

**MECHANISMS OF POLICY CHANGE:
AN ANALYSIS OF SALVAGE LOGGING ON FEDERAL
LANDS INCLUDING
A CASE STUDY OF THE BISCUIT FIRE SALVAGE SALES**

by

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Abstract

Salvage logging on federal lands is a very controversial issue. The issue is centered on conflicting paradigms that seek to define how forests and natural resources are to be used. The belief in Manifest Destiny, the timber industry and historical president all support the harvesting of damaged or dead trees after natural or human created disturbances. The growing scientific understanding of disturbances and the remaining dead and damaged trees now realizes they are fundamental to the health of forest ecosystems. This thesis analyzes the current state of salvage logging on federal lands through a review of the current ecological knowledge pertaining to salvage logging, a case study of the Biscuit Fire salvage logging sales and interviews of forest ecologists and advocates. Evidence is provided that salvage logging is an institutionalized practice within federal land management agencies. The mechanisms of policy change that have effectively challenged the practice of salvage logging are identified as; Federal laws and rules governing salvage logging, the scientific method, the agency's role in policy formation, adoption and implementation, and the role of advocacy in policy formation. The thesis concludes with recommendations including: the de-institutionalization of salvage logging; increased transparency and accountability in policy formation at the agency level; improvements in funding mechanisms for environmental protection programs; increased partnerships with environmental organizations; more scientific research in forest carbon sequestration; and the full incorporation of adaptive management into land management policies.

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Introduction

Salvage: (1889): to rescue or save esp. from wreckage or ruin. (Merriam-Webster Collegiate Dictionary, 1997).

Salvage logging today is a highly divisive practice that is composed of the complex intersection of essentially conflicting paradigms. Attempts to integrate forest ecology, timber economics and political agendas into working policies are extremely challenging. The difficulty of reconciling the opposing goals of profit through resource harvesting and protecting these same resources as sustainable ecosystems creates quite a dilemma for policy makers. Although there are wildly varying opinions as to the usefulness of salvage logging, there is mounting scientific evidence that the practice is ecologically detrimental (Strittholt & Rustigian, 2004; Lindenmayer & Noss, 2006). It is also questionable from an economic perspective (Niemi & Whitelaw, 1995; The Wilderness & National Audubon Societies, 1996). Recent changes in federal management objectives from that of maximum timber production to ecologically centered policies have increased the importance of understanding the impacts of salvage logging (Franklin, 2005; United States Government Accountability Office, 2006). The result is that ecologists, biologists, economists and forest managers are encountering a need for more scientific information in order to better understand this issue in its entirety. In addition it is crucial that legislators receive data from all these perspectives so that they may make informed decisions that are not biased by the conflicting interests that surround this issue.

Salvage logging refers to the harvesting of trees after natural or human-created disturbances, commonly due to floods, volcanic eruptions, various types

of windstorms, insect attacks and wildfires. Removal of live and dead (standing or downed) trees is common. Logging techniques can vary from the traditional high-impact to the less invasive methods of extraction that use low-impact ground skidders, cable systems or helicopters to remove timber. Regardless of which method is used, there is a premium placed on the speed of recovery due to economic loss as the timber deteriorates. The term “salvage” itself reflects the economic reasoning behind the practice, that damaged or dead trees can be harvested to reduce monetary loss (Murkowski, 1996; Franklin, 2005).

Manifest Destiny and its lingering influence provide insight into this spendthrift mindset that accepts the values and beliefs on which the practice of salvage logging is based. It is a uniquely American form of evolving expansionism that mixes republicanism, democracy, freedom of religion and Anglo-Saxonism (Merk, 1963). John L. Sullivan first coined the phrase in 1845. It gave form to a growing consensus that the United States was preordained by Heaven to expand its borders until they had reached their God given limits (Merk, 1963). A main component of establishing these boundaries had to do with the “beneficial use” of natural resources (Merk, 1963). The defining characteristic of this use was improvement, of changing a landscape from its wild state into one more suited for civilization. To not use natural resources is akin to the economic concept of opportunity costs that values a resource at its highest potential economic value possible. It was felt that we as a people had a God given duty to take, convert and make use of all resources for the betterment of our society. Salvage logging embodies this model by making use of a natural resource that

would otherwise be completely wasted and worse still would constitute a fire hazard.

Contained alongside these beliefs is the practice of exceptionalism that is still in use today (Saito, 2010). The narrative stemming from manifest destiny holds that human history is linear and is evolving to ever more advanced stages. The United States is the apex of this advancement and as such is justified pursuing its interests even if they cause harm or are illegal or immoral (Saito, 2010). The continuation of ecologically harmful salvage logging becomes understandable within the context

Although salvage logging is practiced worldwide and has occurred alongside the development of modern forest management its effects have not been studied in the same depth as green-tree logging (Lindenmayer & Noss, 2006; United States Government Accountability Office, 2006). Part of this is due to the perception that natural disturbances are viewed as creating a “mess” that needs to be cleaned up and not allowed to remain for study (Ne’eman, Perevolotsky, & Schiller, 1997; Lindenmayer & Noss, 2006). The idea that salvage is also an economically sound practice is deeply ingrained in the national consciousness and still lingers. Recent rationales for salvage logging are based on the premise that it can improve forest health, reduce the risk of catastrophic forest fires and is economically viable.

Climate change will increase the quantity and scale of disturbances affecting forests. The March 2009 meeting of the Copenhagen Climate Council made it exceedingly clear that the worst-case scenarios of the Intergovernmental

Panel on Climate Change are being realized and that these may be understated (Copenhagen Climate Council, 2009). The Australian fires of 2009 burnt more forest than ever before (Larsen, 2009). Natural disturbances, fires, wind throw and bug infestations, are all increasing and will continue to on a scale that will test humanity. The effects of these disturbances will be amplified in specific areas by the rapidly changing climate. Ecosystems will be forced to absorb both. Salvage operations may well represent unnecessary watershed events for specific geographic locations and species located there from which there may be no recovery.

In light of the rapidly changing environmental conditions it is important to examine the mechanisms that affect policy formation. Mechanisms are both the institutionalized process of policy formation and the methods by which conflicting viewpoints are able to influence policy and policy formation. Vitally important questions for our society include the following. Are the mechanisms of policy change able to cope with the realities of climate change within a relevant time frame? Are the fundamental assumptions and objectives on which current policy is based able to address current needs? And finally, are the mechanisms of change able to translate ecological knowledge into policy? This paper will attempt to shed some light on these questions through an examination of Salvage logging on federal lands.

The first part of this thesis will explain the methods used and why they were chosen. The next section will present findings of the current literature on salvage logging from an ecological and silvicultural perspective. The third part of

this thesis will provide evidence that salvage logging is an institutionalized practice through a critique of past and current laws, which dictate land management policies. The forth part will demonstrate that the practice of salvage logging has been and currently is being successfully challenged through a variety of means. These mechanisms, that have influenced policy change, will be investigated through a combination of a review of the literature, interviews of professionals within the forestry community and a case study of the Biscuit Fire salvage sales. The mechanisms of policy change examined include: 1) Federal laws and rules governing salvage logging, including the insurance of citizen-standing in court; 2) the scientific method, specifically the integration of science and law in policy formation; 3) the agency's role in policy formation, adoption and application; 4) the political process involved in shaping laws and policies, with regards to advocacy and direct action civil disobedience groups that have impacted the salvage logging debate. The thesis will conclude with a discussion revolving around the mechanisms of policy change, how policies related to salvage logging may come into alignment with ecological concerns and what lessons regarding policy change may have been learned or reinforced.

Methods

The realm of policy formation is itself dependent on a combination of quantifiable data, qualitative information and socially based interests. Further, the underlying debate surrounding salvage logging is essentially a focal point of two conflicting paradigms: ecological verses economic. The complexity of the issues involved in this thesis necessitated a mixed methods research strategy capable of integrating the historical, scientific, social and political continuum that embodies the salvage logging debate and allows for a through and holistic analysis of the issue. The research conducted for this thesis fell into three separate parts.

The project began with an extensive literature review of salvage logging with an emphasis on its ecological ramifications. This allowed for a quantitative understanding based on peer reviewed scientific writings on the impacts of salvage logging. The review also supplied substantial qualitative information by way of historical, testimonial and news accounts. A case study of salvage sales was conducted to gain a contextual understanding around salvage sales, to investigate causation factors and to uncover fundamental principles involved. Case studies are recognized for excelling at clarifying complex issues by “detailed contextual analysis of a limited number of events or conditions and their relationships” (Soy, 1997, p. 2). Lastly, interviewing was chosen as a research method to fill in areas of inquiry that were not covered by the literary review. This allowed for in depth responses and clarification on issues from professionals working within the forestry field who have experience to varying degrees in forest ecology, advocacy, policy formation and salvage logging. This was instrumental

in shedding light on specifics of policy formation around salvage logging and the case study.

The ecological impacts of salvage logging were made clear through *Salvage Logging and Its Ecological Consequence* by Lindenmayer, Burton and Franklin (2008) and *Wildfire and Salvage Logging: Recommendations for Ecologically Sound Post-Fire Salvage Logging and Other Post-Fire Treatments of Federal Lands in the West* by Beschta, Frissell, Gresswell, Hauer, Karr, Minshall, Perry, & Rhodes, (1995). Supplementation to these two books included current peer reviewed articles, technical reports, historical accounts, transcripts of hearings before Congress and other books on salvage logging and policy issues. For a fundamental understanding of laws governing policy related to salvage logging the National Forest Management Act of 1976, the National Environmental Policy Act of 1969, The Endangered Species Act of 1973 and The National Forest System Land and Resource Management Planning Rule in their revised forms were the main laws studied.

The Biscuit Fire salvage sales were chosen as the case study for a number of reasons. The fire, subsequent sales, advocacy involved, resulting litigations, scientific studies and continuing public debate are a fairly recent series of events. It was and continues to be very controversial. One of the main reasons was the discrepancy between different official reports written regarding the ecological impacts of the sales. The sales also represented a test run of new Governmental policy towards salvage logging. Finally, there have been numerous groundbreaking scientific studies done on those sales that have directly impacted

the salvage logging debate. These studies have looked at restocking effects, economic benefits and fire hazard impacts of salvage logging, all of which at one time or another have been used as key rationalizations for salvage logging. The salvage sales of the Biscuit Fire offer an ongoing and current vehicle for understanding the issues contained within the salvage logging debate.

Interviews with knowledgeable professionals on salvage logging issues were conducted. These gave invaluable insights on the processes through which ecological knowledge is incorporated into policies. Specifics on the Biscuit Fire salvage sales were also gained through the interviews. Interviewees included: Professor Jerry Franklin of the University of Washington, who has published numerous forestry and ecological articles and has played a key role in developing the Northwest Forest Plan; Rich Fairbanks, former Forest Service employee who initially drafted the proposed Biscuit Fire salvage sales; James Agee, author and Professor of Forest Ecology; presently employed Forest Service ecologists who will remain anonymous; Doug Heiken, Josh Laughlin and Chad Hanson employees of environmental advocacy groups; and a former member of Earth First! who will remain anonymous. These interviews were made up of open-ended questions regarding various aspects of forest ecology, salvage logging, forest planning, public input, litigation and civil disobedience.

Ecological Review

The industrial forestry-based paradigm has reasserted in recent years that salvage logging helps to ecologically restore disturbed forests (Sessions, Bettinger, Buckman, Newton, & Hamann, 2004). The view is based on the assumption that removal of the dead or damaged trees does not affect the recovery of biodiversity or the ecosystem involved (Sessions et al., 2004). This view is reinforced by the assumption that recovery will be accelerated and helped by management techniques used to speed up the re-establishing of forest cover (Bartlett, Butz & Kanowski, 2005; Sessions et al., 2004). These management techniques include salvage logging, burning or removal of generated slash (logging debris), planting of trees, herbicide and fertilizer application, and thinning. Another perception is that disturbance and the disturbed areas have limited significance for biota (Morissette, Cobb, Brigham, & James, 2002).

Although these views influence policy they are viewed with skepticism and as outright untruths by most ecologists (Lindenmayer, Burton & Franklin, 2008). These ideas are rooted in industrial thinking that has dominated forest management since 17th century Europe until relatively recently (Puettmann, Coates, & Messier, 2009). As population and industrial demand for wood products increased during the 17th century, silvicultural actions began to be based more on economic considerations than on site-specific ecological realities (Puettmann et al., 2009).

The importance and value of wood products as commodities eventually led to the development of the Normal Forest Concept (NFC) to enhance the production of timber under economic liberalism in the nineteenth century (Puettmann et al., 2009). Hundeshagen (1826) and Heger (1841), as described by Puettmann, Coates, and Messier (2009), developed this conceptual model, which helped to further the field of forestry, specifically in terms of growth and yield relationships as well as growing stock. The NFC was also intended to determine sustainable harvest levels (Puettmann et al., 2009). This ushered in the change from a product-driven forestry to an industrial concern with productivity (Puettmann et al., 2009). The prevalence of the NFC model is apparent in today's forestry practices, as are the assumptions of this model.

One of the most fundamental assumptions is in relation to the term "stand"; the meaning is defined as a unit of forest that can be efficiently harvested all at once, not considering ecological boundaries. To fit the NFC model stands are homogenous as monocultures or in species compositions. They are similar in acreage, soil types and site conditions. They should be fully or homogeneously stocked and should produce homogenous commodity quality. They are laid out to facilitate harvesting procedures. The roles of natural disturbances are kept to as low a level as possible to ensure the most product (Puettmann et al., 2009). The definition of stand is important as it influences the manner in which forests are conceived, highlighting economic over ecological concerns.

The NFC model was the dominant paradigm until an ecological view began to challenge and change how forests are conceptualized. The shift from

stand based to landscape or watershed level management concerns is continuing to evolve. This debate has continued for centuries; Von Carowitz (1713) stated that maintaining or duplicating species compositions found naturally is the most sustainable way to provide a wood supply over time (Puettmann et al., 2009). However, these ecologically based views did not greatly impact United States' forest policy until the early 1990's. Part of this is due to the entrenched nature of industrial forestry and some is due to the relatively new science of ecology in Western thought, which is still coming to grips with the complexity of the environment and environmental processes. The remainder of the chapter reviews what is currently known in ecological terms about forests in general and, specifically, the impacts of salvage logging on publically owned forest ecosystems.

There are conflicting ways of understanding the assumptions underlying the intertwined terms "succession" and "disturbance". A forest stand can be described as being in a particular stage of succession at a specific time. Succession refers to the process of development, changes of species composition and other ecosystem attributes (e.g. biomass, diversity) that are relevant to a particular succession model (Shugart & West, 1980). Succession is broken down into descriptive stages that include early and late. An early stage refers to the first plants and trees that attain dominance. These trees are usually deciduous, which are fast growing and do well in sunny areas. A late stage will be made up of trees, which eventually gain dominance over the early stage trees and usually include the shade-tolerant conifers. The theoretical end result is termed the climax stage

and can take up to 1000 years to reach in conifer forests of the Northwest (Brubaker, 1980).

The understanding of disturbance has changed from one of being an unwanted interruption in succession to an intrinsic factor of forest dynamics. New models like patch-dynamics have modified the idea of a climax stage. Disturbances cause an ecosystem to be in a dynamic state made up of many stages of succession from early to late. The traditional NFC term disturbance implies an interruption in the wood supply. Fire, wind throw, bug kill, and volcanoes are all considered natural disturbance agents. New understanding recognizes the benefits and ultimately the necessity of “disturbances” in terms of forest health. This variation is good for biodiversity and the health of a forest (Pickett & White, 1985). Disturbances are viewed as essential to the functioning of ecosystems (Puettmann et al., 2009). However, from a silviculture perspective they are undesirable and should be avoided or minimized. These fundamentally different views held by silviculture and ecology regarding disturbances is one of the main reasons for salvage logging being such a controversial issue.

Lindenmayer and Noss (2006) have stated that environmental impacts due to salvage logging are best classified into three broad categories: impacts that affect the physical structure of forest stands and associated aquatic systems; impacts involving ecosystem processes such as hydrological cycles, nutrient cycling and soil formation; and impacts on specific flora, fauna and species assemblages. The first is the easiest to observe and study. It has a direct cause and effect relationship to the remaining categories. The three are interrelated and

affect each other in biofeedback loops. The removal of logs and trees *does* alter the forest's structure, and hence affects its ecology in an ongoing process. The question becomes whether the changes produced are deemed beneficial, detrimental or some combination thereof. The answer, as well as the terms used in discussion, can change based on whether the goal is measured by an ecological, economic or political yardstick. In short, the answer is contingent upon which paradigm has the most influence on policy development.

Ecologically, after a disturbance occurs, the remaining trees and logs are referred to as “biological legacies” as opposed to timber. The removal of these legacies is known to reduce the complexity of forests (Hutto, 1995; Franklin, Lindenmayer, MacMahon, McKee, Magnuson, Perry, Waide, & Foster, 2000). This also affects the landscape pattern (Radeloff, Mladenoff, & Boyce, 2000) and isolates unburned or unaffected areas (Morissette, et al. 2002). Biological legacies include intact thickets of the understory (Ough, 2002), large snags and living trees (Gibbens & Lindenmayer 2002), logs (Harmon, Franklin, Swanson, Sollins, Gregory, Lattin, ... & Anderson, 1986) and sections of non-disturbed or only partially disturbed forest areas (DeLong & Kessler 2000).

The true importance of these legacies is manifested by their many critical roles related to biodiversity. They help the recovering vegetation by providing essential nutrients as well as providing seed sources for the next cohort (Hansen, Spies, Swanson, & Ohmann, 1991). The role of “nurse” logs is a well-known example. The ability of species to survive and remain in the immediate area is increased (Hutto, 1995; Whelan, 1995). Habitat for various different species that

return to the affected area is provided as well (Lindenmayer, Cunningham, & Donnelly, 1997). In forests, up to two thirds of animal diversity is associated with dead trees (Serial No. 109-39: Scientific research and the knowledge-base concerning forest management following wildfires and other major disturbances, 2005). Decaying woody debris makes energy and nutrients available for a variety of organisms (Perry, 1994; Hutto, 1995). Lastly, these legacies help stabilize the environmental situation in disturbed areas (Perry, 1994) and encourage both plants and animals to re-colonize (Whelan, 1995).

There is a temporal element to biological legacies in general and snags (dead standing trees) in particular. The amount of time to replace legacies is a variable figure that depends on the stand in question and relates to its age, complexity and other environmental factors. The removal of snags can postpone for many decades the recruitment of large woody debris to the forest floor and riparian zones (Minshall, 2003). Old-growth trees with cavities that some species rely on for habitat (e.g. the spotted owl) may take more than 200 years to replace (Lindenmayer et al., 1997). After a burn, large trees can remain standing for over fifty years, but are more likely to fall if the area is logged and the remaining slash is burned (Ball, Lindenmayer, & Ossiingham, 1999). This temporal element affects approximately 150 known species of vertebrates alone that depend on snags for nesting and denning (Rose, Marcot, Mellen, Ohmann, Waddell, Lindley, & Schreiber, 2001). The removal of legacies will slow down re-colonization to varying degrees and have cascading effects on the entire plant and animal

community. The extent of the impact depends on the sensitivity of the ecosystem and the scope and scale of the logging.

The negative effects of logging and other landscape changes on biodiversity are due in large part to habitat fragmentation, which can be critical depending on the species in question. Fragmentation due to natural or human-caused disturbance creates a transition zone or edge between undisturbed and disturbed areas. Some types of edges are considered “soft” which means that the transition is gradual and the effects are less severe. Logging, especially clear cuts, leaves a “hard” edge that creates a sharp contrast. The effects of these edges are grouped into abiotic and biotic categories. Abiotic effects create microclimatic changes due to increased temperature, light and wind, as well as decreased humidity. These effects range over tens to hundreds of meters, depending on conditions at the site. Biotic effects include diseases, invasive species and predators, and can have an influence over hundreds of meters. Edge effects are known to significantly influence both distribution and abundance of species and can result in habitat degradation or loss (Lindenmayer & Fischer, 2006).

While soil impacts, such as erosion and soil compaction, have been extensively studied with regard to green-tree logging, there is a shortage of data on impacts caused specifically by salvage logging. This is significant, as the act of salvage logging constitutes a combination of disturbances in the same area within a relatively short amount of time. First, there is the original disturbance, and then the additional disturbance of salvage logging. It is highly probable that there would be additional consequences other than what is caused by either a

natural disturbance or traditional logging alone (Lindenmayer & Noss, 2006). Impacts may also be further amplified not only because salvage can be more intensive but because it can occur in areas of national forests that are normally protected from logging due to their sensitive nature (McIver & Starr, 2000). Also, larger areas can be cut under salvage guidelines than can be cut for normal logging on federal lands (McIver & Starr, 2000).

The salvage logging undertaken after the 1938 New England hurricane covered a huge area, and, although no studies were done at that time, there have been some very interesting ongoing studies by the Harvard Forest Long Term Ecological Research (LTER) program related to this event. There were changes of the hydrology to two major New England river systems, most likely caused by a decrease in evapotranspiration due to the salvage logging (Foster, Aber, Melillo, Bowden, & Bazzaz, 1997). Also there was evidence of reduced ecosystem control caused by forest structure removal, soil heating and soil biogeochemical processes (Foster et al., 1997). Another study by LTER suggests serious long-term impacts may be caused by salvage logging after wind events (Cooper-Ellis, Foster, Carlton, & Lezberg, 1999). Their results indicate “downed and damaged trees play an important role in forest recovery and ecosystem resilience” (Cooper-Ellis et al., 1999).

Soil impacts directly related to salvage logging need further research, although several studies have found increases in both soil erosion and in-stream sedimentation (Karr, Rhodes, Minshall, Hauer, Beschta, Frissell, & Perry, 2004; Reeves, Bisson, Rieman, & Benda, 2006). Similarly, soil compaction and erosion

were found to increase when salvage logging took place in fire damaged areas (McIver & Starr, 2000). In Portugal, it was found by Hansen (1991) that post-fire areas prepared for reforestation using salvage logging lost sediment at rates 100 times higher than areas left alone after fire. In high-severity fire areas that were salvaged, it was found that the soil was depleted of calcium, magnesium and phosphorus. It was also determined that these elements would not be present in pre-fire amounts during the projected rotation time of 100 years (Brais, David, & Quimet, 2000). A study of a repeatedly burned area found that the salvaged sites had less soil and organic material than the unsalvaged sites (Hansen et al. 1991).

Plant regeneration is another important area of the salvage logging debate. In plant regeneration it was found that logging equipment associated with salvage logging did in fact have a negative result (Cooper-Ellis et al., 1994; Lindenmayer & Ough, 2006). This finding was confirmed by Donato (2006) in what has become an important study that also found that un-salvaged units had high natural regeneration of conifers after the high severity Biscuit Fire in Southwest Oregon. There are cumulative effects associated with the deterioration of forest health caused by salvage that can encourage the influx of invasive species (McIver & Starr, 2000). One of these effects involves species whose seeds are serotinous (activated by fire) but are then destroyed by the process of salvage logging. Lodgepole (*Pinus contorta*) is an example of this as they have adapted to fire and have an advantage in fire prone areas. Their seeds will be released and sprout while other plants' seeds will not; salvage logging reduces this advantage and

allows for invasive windblown seeds to colonize the area (Van Nieuwstedt, Sheil, & Kartawinata, 2001).

The last example of serotinous seeds reinforces the finding of Rulker (1994) and Bunnell (1995) that many species and associated ecosystems evolved in conjunction with and adapted to natural disturbance. Pahl-Wost (1995) called natural disturbance a “key process” in most ecosystems. Further, natural disturbances of differing sizes, scales and intensities over varying locations and times are essential to maintaining biodiversity within ecosystems (Lindenmayer and Noss, 2006). These observations have in fact led to new paradigms like patch-dynamics, which center on the non-equilibrium state of nature produced by the recurring feature of disturbances (Pickett, Parker, & Fiedler, 1992). Although this may sound like all disturbances are beneficial, Paine, Tegner, and Johnson (1998) have discovered that organisms that have adapted to disturbances are vulnerable to new forms and combinations of disturbance, especially to one right after another. Equally important, the specific combination of a natural disturbance followed by salvage logging was found to have adverse effects (Van Nieuwstadt et al., 2001; Lindenmayer & Ough, 2006).

Studies on salvage effects upon specific species are fairly limited and have mostly focused on bird populations. There are numerous studies that have established an increase in abundance of cavity-nesting birds, aerial insectivores and shrub and ground-foraging birds following fire (Hutto, 1995; Cahall and Hayes, 2008). Some species of birds may be dependant on burned forests (Hutto, 1995). Studies have found greater abundances of black-backed and hairy

woodpeckers in unsalvaged than in salvaged stands (Saab & Dubley, 1998; Cahall and Hayes, 2008). It has been suggested by researchers that more studies need to be done in regards to partial salvage. It is difficult to draw significant results regarding various species of birds due to a myriad of factors that influence their behavior; many of the studies have been short term and some have not been replicated (Cahall and Hayes, 2008).

Currently, one of the largest disturbances facing forest managers is the infestation of Western lodge pole pine (*Pinus contorta* var. *latifolia*) by mountain pine beetle (*Dendroclonus ponderosae*) in the interior of British Columbia (Lindenmayer et al., 2008). In 2006 there were 9.2 million hectares affected, and by the end of 2007 13 million hectares were infested (British Columbia Ministry of Forests and Range, 2006). This problem continues to grow and represents one of the largest ongoing salvage operations ever. Climate change and past forest practices are implicated as co-contributors to this problem. The beetle is kept in check or killed by extreme cold (-40°C .) and/or continuous low temperatures below -25°C . A series of mild winters since 1993 has allowed the bugs to explode in population. The homogeneity of the forest caused by large harvests and re-planting has lead to the abundance the large pine trees that beetles need to thrive as a species. In the past there have been outbreaks before in various areas in Canada and the U.S., which often led to fires that consumed the dead trees. These fires were an important part of the natural disturbance process and of forest dynamics.

In response to mountain pine beetle infestation the British Columbia Ministry of Forests and Range has established “emergency management units” and authorized extreme control measures. One part of this plan is to salvage log with the goals of limiting the spread of infestations, recovering some of the economic value of the timber, sustaining logging levels to maintain forestry companies, limiting fire risk and facilitating re-plantings. It is unclear if salvage logging will be an effective part of the strategy to control the mountain pine beetle. What is clear is that the sheer scale of this phenomenon represents a major impact to the forest at all levels.

Figure 1. Conifer Regeneration and Woody Fuels on Salvaged and Burned sites within Biscuit Fire.

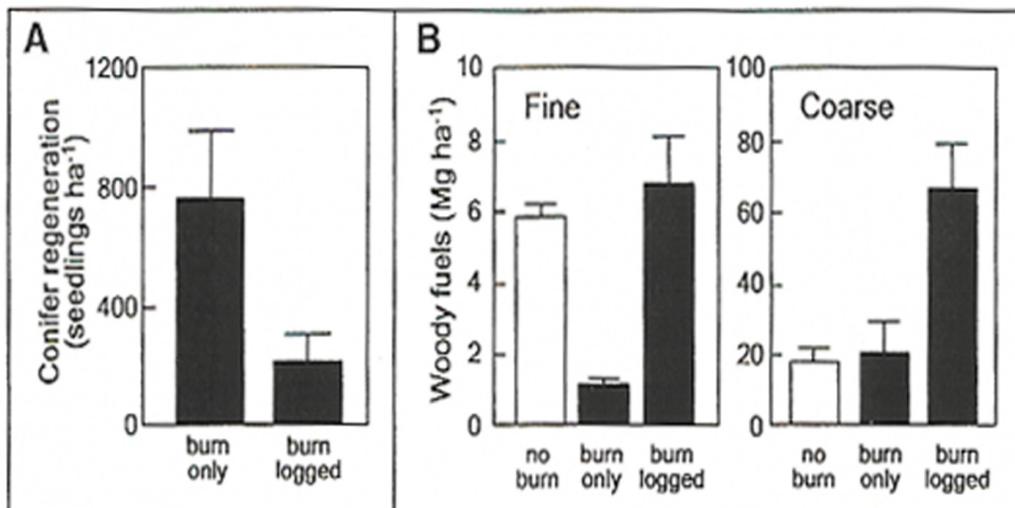


Figure 1. (A) Natural conifer regeneration and (B) surface woody fuel loads before and after postfire logging of the Biscuit Fire, Oregon, USA. (Donato, Fontaine, Cambell, Robinson, Kaufman & Law, 2006, p. 352).

Recent research has focused on one of the assumptions used to support salvage logging, namely that it helps prevent and reduce the intensity of wildfires.

Donato's study (2006) found that salvage logging might actually increase short-term fire severity (see figure 1). A study by Thompson (2007) conducted in Southern Oregon examined fire intensities of re-burned stands in the 2003 Biscuit Fire that *had* been salvage logged compared with those that had regenerated naturally after a 1987 fire. Four fuel types were included and all showed higher intensity burning in the salvaged logged and planted units (see figure 2). This is a single snapshot in time of specific conditions and as such cannot scientifically prove future results. It does suggest that younger forests planted after salvage logging in this type of mixed-severity fire regime may be at risk to positive feedback cycles of high-severity fire for at least 15 to 20 years (Thompson, Spies, & Ganio, 2007).

These studies, in aggregate, strongly suggest that salvage logging is significantly detrimental in regards to forest ecosystems. But substantially more research needs to be done in relation to impacts on specific species. However, it is feasible to use the habitat that a species depends on as a proxy for that species to estimate impacts caused by salvage logging. In light of new federal management practices and directives based on using ecologically sound practices it is somewhat surprising that salvage logging is increasing as a percentage of the overall harvest from National Forests. The next chapter attempts to clarify this issue by providing evidence that salvage logging has become and is now an institutionalized practice.

Figure 2. Fire Severity of Salvage Logged and Unmanaged of Four Different Fuel Types on the Biscuit Fire.

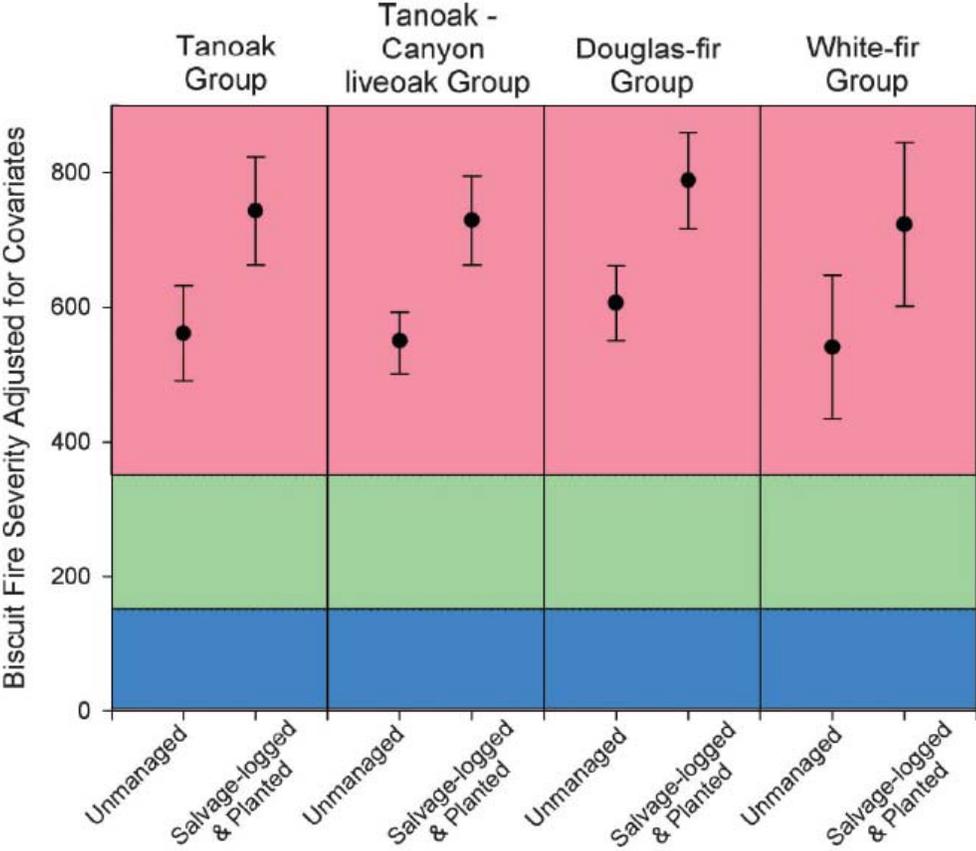


Figure 2. Fire severity on the Biscuit Fire (2002) of areas that had burned during the Silver Fire (1987). Plots were established for salvaged-logged and planted, and unmanaged for four fuel types. (Thompson, Spies & Ganio, 2007, p. 10746).

Salvage Logging as an Institutionalized Practice

In-sti-tu-tion-al-ized: to make into an institution: give character of an institution ...*especially*: to incorporate into a structured and often highly formalized system [i.e. *institutionalized* values]. (Merriam-Webster's Collegiate Dictionary, 1997).

The importance of wood products in our society's history and their continuing role in supporting our economic system are key to understanding how and why salvage logging has become an institutionalized practice. Timber's economic and strategic importance, along with its history and the laws that govern salvage logging all provide insight into the institutionalized nature of salvage logging. Employment in logging has ranged from a low of 69,000 to a high of 88,000 people per year between the years 1972 to 2002 with roughly twice that amount employed in mills (Howard, 2003). Lumber-dependent industries have easily employed 3 to 8 million workers per year during this same time frame (Howard, 2003). Exports of timber products from 1965 to 2002 have ranged from 2.7 to 4.8 percent of all commodities exported from the U.S. This represents a range in 1997 dollars from 3,614 million to 22,518 million (Howard, 2003). National Forests provide 20 to 25 percent of this raw material (Alvarez, 2007). The economic value of timber products caused logging to gain and maintain a status of vital importance to this country's economic security.

The rapid growth of our nation was made possible through the use of timber. Before European colonization U.S. territory contained about 1 billion acres of forests, which declined to about 755 million acres by 1900 (Alvarez,

2007). The largest reduction occurred from 1850 to 1900 and was critical to supporting the rapid expansion during the industrial revolution in the U.S.

Our system of forestry is largely based on a European system that was shaped by a few key players. Gifford Pinchot, appointed chief of U.S. Division of Forestry in 1898, forbearer to the Forest Service, studied forestry both at Yale School of Forestry and in Europe at the French Forest School at Nancy (Lewis, 1999). His father, James Pinchot, was involved in creating the Yale School of Forestry, one of the first two professional forestry schools established in the U.S. in 1898 (Lewis, 1999). By this time in American history the elder Pinchot characterized the Eastern forests as "gone" and that this "forced us to think of its preservation" (Lewis, 1999. p. 3).

Central to Pinchot's idea of conservation was the concept of sustained-yield forestry. This entailed harvesting in a year only what forests produced in new growth during that year. Theoretically, this is a very sound idea that would keep the forests in a perpetual state of production. By 1907 this was expanded with the recognition that forests were intimately interconnected with water and minerals and that there was a need to manage all three in a unified approach. This conservation policy was embodied in the slogan "the greatest good of the greatest number for the longest time" (Walsh, 2010). Inherent in this philosophy is the assumption that trees represent a natural resource to be utilized by society.

The focus of forestry was shifting from harvesting an endless natural resource that needed no stewardship to an understanding that the forests were in need of a management plan that incorporated the idea of conservation.

Conservation as understood in Pinchot's time was directly in line with the Normal Forest Concept (NFC), discussed in the previous chapter, which evolved out of an economic system that valued timber as a commodity, not as an essential part of an ecosystem¹.

There are a number of laws and subsequent funds that effectively continued to develop salvage logging into an institutionalized practice. Support for logging, and by extension salvage logging, was strengthened, in both the public and within the Forest Service, by laws that offered financial benefits. The National Forest Receipts Act of 1908 and 1911 mandated that 25% of logging related receipts from National Forests would be given to the state where the forest was located (Holmer, 2004). These funds were to be used for schools and roads of the counties in which the sales took place. The Brush Disposal Fund of 1916 allowed the Forest Service to charge a deposit on timber sales to provide for disposing of the logging slash left after harvesting (Holmer, 2004). The Knutson-Vandenburg (K-V) Fund was established in 1930 for reforestation and restoration. The funds were also provided by timber sales and were to be used within the same forest where they were generated. These forest restoration funds were only available for lands that had been logged (L. Moon-Stumpff, personal communication, June 6, 2011). The two trust funds have been used to pay for administrative overhead costs. The more logging of forestland, including salvage logging, the more funds were available. This financially beneficial relationship for

¹ The term ecosystem is used because it most accurately encompasses the idea being expressed, although it did not enter the lexicon until the 1940's.

Forest Service administrators was an early incentive leading to the eventual institutional acceptance of salvage logging.

The institutionalization of salvage logging can be concretely demonstrated in the enactment of laws focused on the implementation of salvage logging. On September 21, 1938 the six New England States suffered the most destructive hurricane of the last 175 years (Foster & Orwig, 2006). Winds in excess of 220 km/hour blew down or damaged 3 billion board feet of timber within a 150-km wide area of forest land (Foster & Orwig, 2006). Within days numerous calls for help were coming to the Forest Service, The Secretary of Agriculture, and even the President of the U.S. from Governors and representatives in Congress of the affected states (Peirce, 1968). The United States Government established the New England Timber Salvage Administration (NETSA) to coordinate and promote salvage logging operations, purchasing of timber and fire hazard reduction (Spurr, 1956). The Forest Service was the logical choice to lead this coordinated effort, as there was no single organization that had the necessary experience and all the needed equipment (Peirce, 1968). The operation required the resources and cooperation of many local, state and federal agencies. It was the first such large-scale salvage operation in the history of the Forest Service, and there were no previous examples, of this magnitude, on which to base actions or policies (Peirce, 1968).

NETSA came about in an odd way. At the time of its creation there were not any Federal funds available and Congress was not in session. The Forest Service and the Secretary of Agriculture were not authorized to borrow funds.

However, a corporate agency within the Department of Agriculture, the Surplus Commodities Corporation (SCC), was able to borrow funds. The SCC produced NETSA as a sub-division, giving it the authority to meet its goal of mitigating the results of the hurricane (Peirce, 1968). The Loan was secured from the Disaster Loan Corporation with the understanding that principal and interest were to be paid back “to the full extent possible” (Peirce, 1968). The foundation of NETSA financed as a business transaction as opposed to disaster relief is a key step in the development of salvage logging as an institutionalized practice. The blow-down and products to be derived from it were viewed as collateral as opposed to a one-time occurrence that required action (Peirce, 1968). In essence, it represented the precedence of salvage logging as a funding mechanism that the Forest Service could incorporate into its modis operandi.

The Forest Service Chief Forester therefore became the administrator of NETSA as well as vice-president of the SCC. November 14, 1938 was the day of formal authorization. A historical report written in 1965 by Earl S. Peirce, who directed the Division of State Cooperation within NETSA, which used official reports and records from the late 1930's to supplement his personnel experience relates the granting of authority.

... [A]uthority to use all facilities and personnel of the U.S. Forest Service and of such Federal, state, local and private agencies as may be willing to cooperate, and to employ such additional personnel as needed and to assume full responsibility for the procuring, handling, processing, exchanging, storing, transporting and sale of all inventories of the corporation, acquired in connection with the timber salvage program and shall execute contracts in connection therewith and to designate field agents of the corporation to carry out the last named functions, pursuant to his direction. [As well as] to establish state offices and such

administrative units and offices as he may deem necessary to efficient effectuation of the salvage program, to negotiate with the Disaster Loan Corporation and to obtain a loan to be made to the Federal Surplus Commodities Corporation in an amount not in excess of \$15,000,000. (Peirce, 1968, p. 17).

A main focus of the law was to reimburse landowners for timber that had been blown down or damaged without disrupting local markets. NETSA accomplished this by buying the logs from the landowners, having the logs sawn into lumber and then selling the lumber in a controlled manner. The government was not interested in making a profit but was beholden to cover costs if possible. The original loan agreement called for purchasing the logs at 80% of their appraised value. After much controversy and various bills failing to pass in Congress, an Executive Order increased the price to approximately 90% of appraised value. This increase had the effect of really getting the program moving as contracts were signed and logs began arriving to the 721 receiving sites. By December 31, 1943 the program had completed its tasks and was terminated. A total of 651 million board feet was salvaged with more than eight million dollars paid out to thirteen thousand landowners. The total cost of the program was \$16,269,300 with the sales of the lumber recovering nearly the whole \$15,000,000 loan (Peirce, 1968). NESTA enacted funding and established a bureaucratic structure for salvage logging essentially institutionalizing the practice for the first time.

In the 40 or so years after the New England hurricane there was an increased demand for wood products that led to very environmentally destructive logging practices being used on national forests. The amount of logging continued to rise due to World War II and the resulting need for timber products. Use of

wood products continued to rise after the war to meet new job and housing needs. By the 1950's private lands were largely exhausted due to overcutting, especially of old-growth (Holmer, 2004). To compensate the National Forests increased their sales from 3 billion board feet in 1950 to 9 billion board feet in 1959 (Holmer, 2004). 1959 also saw the Forest Service's release of Operation Multiple Use, a plan that foresaw 21.1 billion board feet logged on an annual basis by 2000 (Holmer, 2004). Clear cuts and other destructive practices continued on a large scale. By the 1970's the public exerted enough pressure to pass the National Forest Management Act (NFMA) of 1976. But salvage logging continued to be practiced.

NFMA was intended to protect the natural ecosystems contained within the National Forests from harmful extraction practices. It has become the primary statute influencing management policy of the national forests. It requires the Forest Service to co-ordinate and balance multiple use with sustained yield so that citizens' needs are met for perpetuity. It contains provisions that established the Salvage Sale Fund and protects the practice of salvage logging within the management practices of the Forest Service.

Section 472(h) of NFMA establishes the Salvage Sales Fund to pay for the salvage logging of "insect-infested, dead, damaged or down timber" (NFMA, 1976). The fund was conceived to be self-sustaining after its initial establishment. Congress made two 3 million dollar appropriations to initiate it, one in 1977 and another in 1979 (U. S. General Accountability Office, 1996). After the establishment of the fund, payments from a portion of the purchase price of

salvage sales are deposited into the fund. In this self-sustaining way, salvage sales pay for the planning, preparation and supervision of future salvage sales (U. S. General Accountability Office, 1996). After the severe fire season of 1987, Congress expanded the fund by appropriating another \$37 million to increase salvage sales (U. S. General Accountability Office, 1996). The establishment of a permanent self-perpetuating funding mechanism for salvage sales indicates that salvage logging fits the criteria of an institutionalized practice.

There are concerns that the salvage fund has been used for other purposes than for what it was intended. In a hearing conducted on June 4, 1998 by the Committee on Agriculture of the House of Representatives it was revealed that the Washington office had increased expenditures charged to the fund from \$581,879 in 1993 to \$8.4 million in 1997. This 800% increase in administrative overhead costs was troubling to the committee. It represented a loss of funds for on-the-ground work that the fund was created to accomplish. The U.S. Government Accountability Office in its May 6, 1998 report found that the Forest Service spends about 30% of the Salvage Fund on administrative costs while other programs only use 8% of their appropriations for administration costs. It seems obvious that administrators would favor the practice of salvage logging if it provides for their salaries.

NFMA states that lands not suitable for timber production must be identified and set aside from harvesting. However, NFMA does allow for salvage logging to occur on those lands deemed unsuitable for green tree logging. NFMA also requires that an annual timber harvest level is set that allows for removal of

timber "in perpetuity on a sustained-yield basis". Again salvage logging is exempt from environmentally based management practices. NFMA allows stands of timber that have been "substantially damaged by fire, wind throw, or other catastrophe, or which are in imminent danger from insect or disease attack" to be salvage logged regardless of if this harvesting is within sustained-yield parameters. Timber harvested by salvage sales may be counted within the annual amount or may be sold "over and above the plan volume" (NMFA, 1976).

The National Forest System Land and Resource Management Planning Rule mandates the Secretary of Agriculture to establish regulations based of the principles of multiple-use and sustained yield for development of land management plans (16 U.S.C. 1604 (g)). It is derived from and mandated by NMFA. The intent of NMFA is implemented through the development of National Forest Plans. These plans determine the actual policies at the forest level. Language in the planning rule is identical to what is in NMFA. This holds true for sections relating to salvage logging. Currently the planning rule is being updated and is close to being adopted (Federal Register, 2011). The sections regarding salvage logging have not changed since the original plans of 1978, indicating that it is unlikely that policy around salvage logging will undergo any major changes. It seems that salvage logging will remain an institutionalized practice for the foreseeable future. The next sections will examine the basis and issues surrounding challenges to the practice of salvage logging on National Forests.

Federal Laws Impacting Salvage Logging

There are a number of laws that govern and lay out the parameters for forest policy formation and that land management agency actions must abide by. These laws have direct impacts on salvage logging operations taking place on federal lands. The Wilderness Act of 1964 (16 U.S.C. § 1131) prohibits salvage logging from taking place on any federal land designated as “wilderness”. The most relevant laws for this thesis are the Administrative Procedures Act (APA) of 1946 (5 USC § 551 - 559), U.S. Forest Service Decision Making and Appeals Reform Act (ARA) of 1992 (42 U.S.C. § 1612), the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. §§ 4321-4347), the National Forest Management Act (NFMA) of 1976 (16 U.S.C. §§ 1600-1624) and the Endangered Species Act (ESA) of 1973 (7 U.S.C. § 136, 16 U.S.C. § 1531). NEPA, NFMA and ESA often have a synergistic effect. This section will explain their importance as mechanisms for incorporating scientific knowledge into forest policy, directly affecting salvage logging on federal land. These laws collectively provide for public participation within the agency decision-making process through comment and appeal as well as insuring citizen standing in court. They also provide stringent protections of the environment, endangered or threatened species and their critical habitat.

The 1996 APA is a procedural statute establishing public involvement procedures covering all federal agencies. It established the right of citizens to be notified, provide evidence pertaining to and have access to hearing officers for any government agency rule or regulation formation. In cases when the Forest

Service decides to move forward against citizen concerns, the APA also provides an opportunity for the public to submit an appeal to the courts. If the appeal is found to have merit, the APA mandates the court to nullify any agency rule or regulation found to be "arbitrary", "capricious" or outside the intent of law (5 U.S.C. § 706, 551:13; George, 2006).

The ARA is similar to the APA in that it also guarantees citizen's rights in the decision making process through notice, comment and appeal. But the ARA only pertains to the Forest Service and it mandates public input down to the individual project level (i.e. a salvage sale). The Forest Service is required to document all public comments in this process. Any citizen who participated by commenting on a decision is able to file an administrative appeal. This act made the Forest Service the only federal agency having statutory bindings for administrative appeals (Coulombe, 2004).

The National Environmental Policy Act (NEPA) is a procedural statute that sets forth the requirements that governmental agencies must follow in preparing Environmental Assessments (EA) and Environmental Impact Statements (EIS). The act's purpose is to increase public disclosure and to prevent or eliminate damage to the environment (Schultz, 2008). NEPA requires that federal agencies must explicitly solicit reviews and comments before reaching a final decision on proposed projects "significantly affecting the quality of the human environment" (42 U.S.C. § 4332(2)(C)). This effectively mandates the public's right to participate in federal decisions. It also allows citizens to sue under the law, providing the public with "standing" in legal terms. It also requires

the Forest Service to obtain opinions from the Fish and Wildlife Agency regarding adverse effects to endangered or threatened species under the ESA resulting from any major actions undertaken by federal agencies including salvage sales.

The National Forest Management Act of 1976 was created to resolve lawsuits that had effectively shut down clear-cut logging on national forests (George, 2006). The litigation was based on NEPA and its requirement that federal agencies provide Environmental Impact Statements (EIS) for logging projects (Parent, 1992). NFTA is principally procedural but does include powerful requirements. It requires the Forest Service to conserve biodiversity, limit harvest methods (i.e. clear cutting) and enforce soil and water quality (Schultz, 2008). NFMA reorganized the Forest and Rangeland Renewable Resources Planning Act of 1974 that had replaced the 1897 Organic Act. Its purpose is to allow timber production without compromising recreational and environmental goals (Schultz, 2008).

NFMA begins with a section of findings that serves to clarify its purpose. The findings start by stating that the management of renewable resources is an extremely complex issue that will change over time. This necessitates a national renewable resource program that is periodically updated. This program must include the renewable resources on both public and private forests and provide for public involvement in the development of the program. Finding number four makes clear that public and private research will be coordinated and will produce new knowledge to be incorporated into the resource program. The Forest Service

is also found to have a responsibility in leading the nation in conservation and resource use that will be sustainable in perpetuity. NFMA requires the Secretary of Agriculture to complete an assessment of the renewable resources administered by the Forest Service every ten years. This includes an inventory of resources, the programs of the Forest Service, a discussion of policy considerations and laws, as well as an analysis of affects caused by climate change on renewable resources.

NFMA's main significance to this thesis is its statutory protection of public participation in the development process of National Forest Land and Resource Management Plans (LRMP or forest plans) that are to be completed every 15 years for each National Forest. It increased the amount of public input allowed above previous laws by instituting pre-decisional requirements for public comments on forest plans. This combined with NEPA had the effect of scientifically changing the "level and intensity of public interaction with agency officials in the planning of land management programs and projects" (Coulombe, 2004, p.10). NFMA additionally provided access for the public to appeal forest plans. It also required the Forest Service to document and make available the environmental analysis undertaken for projects (i.e. timber sales) in accordance with forest plans and that they be able to "withstand scientific challenge and public scrutiny" (George, 2006, p. 36).

The Endanger Species Act (ESA) provides protection to plants and animals that the federal government has listed as endangered or threatened. ESA entails that killing or harming, known as "take", of a listed animal or significantly modifying its critical habitat is unlawful. Federal agencies are also required to

guarantee that their activities are unlikely to endanger the continual existence of a listed species or to destroy or alter critical habitat of the species. The U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Services (NMFS) enforce the ESA. Endangered species are defined as being "in danger of extinction" within all or a significant amount of their habitat (16 U.S.C. § 1532(6)). Threatened refers to a species that is "likely to become endangered" within a short amount of time (16 U.S.C. § 1532(20)). Only one of five criteria needs to be met for a species to become listed. They include excessive damage to a species habitat, human overuse (i.e. hunting), disease or predators, ineffectual current legal protections and an "other" category for anything else threatening a species existence.

A critical point is that the decision be made only on biological grounds without considering economic or other impacts caused by the listing (50 C.F.R § 424.11(b); Albrecht & Christman, 1999). Also the nomination of a species for listing can be made not only by the FWS and NMFS but also by any other agency, group or person (16 U.S.C. § 1533(b)(3)(A); Albrecht & Christman, 1999). If the petition is rejected the decision can be subjected to court review (16 U.S.C. § 1533(b)(3)(C)(ii); Albrecht & Christman, 1999). If a species is listed, a critical habitat must be designated. This area is defined as where physical or biological features are found that are essential for the species conservation. The agency is beholden to use the "best scientific data available" in determining the critical habitat. However, economic considerations can be considered here as long as the potentially excluded critical habitat would not cause extinction (Albrecht &

Christman, 1999). The ESA within its provisions “called for an unprecedented degree of scientific involvement in the identification, protection, and recovery of threatened species” (Meine, Soule, & Noss, 2006, p. 635).

The ESA also ensures that federal agencies adhere to a consultation process with FWS or NMFS before they begin any project or activity that may impact listed species or their critical habitat. There are several steps involved, the first is having FWS or NMFS determine if a listed species may be in project area. If this is a possibility then the agency must conduct a biological assessment that will determine any impacts. A biological assessment is automatically required for major construction projects done by any federal agency (Meine et al., 2006) or any project done by non-federal agencies with significant federal funds (L. Moon-Stumpff, personal communication, June 6, 2011).

This unique set of environmental laws have had major impacts on agency actions down to the individual project level and have proved invaluable in protecting ecosystems. These mechanisms, enforced by public oversight and participation, help insure that sound scientific principals and methods are used by federal agencies. They have been effectively used to mitigate environmental impacts as well as stop numerous salvage logging sales. The Biscuit Fire salvage sales case study will explore this in more depth.

These laws have also provided a mechanism for public and private interests to effectively participate in policy formation and enforcement. This was accomplished by initiating the synthesis of science and policy into a powerful and progressive mode of decision-making. This may lead, eventually, to an inevitable

massive reduction in salvage sales on National Forests and other federal lands.

These laws have effectively changed the process of policy formation and have had some interesting outcomes and implications that are discussed in the next section.

Scientific Method in Policy Formation

The previous section demonstrated that science has become a fundamental factor contained within the environmental laws governing salvage logging activities on federal lands. These laws require that policies take into consideration environmental concerns along with economic, recreational and other interests vying for rights and access to the National Forests. However, there is a fundamental tension between science and law in the process of policy formation. The implications of integrating policy, science and the law include the necessity of developing a process for this combination to work successfully. One such development has been the advent of policy-driven science. There are conflicts that arise in combining these three distinct disciplines. How these issues are being resolved and the results of this new combination will be examined in this section.

The scientific method is an ongoing formal process that attempts to understand the world. It accomplishes this through an endless cycle consisting of: observation of a problem or process; theorizing as to the cause; development of a test that should prove or disprove the hypothesis. This continues until a satisfactory answer is found, and then a new problem or observation undergoes the process. Law progresses in a similar fashion except that a definite finding is necessary at specific points in time (Brosnan, 2011). This comes into play when litigation is necessary to resolve issues and during policy formation. Further, law uses an adversarial approach, while science is a cooperative process in that ideas are shared and tested. Environmental policies dealing with salvage logging as put forth by land management agencies are, in one sense, an attempt to navigate

within the constraints of the environmental laws to avoid litigation between adversarial parties.

After the Endanger Species Act (ESA), National Forest Management Act (NFMA) and National Environmental Protection Act (NEPA) were passed, and science had become an integral part of producing forest policy, there developed a sudden interest in scientific concepts. Forest stakeholders, lawyers, scientists and politicians became very concerned with what defines a species, forest ecology and the scientific standards on which science is based (Brosnan, 2011). The development of conservation biology in the mid-1980s allowed for very directed scientific participation in policy formation. In fact, the passing of environmental laws and various international agreements effectively increased the importance and scope of biologists. The formation of conservation biology was due, in large measure, to the growing need to establish accepted standards for the new interface of science, law and policy (Meine, et al. 2006).

One result of this new arrangement was termed “policy-driven science” which, implies that research responds to policy needs as well as to legal decisions (Brosnan, 2011. p. 2). This changes the scientific method from one of seeking answers for knowledge's sake to one prioritizing a resolution of an adversarial case or for meeting a politician’s desire for an answer (Brosnan, 2011). An example of policy driven science can be illustrated by the example of Congress, in 1978, enlarging the ESA’s definition of species to include “Distinct Population Segments” for vertebrates (Brosnan, 2011.) Scientists up to this time had never employed the term in the scientific literature, although the use of subspecies was

common (Brosnan, 2011). Also the fact that the term referred only to vertebrates might be seen as biased. There followed an effort by scientists to define the term. By 1996 the Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) clarified the issue by defining the term as a group of animals discrete from other segments of that species that are significant to the species holistically (Brosnan, 2011). This has had ramifications, especially for the logging industry involving the spotted owl controversy. The Californian subspecies that shares genetic traits with the protected spotted owl was found to be a discrete population and as such also gained protection under the ESA, effectively enlarging the area off limits to logging (Brosnan, 2011).

A fundamental area of concern impacting the interface of science and law is the question of acceptable levels of uncertainty. The scientific method never proves a hypothesis completely--it only fails to disprove it. While policy and courts rely on "certainty" to inform and support decisions, scientific progress is often gained through a healthy questioning and retesting of results. Often science uses a 95% confidence level to qualify something as significant. This confidence level of 95% means that there is a five percent chance that the finding is wrong. Policy and decision makers may use a simple majority for rationalization purposes. Using higher standards for some and not other expert opinions can cause a discrepancy involving the different types of issues being considered (i.e. environmental, social and economic). This can be the deciding factor for both policy formation and legal decision (Brosnan, 2011).

Uncertainty is virtually unavoidable in conducting land management actions directed by forest policy. This creates a condition where different policy recommendations could be proposed on the merits of the same scientific data. In addition, Schultz (2008) says that scientific data should not be viewed as totally objective because of contextual and methodological values infusing the research. Ecosystems are extremely complicated systems having copious variables, some unknown, which are also impacted by random events (Schultz, 2008). Statutes do not provide a clear answer for addressing the scientific uncertainty inherent in shaping forest policy (Schultz, 2008).

In terms of forest policy, science has enjoyed a major role in helping to resolve these issues left in limbo by NFMA. Congress mandated that the Forest Service convene a Committee of Scientists to clarify the intent of statutory language used in the NFMA. This first committee stated that the Forest Service must maintain viable populations of vertebrate species. By 1982 the recommendations were being used to generate forest policy and create the required forest plans. The same scenario was repeated in 1997 to update the forest plans as required by the NFMA. However, during George W. Bush's term as president these regulations were replaced without input from a Committee of Scientists. There have been a number of changes in recent years that have caused the Forest Service to switch back and forth between the 1982 and the 2005 regulations (Schultz, 2008). Currently, in 2011, there is a new planning rule proposed by president Obama's administration that is undergoing refinement. It contains the same language in terms of salvage logging as in the past.

Perhaps the most important question brought up, as a result of the environmental laws is what constitutes the “best scientific data available” used to dictate policy? There is no definition provided by the acts themselves, leaving this as an outstanding issue, which adds to the uncertainty that policy-makers already face. Unanimity is starting to be included in reports to policy-makers to reduce confusion over uncertainty and the possible misuse of scientific findings (Brosnan, 2011). This allows politicians to recognize which findings the majority of scientists support and to ferret out suspect findings with little acceptance in the scientific community.

In 2000 the Data Quality Act was passed, without hearings, to help with these issues. However, the reaction to this law was lukewarm at best. Critics of the act say that it inherently favors industry by requiring that data meet a rare level of certainty. The level required is much higher than the 95% confidence level accepted as significant. This effectively removes scientifically accepted data from legal consideration and forces scientist to strive for extremely difficult or unreachable confidence levels. Rena Steinzor, professor of law and director of the Environmental Law Clinic at the University of Maryland, describes the act as amounting to “censorship and harassment” (Weiss, 2004, p. 2). Logging groups have filed petitions to challenge calculations used to restrict timber harvests on federal lands. These petitions have been rejected by the agency (Weiss, 2004).

Often the results of these issues of uncertainty at the project level end up in the courts (i.e. Biscuit Fire salvage sales). One of the considerations is if the relevant scientific data was considered and towards this end agencies are required

to document and explain their decision making process (Schultz, 2008). Because the relevant laws do not provide directive in how to proceed with regards to scientific uncertainty the responsibility of making those decisions falls to the agencies. Agency decision-makers invariably include political and value choices concerning risks in their decisions. This process is often not transparent and often excludes public input into the process at critical points (Schultz, 2008). The problem from the standpoint of environmental protection is that the decision-makers can claim that their decisions are science-based when they may have been value-based (Schultz, 2008). In litigation the courts will follow the tradition of judicial deference in regards to federal agencies that is based on the constitutional separation of powers (Schultz, 2008). If agencies can demonstrate thorough and adequate documentation of following the statutory language, and have a reasonable rational their decisions they will be granted deference by the courts (Schultz, 2008).

Uncertainty is a long-term problem that will continue to come up in the realm of land management decision-making. There is a need for an improved method of responding to uncertainty. Suggestions for improvement include: increased transparency of agency decision-making through judicial review; peer review and unanimity; adaptive management; and full implementation of NEPA (Schultz, 2008). Because of the complexity of forest ecosystems a fully integrated adaptive management process is needed. A full implementation of NEPA would accomplish this. These issues will be further discussed in the next section as they relate to agency policy.

Policy Implications at the Agency Level

Policy formation, adoption and ultimately application at the agency level involves a complicated process based on laws formulated by Congress and directives issued by the executive branch of the government. Legislative policy (i.e. laws) is a public process while executive agency level policy is derived from rules, plans, codes and directives to implement the legislative policy. The complexity involved in environmental science-based policy formation to maintain bio-diversity requires new techniques, documentation and direct communications along with adequate funding and personnel to be thoroughly successful in its implementation. The difficulties arising from issues of funding and capacity to perform a change in mission under apparently conflicting legislative laws and performance objectives (i.e. harvest level goals) caused an intermediate level of policy formation to occur between Congress and the agency. This intermediate stage of policy formation will be examined in this section. Also the meaning of policy and how it pertains to forest management will be explored. The Forest Service's methods of policy inputs will be examined including problems the agency faces implementing policies and the mitigation actions taken. Policy formation pertaining to salvage logging and its role are also brought out through interviews with Forest Service ecologists.

Policy is defined by Webster's dictionary as a settled course adopted and followed by a government, institution, body or individual. This allows for a simplification of the decision-making process. Policies are based on and follow from the general objectives and attitudes of society as expressed through public

processes. Specific objectives are not always clearly stated, but they do support our society's fundamental objectives. Worrel (1970) breaks these into five categories: Security and national defense; health and welfare of U.S. citizens; support of a free enterprise economic system and democracy; economic development; and equitable distribution. At a more specific level, as in forest policy, the development and addition of further objectives comes into play. The multitude of objectives inevitably leads to conflicts between objectives and a hierarchy of policies (Worrel, 1970).

An example of hierarchy in forest policy can be seen in a first-level broad policy of multiple use of forestland. Lower levels of policies help carry out the overriding policy. Conflicts can cover a broad range and cover several categories. There are physical conflicts, both mutually and partially exclusive, economic conflicts between different groups representing different goals and opinions, as well as conflicts involving time perspectives (i.e. individual vs. a social group). Policy is charged with resolving these conflicts. This is often an ongoing and extremely involved process that points out a basic nature of policy, namely that policy is an evolutionary process. Policymakers never develop policies in a vacuum; there is always a historical context involved (Worrel, 1970).

Our society is composed of an overwhelming majority of urbanized people. This led to forests being considered as an entity to be dominated and used (i.e. manifest destiny). Specialists emerged to manage forests because the forests are outside the immediate area of concern for most citizens (Worrel, 1970). This attitude, which is based on manifest destiny, has increasingly come into a state of

conflict with ideas of conservation and preservation espoused by a growing consensus among the public (Protasel, 1980). The passage of environmental protection laws was the outcome of changing ideas within our society. These laws allowed for watershed change in forest policy.

The term "punctuated equilibrium" has been used to describe this process of change in federal forest policy. It is borrowed from evolutionary biology and refers to long periods of equilibrium and stability that are disrupted by occasional salient changes, or punctuations (Cashore & Howlet, 2006). Requiring policy to respond to indicators of forest ecosystem stress fundamentally changed policy and management objectives. The mandatory requirements within the provisions of the ESA, NEPA and NFMA laws, by virtue of being enforceable by the courts, created the conditions for punctuated equilibrium policy change to take place (Cashore & Howlet, 2006).

These fundamental changes manifested themselves through various levels of policy formation from the overarching strategies that affected the forest plans to policies geared to the project level. The higher-level policy formation required massive input from Forest Service employees. Jack Ward Thomas (2004) gives an account of the toll that creating the conservation strategy for the northern spotted owl caused:

In the last two months of the job there was no respite, no days off, nothing but work and sleep with more work and less sleep with the approach of the deadlines. When the end came, we felt that we had done a good job and had arrived at the only possible place that would satisfy our mission. We finished without exultation, but with exhaustion, and a profound feeling that something had

changed forever for each of us, for the agencies that employ us, and for the management of the public lands (Thomas, 2004, p. 16).

A similar situation occurred during the formation of the Northwest Forest Plan.

Congress commissioned Professor Franklin and three others to head up a scientific commission to analyze old growth forests and provide options for a forest plan. This was an intermediate step between laws passed by Congress and the agency producing the final plan. Professor Franklin had this to say about the consideration given to salvage logging during the development of the Northwest Forest plan:

We didn't do a good job on that. And you know we'd spent a huge amount of time talking about it but it didn't show up in the report. And it goes along this way that basically in the late successional reserves and the riparian reserves, only minor salvage should be allowed. That was the intent. But we were very tired, and we'd already set aside so much that we wanted to be, wanted to try to appear to be reasonable with regards to that. So we didn't say no to salvage. And I have to go back and look at what the language says in FEMAT and the Northwest Forest Plan, but I can tell you the sense of the team was we'd rather not have any salvage at all. That's probably unreasonable so we'll leave a hole for them to do a little bit. [When asked if he would change anything if he could do it over again Franklin responded with:] Yeah we'd probably just flat ass prohibit it. (J. Franklin, personal communication, May 5, 2009, appendix A, p. 120).

These sorts of conservation plans are higher up in the policy hierarchy and form an umbrella like framework that policy at the forest and ranger district level must abide by. Franklin's (2009) comment that salvage logging should have been prohibited under the Northwest Forest Plan and FEMAT speaks volumes and I believe underscores the idea that salvage logging is an institutionalized practice currently in the process of losing its protected status.

Another very interesting facet of the Northwest Forest Plan had to do with the Adaptive Management Areas (AMA). The intent was to encourage forest managers to experiment with new and different ways of managing the forest to develop ecologically beneficial tactics (J. Franklin, personal communication, May 5, 2009). The punctuated equilibrium shift that had occurred in forest management changed the goal from timber production to ecologically based practices, and the shift resulted in a need for an adaptive management technique. The Forest Service describes adaptive management “as a means of linking learning with policy and implementation” (Stankey, Clark & Bormann, 2005, p. 1). It is an “approach that treats on-the-ground actions and policies as hypotheses from which learning derives, which, in turn, provides the basis for changes in subsequent actions and policies” (Stankey, et al. p. 1). The speed at which scientific knowledge is increasing makes a mechanism like AMA necessary for management to keep abreast of scientific advances in the understanding of forest ecosystems. Unfortunately, AMAs were not quickly accepted, as Franklin points out:

And we created adaptive management areas where it was the intent that we would encourage people to explore different ways of doing things. And in the end this was a place where we as scientist were very naïve. We thought everybody would want and there's a logic to adaptive management. The notion is you've got to learn something that is going to give you better ways of achieving your objectives.... Well it turned out that none of the stakeholders really want adaptability. They want rigidity. They don't want to be told that you know something may change next year because of something new that you learned. And so it turned out that the courts really didn't like building in change, adaptation. It turns out the agencies don't like it because, you know, we've got this nice rule and I don't want to get mixed up with making changes in that,

the stakeholders, the environmentalists don't want you to change (J. Franklin, personal communication, May 5, 2009, appendix A, p. 126).

Originally, both the report by Forest Ecosystem Management Assessment Team (FEMAT) and the Northwest Forest Plan had AMA's with very specific language saying that no plans were required before starting to experiment within the AMA's (J. Franklin, personal communication, May 5, 2009). After FEMAT and the Northwest Forest Plan were completed they went through the process of revising, which was done by the agency. None of the main authors was present during this process. Franklin related that the federal biologist involved in the revision changed the language to "...make the AMA's the most restrictive land allocation in the Northwest Forest Plan" (J. Franklin, personal communication, May 5, 2009, appendix A, p. 127). The restrictions that were added effectively caused the AMA's to be too difficult to use due to the multi-stakeholder group that would need to be formed and come to a consensus on a plan. The agencies felt that the amount of money and time needed to implement experiments within the AMA's could be better spent in other areas (J. Franklin, personal communication, May 5, 2009). Not taking advantage of the possibilities that AMA's potentially provided for policy development was short sighted, and the need for adaptive management is still felt on the forest level as of this writing in 2011.

The subject came up in an interview with a Forest Service ecologist. The employee interviewed explained the role ecologists take on within the agency as including monitoring post fire salvage sales and reporting on the findings to forest

managers. The managers use this information to adapt policies concerning salvage logging as well as other management activities. He made clear that the monitoring, although very important for land management, is very difficult to accomplish for a number of reasons. One is the funding is hard to get because “it’s chronically underfunded” (Anonymous R. A, personal communication, May 20, 2009, appendix B, p. 140). It’s also logistically hard to set up a study and carry it out for a number of years. This is a key issue because short-term studies are not adequate for developing the knowledge needed for responsible long-term, ecologically sound land management policies. Recently the region he works for developed uniform standards for monitoring. This allows for data collected being useful on a much larger scale, although other agencies (i.e. Bureau of Land Management (BLM)) use different standards. The Forest Service now has an interagency and interdisciplinary Field Vegetation Team (FVT) that coordinates the monitoring within the region. The contact stated that the next step is “to incorporate this adaptive management strategy so that we build it right into EIS’s or ES’s right from the start. . . .making learning one of the specific needs or the objectives of the NEPA effort” (Anonymous R. A., personal communication, May 20, 2009, appendix B, p. 139).

Other issues impacting the implementation of adaptive management strategies, including the necessary monitoring, that would improve the policy formation process revolve around stakeholders’ perceptions and the lack of public involvement. The Forest Service ecologist stated: “And it may be in the interests of certain organizations to keep fighting the timber wars and to refuse to

collaborate with the Forest Service. ...it creates a strawman and false arguments” (Anonymous R. A., personal communication, May 20, 2009, appendix B, p. 143). He goes on to say that some people are threatened by the idea of monitoring and that both sides (i.e. liberals and conservatives) may not like the answers found. He does believe that adaptive management portrayed as a learning experience (as opposed to a policing activity) could make monitoring less threatening and encourages a better chance of being accepted by stakeholders. The interviewee said that public support for issues like monitoring or AMAs is vital, without the public weighing in on the issue change is unlikely to occur. The issue has to do with status quo: “... if you come from a bureaucracy you tend to follow the roles and norms rather than break outside the box” (Anonymous R. A., personal communication, May 20, 2009, appendix B, p. 142). The diversity of public viewpoints results in a long and involved process to build public support and will require “exceptional leadership” to be accomplished (Anonymous R. A., personal communication, May 20, 2009, appendix B, p. 141). A general mistrust of government by the public is another factor mentioned as hindering progress in this area. He also cites a larger concern with issues such as the recent economic downturn, health care and private property rights taking priority over environmental issues and thus causing a lack of public support for adaptive management techniques.

Another Forest Service ecologist from a different region also echoed many of these same issues, especially around monitoring and adaptive management. In addition he stressed that science was just one of many issues being considered

within decision-making and policy formation. These include social, economic, political and logistical issues. When asked if he thought these issues were well balanced within the decision-making process he gave this answer:

I think it very much depends on the situation. You know I mean it depends a whole lot on, oh it just depends so much on the situation. ... I mean the politics in particular, ... if you've got a group or a person or an organization that you are sort of at odds with that's kind of high profile and strong political connections, then it's likely that politics are going to play a really big role in the decision. ... [W]here science makes a difference in those kinds of decisions are where you've got really big ecological issues, say. I mean it's like a court case right? ... and then the issues here become ... can you document what actually the ecological issues are. ... So ... sometimes science itself may be the principle issue and sometimes it may not be, and it may be asked to just support a decision that's been made for another reason. ... someone like me has very, very little influence on those kinds of decisions
(Anonymous R. B., personal communication, May 25, 2009, appendix C, p. 153 - 154).

From these comments it can be inferred that science is not the only consideration on the project level and that at times it is used to justify decisions based on other factors.

When asked how scientific information is passed on to management for policy formation and decision making the ecologist gave this answer:

It can be done a lot of different ways. Since we are internal, ... it's a little bit easier because there's a lot of word of mouth stuff that goes on. But we submit reports as well. It really depends of the circumstances. It depends on who the individuals engaged are. If it's something ... highly likely to have a high profile or there's likely to be an appeal or a court case or something ... [we] will try to generate a paper trail. ... typically ... I will try to get a summary of the results out into a peer reviewed publication somewhere in a scientific journal because results in a peer reviewed scientific

journal hold a lot more weight in court proceedings than just someone's opinion (Anonymous R. B., personal communication, May 20, 2009, appendix C, p. 153).

The answer reveals the need for the agency to document results of studies, especially if there is a likelihood of an appeal or court proceedings. On the other hand it points out the streamlined process that can occur in-house, which increases the efficiency of decision-making.

When asked if the Forest Service had been successful in the transformation from a primarily timber extraction based organization into one who's main goal is to protect bio-diversity the ecologist responded with an answer that was quite long and candid. The answer reveals some fundamental issues that will have to be dealt with to insure that the Forest Service lives up to its rightful position as a leader in ecological stewardship practices and applications:

Well I would say the thing you have to understand about the Forest Service right now is really they are primarily a fire department right now. I mean that's just a fact of the matter. Basically half our budget goes to putting fires out. ...the difference between that and when it was largely a timber organization is that the timber side of the organization brought funds in and that's not what goes on with fire. It's essentially just a dispersement. So it's really fundamentally changed the way the organization is and the agency is organized and all those kinds of things. But to answer your question more directly, I think that currently as you know it's difficult to change the nature of agencies because it's like you know gradual change versus revolution. You know I mean gradual change, it does happen. It just takes a long time. And a lot of people get frustrated about that. I can tell you that the rhetoric in the agency has changed a lot. Some people would scoff at that and say that's all that's changed but I mean that's always the first step anyway, you know when you start realizing that there are other issues. But the fact of the matter is that when you look at the agency's current ... strategic goals for example and kind of our

focus areas. I mean basically they are at least as stated by ... headquarters, they are climate change, they are you know ecological restoration; they are ecosystem services, ...that sort of stuff. And obviously taking for granted all along that ... fire management is a huge part of our job. But what I would say, ... that although there appears to be a desire within the agency to make the shift towards ... what's the right word... Well let's just remember the Multiple Use Sustained Yield Act that's old stuff, right? That was late 60s, right? So the concept of managing for multiple things, that's decades and decades old, all right. So the agency, well we have most of the ... wildlife biologists. You know we've got soil findings ..., we've got hydraulics. We didn't have those people before. But the fact is that over the last 10 to 15 years, the numbers of most of those people have been dropping fast. And they were largely funded off of timber receipts, all right, because you need those people to do that work. And the fact is, is that because the budget of the agency has not been going up rapidly and in fact we've lost a lot of people. I don't remember where we are but we, you know, we're tens of thousands of people less than we were in the 1960s and 70s. ... I don't know which staffed areas the biggest losses are in but I can tell you that with respect to for example people who are called ecologists in the agency, that in [Redacted location] we lost 50% of those people in the last 10 years. And I know it's no different for soils or hydrology and for some of these other staffed areas. So I guess the reality is that even though I think we're starting to say the right things, my opinion is, is that we are not staffed to be able to do those things. And I think you would find pretty broad agreement there ... independent of who you talk with, whether it was an external/internal you know environmental groups will tell you the same thing that they're just almost chagrined at, how poorly staffed we are on the science side. And you know that's going to change and it is changing. But I think it's a critical issue because when we make these suggestions that you know climate change, ecosystems services and restoration et cetera are our top goals, we've got to have the right people to do that. You can't for example you couldn't say that fire management was our top goal and then have an agency that was 95% ... ecologists ... and hydrolysis. It doesn't work. And ... we're kind of in the reverse situation right now where I think we're getting a good handle on what the actual issues are but we have not had or

been able to yet make the kind of changes and modifications in staff to be able to actually appropriately deal with those kinds of issues. And I think you see that to a certain extent in the record over the last say 10 years in, well you brought it up. You know some of the salvage logging stuff for example. I mean come on let's be candid. I mean most of the salvage logging issue came from the fact that that was an economic imperative that was driving that, right? But you know we try to clothe it in sort of a quote-unquote "ecological" terms but you know there ... isn't an ecological term to cloak it in. I mean come on you know (chuckles). And we lost a lot of court cases for a lot of years and continued to because we just don't really have the right kind of staff to be able to make ... a coherent case for the ecological necessity to do a lot of these kinds of things. And that's basically because really ... what we were for a long time was a timber organization. We're now a fire organization and ... we know how to do that and to do this but in terms of doing a lot of that timber and fire stuff for ecological reasons, we've never been really good at that and we need to figure out how to do that. So I don't know. ... [other agencies] haven't had nearly the trouble ... dealing with sort of the schizophrenic nature of how you manage for ... timber, watershed, fire suppression, recreation, watershed, wildlife, rare species. ... you name it all at the same time. Or oil and gas, you know, all that stuff, coal. ... look at their staff ... [T] hey have three, four, five ecologists on every unit and they have permanent standing crews of technicians who are out there monitoring and doing studies on a constant basis. I mean every unit has got a couple of these crews that are there every year. And we don't have anything like that although we should. But the question comes down to whether Congress is ever going to ... provide ... funding to have that kind of staffing. (Anonymous R. B., personal communication, May 25, 2009, appendix C, p. 158 - 160).

The problem of being under staffed in environmentally important areas is paramount to hindering the Forest Service from being able to adequately carry out its duties pertaining to managing for protection of bio-diversity. The answer as he says is to develop adequate funding, which will require extraordinary leadership as well as increased public support. The issue of salvage logging occurring due to

“economic imperatives” but being “cloaked” in ecological terms is a key statement for this thesis. It brings to light that the agency is aware that salvage is rarely if ever ecologically beneficial.

Mitigating the problem of understaffing is accomplished in a few ways. One is to contract that work out to private companies (Anonymous R. B., personal communication, May 25, 2009). Problems in work quality sometimes arise which may require additional Forest Service time to correct. Another mitigation is provided through the formation of "enterprise teams". They are made up of Forest Service employees who are considered internal contractors. They travel to where needed and provide NEPA support work. Issues with these teams include the fact that they are expensive and their use does not build the local knowledge and understanding of the local ecological issues. They come in and do their work and then leave. The cost of both these methods is an issue. The ecologist felt that funding was an issue not so much in amount but more so in its distribution. A lot of funding goes to the fire program for instance which lowers the amount available for ecological areas. Another related issue is the need for a lot of up front ecological input for the forest planning rules. However, the fire program is often prioritized over ecological studies because it is of immediate concern where as the needed studies are something that can be delayed (Anonymous R. B., personal communication, May 25, 2009).

The Forest Service has undergone a fundamental shift in its goals as an agency. The change from a primarily timber based organization to one whose prime directive is now to preserve bio diversity is truly a paramount change.

Policy is, in one sense, a way to simplify the decision-making process but the Forest Service is currently faced with a rising tide of complexity. The nature of forest systems, their complexity and dynamic character, in conjunction with the rate at which scientific knowledge is advancing our understanding of these ecosystems requires an adaptive management approach (Anonymous R. B., personal communication, May 25, 2009). Currently forest plans constrain and force management to develop set strategies (Anonymous R. B., personal communication, May 25, 2009). This approach does not adequately allow for the needed freedom to adapt to changes in conditions or to advances in understanding. It also has not allowed for the needed incorporation of the adaptive management paradigm that is crucial to meet the challenges that the Forest Service faces. It may be time for policy to acknowledge and adapt to the growing complexity now inherent in the decision-making process.

Advocacy Groups and Civil Disobedience

The importance of advocacy groups within policy formation cannot be overstated. The passage of the ESA, NEPA and NFMA has allowed these groups to influence policy in significant ways. The main reason and defining characteristic of these laws was the inclusion in the provisions that granted citizen standing (L. Moon-Stumpff, personal communication, June 15, 2011). These laws institutionalized formal avenues that allowed the public and environmental groups to oversee and insure environmentally sound practices through court enforceable mandatory requirements within the laws that established legal standing (Cashore & Howlet, 2006). This section will draw on interviews of members of the advocacy community to explore how this influence is accomplished. The success of their actions in bringing about environmental protections and in challenging salvage logging practices will be explored. The role of civil disobedience in affecting policy change will also be explored.

Advocacy groups tend to be focused on a few major issues causing them to be somewhat specialized. To look at one example, the group Oregon Wild started out as a wilderness advocate but has evolved its scope to include restoration of federal forests. There is a triage prioritization process of ongoing projects on federal lands in Oregon. Projects potentially having the most environmental impacts will get first priority. Large timber sales in roadless areas for instance would be a top priority (D. Heiken, personal communication, May 18, 2009). Within this process there are a number of ways that the organization tries to succeed in their goals, as Hieken relates:

... [W]e have to ... work at all levels. ... [W]e're bringing science to bear in our comments [i.e. comments within the NEPA process]. We're bringing the law to bear through our lawsuits. ...[W]e're directly talking to members of Congress and we're talking to our members, encouraging them to ... write letters to the editor and talk to members of Congress. (D. Heiken, personal communication, May 18, 2009, appendix D, p. 169).

One of the main methods of accomplishing their goals is gained through participating in the NEPA process. This allows the group to comment on planned actions by the federal land management agencies and suggest the use of ecologically sound practices based on current scientific knowledge. This often improves the projects' end results by mitigating environmental impacts when these suggestions are incorporated by the agencies. The group also tries to influence the front end of the process by talking to and educating Congressional members, officials within the agencies and the public so that projects will be well planned from the beginning and not need modification. "We engage with the agencies on a daily basis" (D. Heiken, personal communication, May 18, 2009, appendix D, p. 172). This constant interaction helps ensure that the agencies conduct ecologically sound projects. Sometimes, however, lawsuits are filed if the NEPA process fails to bring the desired results (D. Heiken, personal communication, May 18, 2009).

To be effective in a sustained and influential way requires the organization to garner public support. This requires outreach as well as an educational effort. The Internet is an important tool of the organization. Oregon Wild has a large website with lots of information on it dealing with current issues and providing educational information. The Internet is also used to alert the membership of

important issues as they arise. Participation in conferences to share and to gather information is part of the activities of the organization. Oregon Wild also hosts events in the local community to educate the public about environmental issues like climate change or the role of forests in carbon sequestration. The group also produces educational publications on environmental issues. One issue that requires a lot of effort is confronting and correcting the misinformation being disseminated by the timber industry. This is mostly related to the industry's point of view that logging creates rapidly growing forests. When combined with carbon storage of wood products they claim that logging stores more carbon than not logging. It's important to rectify this misperception being promoted to the public and policy makers by revealing scientific studies, which show this is not true when considering all the factors involved (D. Heiken, personal communication, May 18, 2009).

As projects come up Oregon Wild acquires the agency-generated environmental documents pertaining to the project. The group reviews the documents and then checks to make sure that the proposal is in line with current scientific knowledge. There are three points in the NEPA process where the public (i.e. environmental groups) can officially engage the agency. The first is during what is known as the "scoping stage", which includes the agency informing the public of an upcoming project. The environmental organizations will study the proposed project and any environmental impacts it may incur. If the environmental group has concerns of adverse environmental impacts occurring they will send a formal letter to the agency requesting that the agency analyze

their concerns. The agency is required to address the issues brought up in the preparation of either Environmental Impact Statements (EIS) or Environmental Assessments (EA) depending on the scope of environmental impacts that may occur. After this step the public can comment again if they feel that the agency has not adequately addressed the issues within the EIS or EA. In this commenting phase the public or organizations will explain their opinion of what is wrong with the agency's proposal and will provide evidence to support their claim, such as scientific studies or reports. The agency will then consider this information and write a final document called a Record of Decision (ROD). If the group does not believe the agency has met its obligations under the NEPA process with the ROD they can then file an administrative appeal. During the appeal more evidence can be entered into the administrative record (D. Heiken, personal communication, May 18, 2009).

It's very important for the groups to get all the relevant scientific information into the administrative record of the NEPA process. If an organization is still concerned that a project will have unnecessary detrimental environmental impacts or that the agency has not followed the NEPA process correctly they can then file a lawsuit, which will lead to litigation. Within litigation the parties involved are limited to the administrative record of the NEPA process. In the case of new scientific information arising during the NEPA process or litigation there is a clause in NEPA requiring the agencies to look for and disclose any new relevant information. If new scientific information is found by the agency the NEPA process must be started over. This occurs if the new

information significantly changes or undermines the analysis. If the agency does not start the process over then a new lawsuit may be filed or a complaint can be amended that charges that the agency did not consider new information and did not prepare another EIS addressing the information (D. Heiken, personal communication, May 18, 2009). During litigation it is possible to submit affidavits from experts. These are considered enhancements as opposed to additions to the administrative record but they can serve to expand the scientific knowledge used within a case (D. Heiken, personal communication, May 18, 2009).

One of the concerning issues within the NEPA process, as pointed out by Mr. Hieken, includes agencies sometimes meeting the requirement of notifying the public through publishing the information in obscure rural newspapers of rural Oregon. He suggests that the information in this day and age should be transmitted through a website. Another issue involves the maps released by the agencies that locate the project sites. Sometimes the section lines are left out which makes it very hard to locate the exact location of a project. At times the maps are issued in layers so that the road layer is separated from the layer showing the actual layout of a unit. This also adds to the difficulty of finding a proposed project location (D. Heiken, personal communication, May 18, 2009). It is possible with today's geographic information systems (GIS), global positioning systems (GPS) and programs like Google Earth to easily and exactly locate project sites and relay this information. It would seem to make sense that the land management agencies should provide top quality, easily accessible information on

these proposed projects; not doing so would seem to create an adversarial climate that is counter productive to the NEPA process and to the directives that require an ecologically sound approach be used for all federal land management agencies.

Modern technologies have improved other aspects of how environmental groups disseminate their messages. Mr. Laughlin of Cascadia Wildlands Project, related that images have become a very powerful tool, whether they are photographs or video footage of a forest that may be logged or an actual iconographic image that embodies a larger goal (i.e. spotted owl used for old growth preservation). Digital photographs or video can easily be sent to websites or decision makers in Washington D.C. instantly from across the country. These images can clearly and graphically communicate on a level not possible through language alone. Laughlin did stress that taking people out to sites is more effective than looking at pictures. Actually visiting a proposed project site and being able to experience it through all the senses makes for a stronger connection to a project's consequences. Because of this many environmental groups provide tours to project sites or to proposed wilderness areas. However, pictures are especially used in the cases of politicians who are unlikely to don the appropriate gear and hike through rough country.

Some environmental organizations are active in the production of scientific knowledge that directly relates to their areas of concern. The John Muir Project is one such organization that was founded in 1996 by Chad Hanson, who has a Ph.D. in ecology. The focus of research is placed on questions that are highly relevant to forest management decisions, especially in the area of fire

ecology of forest ecosystems. He is particularly drawn to “where management decisions are being based upon an assumption that hasn’t really been empirically tested” (C. Hanson, personal communication, May 28, 2009, appendix F, p. 223). This shapes or directs the research into poignant areas and falls into the category of policy-driven science, discussed in an earlier section. One assumption that has been disproven is the belief that in a frequent low severity fire regime there would be no significant occurrence of less frequent high severity fires. This was assumed to be true because the low severity fires would keep surface fuel and understory foliar fuel from accumulating to levels that would facilitate high severity fire. Hanson asserts that the two fire regimes “operate on two different spatial and temporal scales” and are occurring on some landscapes at the same time (C. Hanson, personal communication, May 28, 2009, appendix F, p. 224). Related to this is a current fire deficit at all levels of severity “that has major implications for wildlife, especially the wildlife species that are associated with burned forest habitat” (C. Hanson, personal communication, May 28, 2009, appendix, p. 224).

Another example he gave dealt with perceptions verses the reality of high severity fire impacts to the environment:

...even where you get high severity fires it’s not like this particular fire is a high severity fire. It’s generally some percentage of high severity. But where you do have a high severity patch the assumption in the past was that basically its an ecologically damaged or destroyed portion of the landscape that supports very little wildlife habitat or plant species diversity ... the terminology that’s been used ... destroyed, damaged, ravaged, ... This is not just in the popular media. This is also used by policy makers. ... also by people, land managers and even a lot of scientists ... But now we’re coming to understand that these areas are actually biodiversity treasures. They are extraordinarily high in biodiversity

and higher plants and wildlife species and invertebrates. They support a considerable number of species that are largely restricted to that habitat type. And by and large these species, rare endemic species, are in trouble from a conservation biology standpoint, a viability standpoint. Either they are declining or the populations are so low that we can't even detect their population trend, which is an even bigger concern. Of course the response of the land management agency is ..., well, we don't know if the population is declining so we might as well keep salvage logging and suppressing fire, which is scientifically a very inappropriate response... And of course the one that you alluded to before which is if you do have a high severity fire patch there won't be natural conifer generation. Of course that's turning out to be wildly incorrect. Sure, there are always going to be patches you can find here and there where Mantage Deperelle (?) will come in after a high severity patch and will persist for some decades even more than a century which is actually a really important thing ecologically because that's extremely important habitat for wildlife and it has declined fairly dramatically since the 19th century because of fire suppression and post fire salvage logging and plantation establishment which eliminates the chaparral. Oh here's one more I should mention just because it just really contradicts so much, some very deeply held assumptions. You know in fire suppressed forests, forests that have missed the most fire returns, the assumption that these are the areas that will burn most severely and that they will burn almost exclusively at a high severity. It turns out that's not true at all where we've gathered data. There's three different studies on this. And all in California, ... the areas that missed the most fire returnables still burned overwhelmingly at low and moderate severity. In fact if anything the high severity of percentages or proportions were a little bit lower than the areas that had missed fewer fire returnables. Again, totally counterintuitive. We think we've figured out why this is. And basically as the stands mature since the last significant fire event, they get more big trees, the canopy closes more, there's less sunlight reaching the forest floor and this has a number of implications. The crown base side of the forest increases. It's higher above the ground because the big trees are self-pruning their lower branches because they're not getting enough sunlight. ... And the small trees are self-thinning because some are dying off

because of competition for increasingly scarce sunlight and the surface fuels on the forest floor are staying more moist later into the fire season because of the cooling state of the forest canopy. And on top of that you've got more large tree bowls which decreases mid play wind speeds when a fire does come through. That's a fire physics issue but all of these things combined basically create a tendency, it doesn't always work this way by any means, but a tendency for mature and old growth canopy forests to burn at relatively lower severity or to have relatively lower rates of high severity fire. And of course it's important that some mature old growth closed canopy forest does burn at high severity periodically because there are some species that actually really, really need dense mature forest that burns at high severity. That's their habitat, like the black backed woodpecker. It can't be just any habitat. It has to be a very narrow type of habitat. (C. Hanson, personal communication, May 28, 2009, appendix F, p. 225 - 227).

The gist of this passage is that disturbances, even the most extreme, are an essential part of healthy, biologically diverse forest ecosystems. Further, ecosystems are self-regulating. In addition, many of the assumptions that influence policy may not be accurate. Scientific research is needed to correct faulty assumptions to insure that policies are based on the best scientific data possible. An important point brought up by Hanson is the severe decline in diverse young forests compared to historical norms and their ecological importance. Recent studies are confirming this shortage of young forests with legacies and reveal the across the board shortage of dead wood in areas studies (Nonaka, Spies, Wimberly and Ohmann, 2007).

Some groups such as Earth First! engage in direct action, a form of civil disobedience. This entails knowingly breaking laws to prevent an unwanted event from occurring. The Earth First! Journal describes direct action as "action that

either symbolically or directly shifts power relations” (Bell, Cookson, Hogue and Reinsborough, 2002, p. 2). The group espouses the belief that corporate globalization and consumer capitalism are not only very destructive to the environment but that they are “invading the thought space of the individuals that make up U.S. consumer culture” (Bell et al. 2002, p. 2). In this way the corporations gain control not of how people think but what they think about. The issue becomes one of context and the production or control of truth (Bell et al. 2002). To combat the structuring of reality that views nature as a commodity, Earth First! uses direct action to apply pressure at critical points of importance within the consumer system in a way that can “re-pattern reality” (Bell et al. 2002, p. 2). Earth First! recognizes at least five such points. They are: destruction, consumption, decision, assumption and potential. One of the questions asked in many of the interviews conducted for this thesis was whether or not civil disobedience was effective. All of the responses were that it was, but to varying degrees. Salvage logging has been the cause of many direct action events. Warner Creek salvage sale in Oregon was one such event in which Earth First! used direct action at the points of destruction and potential (Bell et al. 2002). A road blockade is an example of direct action at a point of destruction while proposing an ongoing scientific research area in Warner Creek is an example of direct action at the point of potential.

In October of 1991 an arsonist started a fire on the Willamette National Forest in Oregon that burned roughly 9000 acres of old growth timber in the Warner Creek drainage. Part of the area was considered a Habitat Conservation

Area (HCA) for the endangered northern spotted owl. The Forest Service drew up plans under the salvage-logging rider signed by President Clinton to salvage log part of the area. However Earth First! started a direct action located on the road leading to the Warner Creek sales. They (and eventually other groups) effectively blocked the road for 343 days making it the longest blockade of a Forest Service road in history (Davis, 1996). This blockade represents direct action used at the point of destruction. The objective, as stated by Bell (2002), is to polarize the debate (i.e. salvage logging) to garner media and public attention to a clear injustice. The blockade was covered by local, regional and eventually national news outlets such as the New York Times and 60 Minutes (Davis, 1996). The effort was highly successful in that it engaged the public from all over the U.S. in what in effect was a regional issue of salvage logging in the Northwest. The Clinton administration withdrew the sale in 1996 partly due to public pressure against salvage logging. Direct action was critical in effectively stopping not only the Warner Creek and other sales but was also a catalyst for the repeal of the salvage-logging rider itself (Davis, 1996).

Warner creek also serves as an example of direct action used at the point of potential. The activists recommended that the Warner Creek burn become permanently protected as a Fire Ecology Research Natural Area. The local community, scientists and environmental groups ultimately supported this idea. By suggesting this alternative future Earth First! believes that it is successful in “reclaiming our ability to shape the future” (Bell et al. 2002, p. 4). The goal is to

refute the accepted wisdom of conventional politics and offer an alternative reality to “society’s destructive institutions” (Bell et al. 2002, p. 4).

When asked if civil disobedience is necessary to bring about change in a timely matter an anonymous source that took part in the Warner Creek direct action gave this response:

Oh incredibly. Because I mean the reason why activists put themselves out there, their safety, their security, their time and their resources is because they feel ... the pain of the injury, of the larger injury being done. And it’s also ... a matter of self preservation, of survival for their family. ... we’re at the eleventh hour, fifty-ninth minute [in regards to climate change] (Anonymous, D. A., personal communication, May 6, 2011, appendix I, p. 319).

When prompted about informing oneself about an issue before conducting direct action the contact gave this response:

I have considered all those issues before I put myself on the line because ... what if the burnt timber was a fire hazard and had no ecological benefit and more trees would sprout from the space they’re taking up? ... what if that was the case? ... to hell if I want to spend a couple of weeks in jail pushed around for the wrong reason. So I think most people will look into that and make their own decision (Anonymous, D. A., personal communication, May 6, 2011, appendix I, p. 322).

Later in the interview when asked about the ultimate goal of direct action the source responded with:

Generally the goal is to bring this to a larger stage. Sometimes you have well meaning politicians and corporate stakeholders ... [who] don’t even know what’s going on ... [in] their mining operations or logging operations. They didn’t know that arson was ... the cause of this timber sale that they’re profiting from. You know I think people are generally good and won’t stand for it if they know the truth. Money speaks volumes though ...and that’s used to just squelch that knowledge you know. ... I would say most actions I

have been involved in have been successful because they've been well planned. [We've] adhered to non-violence and we've done a lot of organization before to make sure that what we do gets ... shared with the public (Anonymous, D. A., personal communication, May 6, 2011, appendix I, p. 329).

A common thread for mainstream environmental groups and direct action groups is the importance of informing and activating the public. It seems that ultimately the key to bringing about significant change lies in garnering public support for a cause. It's also clear that environmentalists care deeply about their causes and are willing to back up their beliefs through serious investment of their time, energy, resources and in some cases themselves.

The Biscuit Fire Salvage Sales Case Study

The Biscuit Fire was a combination of four fires started by lightning that joined and eventually burned 499,965 acres, making it the largest wildfire in the U.S. in 2002 (USDA Forest Service, 2003). It was Oregon's largest fire in 137 years and the most expensive, resulting in more than 150 million dollars in suppression costs (Azuma, Donnegan, Gegney, 2004; Woody, 2007). It burned across multiple jurisdictions and two National Forests, the Six Rivers and the Siskiyou. Land ownership of the area was 97% Forest Service, 2% Bureau of Land Management and less than 1% private or unknown (USDA Forest Service, 2003). Most of the Kalmiopsis wilderness burned, as well as 68,000 acres of monitored and protected Northern Spotted Owl habitat under the Northwest Forest Plan (Woody, 2007). Seventy-eight percent of the burn was within Inventoried Roadless Areas (210,913 ac) and wilderness (178,385 ac) (Strittholt & Rustigian, 2004). Wildland firefighters witnessed extreme plume-dominated fire behavior (J. Mshoi, personnel communication, June 2, 2011). Although there was very extreme fire behavior (i.e. plume dominated and fire whirls) in parts of the area burned, it is important to realize that the fire burned with a mixture of fire intensities.

An interview with Professor Agee, fire ecologist and author, revealed some interesting facts about the fire behavior and the resulting impacts on the forest:

...there was a lot of pretty intense and severe burning of the Biscuit on the southern end. But a lot of that terrain that burned pretty hot was serpentine country, and so it's got a pretty sparse tree canopy already and it was mostly brush that burned.... scorch

from the brush or the heat from the brush scorched the crowns of the conifers. So it was pretty well stand replacement across a lot of that. But in a lot of areas where you had pretty dense canopy cover of mature trees-- that was under burned.... I review[ed] this paper ... they said that only 10% of the area was stand replacement in terms of ... 90 to 100% of the canopy scorched. And about a third of it was 25% or less and the other 40% or 50% was somewhere in between the low and the high [severity]. So an interesting mosaic there, kind of similar to what Carl Skinner and Alan Taylor have shown in the past. (J. K. Agee, personal communication, May 8, 2009, appendix G, p. 273 - 274).

A report by the Forest Service notes that 45% of the burned area is considered to be low-productivity. Of the remaining area only 20% of study plots were determined to be of high or moderate fire severity. The report also states that, “As site productivity decreased, the proportion of area classified as higher severity increased” (Azuma et al. 2004, p. 12). Although the government report grouped high and moderate severity together in its analysis, it is in basic agreement with Agee’s statements. The Biscuit burn overall was a majority of moderate severity fire behavior. The report and interview both reveal that the high severity fire behavior occurred mostly on low productivity sites. The overall pattern was one of a mosaic of mixed severity. For the most part, the conifer older growth stands were under-burned which left the large trees alive and clearing out the undergrowth (T. Agee, personal communication, 2010).

The region of the Biscuit fire is unique in a number of ways. The geology of the area is made up of a combination of faulted granitics and serpentine peridotites surrounded by igneous rocks of the Cascades and the sedimentary rocks of the Coastal ranges. The Klamath Mountains were formed approximately 200 million years ago. Serpentine soils along with other geological conditions are

ideal for a number of sensitive plant species (Whittaker, 1954). Its ecology is a mixture of six neighboring regions (Smith and Sawyer, 1998). Fire is endemic to the area and is one of the most important factors influencing the unique biodiversity of the region (Beschta, Frissell, Gresswell, Hauer, Karr, Minshall, Perry, & Rhodes, 1995; Strittholt & Rustigian, 2004). To give some perspective, the World Wildlife Fund has recognized this area as globally exceptional in terms of its species variety and endemism. Due to its rugged terrain it has remained far less influenced by human intervention (namely logging) than other areas in the Northwest.

It was shortly after the Biscuit Fire was contained (August 22, 2002) that President Bush announced his “Healthy Forests” initiative in Portland, Oregon. The Presidential elections were drawing near. Richard Fairbanks felt that the Biscuit salvage sales were used as political fodder by the Republicans to win votes by characterizing the issue in this manner: “... not salvage logging is wasting jobs, wasting wood and the environmentalists are locking everything up and so forth” by Republicans (R. Fairbanks, personal communication, May 16, 2009, appendix H, p. 291). Overnight the Biscuit fire was in the political limelight as the initiative favored logging of burnt lands, along with increased thinning of green forests. The reasoning provided was to prevent damage from wildfires, improve forest health and for “other purposes” (Healthy Forests Restoration Act of 2003). Although not stated in the law itself, economic rationales were used to support the initiative. The importance of this area had been tied to the economic health of the timber and related industries in Oregon. This was a powerful lever,

especially in light of the decline in timber sales generally and the potential bonanza that these burnt lands seemed to represent if they could be logged. While overall timber sales had been going down during the early 1990s, the salvage sales had increased from 14% to 21% of the overall harvest by the mid 1990s (Duncan, 2002).

By September 2002 the Forest Service had begun conducting studies assessing the opportunities regarding salvage sales and restoration in the Biscuit area. When interviewed about the Biscuit sales Richard Fairbanks explained:

I was ID team leader for the Biscuit Fire Recovery Project, which was a half million-acre fire here in Southern Oregon that was very controversial. ... The ID team recommended 100 million board feet [mbf] ... [W]ith a minimum of pain and a minimum of disruption of natural ecosystems and watershed values ... You can get about 100 million [mbf]. (R. Fairbanks, personal communication, May 16, 2009, appendix H, p. 289 & 291).

The original environmentally sensitive plan was rejected and a request was made for an alternative that called for 1 billion board feet from his supervisors (Fairbanks, 2006). This was mostly the result of what was known as “The Sessions Report”, which was produced by John Sessions (2003) (Professor at Oregon State University (OSU) School of Forestry) and three other professors from OSU. None of the authors were biologists (Durbin, 2003). The report was central to the controversy surrounding the Biscuit salvage sales and also impacted the Healthy Forests Initiative. For these reasons it is worth analyzing. The report concluded that 2.5 billion board feet was economically salvageable from the Biscuit area (R. Fairbanks, personal communication, May 16, 2009; Sessions et

al., 2003). Douglas County Commissioner Doug Roberson (who happens to be a conservative Republican) commissioned the report, which cost 25,000 dollars (Douglas County Republican Central Committee, 2007; Durbin, 2003). The increase in volume was accomplished by including environmentally sensitive areas for salvage that had originally been excluded for consideration because of their importance to the biodiversity of the region. The report called for logging in roadless areas, late successional reserves and other previously off-limit areas (Durbin, 2003). Mr. Fairbanks called into question some of the timber used to arrive at the 2.5 billion board feet:

Of course when you look at the tables in the back of his report [Sessions Report] you found out he was counting dead tan oak. There's very little market for live tan oak, none for dead tan oak. What was he talking about? Dead tan oak was part of his 2.5 billion board feet. It was nonsense. (R. Fairbanks, personal communication, May 16, 2009, appendix H, p. 290).

Fairbanks later made a very interesting connection between the *billions* of board feet predicted by the Sessions report and the perception it generated:

So basically it was this insanely optimistic prediction that Sessions was making and the Forest Service went along with it. The Forest Supervisor, his final decision was to cut 380 million board feet or something like that. And then of course you could then say he was being real moderate because Sessions had set him up by saying there was 2.5 billion out there, right? So it was supposed to make him look moderate. Of course they never found that much wood, the first time presale came to a meeting, that's the people who actually go out and look for the [specific] wood. They were like laughing the project leader out of the office. They were saying [redacted] where do you think all this wood is? It wasn't there. Okay what they wound up getting was about 90 million board feet that they actually cut, which was very close to what the ID team tried to tell them in the first place. So it was a very interesting

exercise in magical realism (R. Fairbanks, personal communication, May 16, 2009, appendix H, p. 291).

The Sessions report in essence enlarged the playing field. It allowed wildly overestimated timber volumes available for salvage harvest to seem like legitimate and moderate judgments.

Fairbanks was far from the only person who found problems with the Sessions Report. Professor Agee had this to say about the report: “It was not well thought out and it didn’t have a very good sense of place.” (J. K. Agee, personal communication, May 8, 2009, appendix G, p. 274). When Professor Franklin was asked about the so-called “ecologically sound” proposals based on the Sessions Report he responded with, “...they claim that. That’s correct. But I ... disagree completely. Fundamentally” (J. Franklin, personal communication, May 5, 2009, appendix A, p. 121). The Sessions Report called for the salvage logging by helicopter to be followed by planting and aerial herbicide applications which were portrayed as the best and fastest way to restore forest health and reduce the risk of wildfire. Sessions reasoned that the severity of the burn would prevent tree regeneration (Sessions, et al., 2003). This assumption was later proven false by a scientific study that found that salvage logging in the Biscuit fire area had hindered tree regeneration and had actually increased the short-term fire risk (Donato et al. 2006).

There are several serious flaws in logic within the Sessions report, due to its weak assumptions and comparisons. One is the comparison of the Biscuit area with a salvage operation in Arizona that was extensively logged. The Arizona fire was not in a roadless area, was of an entirely different fuel type and had major

differences in its ecology. Eighty-four percent of moderate to high burn severity areas of the Biscuit burn were within 200 meters of potential natural seed sources (Strittholt and Rustigian, 2004). Recent studies have established that the Biscuit burn was capable of natural regeneration (Shatford, Hibbs & Puettmann, 2007). The point here is that very sloppy science was used to help justify an extremely harmful series of events on an environmentally unique and sensitive landscape. The predominant trend in ecological research clearly reveals that salvage logging is environmentally detrimental and does not reduce fire risks (Donato et al. 2006; Beschta et al. 1995; Lindenmayer et al. 2008).

Although several respected scientists (including Dominick DellaSala, World Wildlife Fund's Klamath-Siskiyou Project's forest ecologist) publically denounced the Sessions report, it still caught the attention of President Bush's administration (Durbin, 2003). According to County Commissioner Robertson, who commissioned the report, Mark Rey the Undersecretary for Natural Resources and the Environment, who oversees the Forest Service, reviewed the report with his staff (Durbin, 2003). Mark Rey worked as a timber industry lobbyist for over a decade before appointed by President Bush as Under secretary (Evans, 2003). Rey's appointment sent a clear message that timber sales would become a priority for the agency (R. Fairbanks, personal communication, May 16, 2009). It should also be noted that the timber industry made major campaign contributions to the Bush campaign (Common Cause, 2011). It was shortly after the report's release that the Siskiyou National Forest Supervisory Scott Conroy made the announcement that the Draft Environmental Impact Statement (DEIS)

on the Biscuit Fire salvage sales would be delayed to allow incorporation of the Sessions report (Durbin, 2003).

The final alternative chosen included 518 million board feet, which was later reduced to 372 million board feet. The final plan also called for a lot of the logging to be done by helicopter due to the lack of roads in the area. Helicopter logging is restricted for economic reasons to about a mile and a half. Any further makes profit unlikely (R. Fairbanks, personal communication, May 16, 2009). Of note is the one million dollars given to Oregon State University's College of Forestry by the wife of the founder of Columbia Helicopters after the Sessions report came out (Pope, 2006; Fairbanks, 2006).

What are left are political and economic reasons to justify salvage logging not only for the Biscuit Fire area, but also for all other subsequent salvage sales. Very telling is the assertion by a Forest Service review team that salvage logging in the Biscuit Fire area was not meant as a restorative action but rather it was concerned primarily with recovery of economic value (Sensenig & Shull, 2006). Although the Sessions report was used to justify the major increase in board feet harvested, its "environmental friendly" rationale of creating healthy forest regeneration had been switched to economic reasons by the time policies were written pertaining to salvage operations on the Biscuit Fire area. That economic reasoning, at least for the Biscuit sales, turns out to be just as flawed as the scientific reasoning. The real world economics of salvage logging are extremely opaque, mainly due to the complicated record keeping of governmental agencies involved (U.S. Government Accountability Office, 2006). There are many factors

that influence the end result, not least of which is who actually does the accounting.

The steps involved in calculating the net economic benefits or costs of any agency's salvage logging operations are relatively straightforward, as explained by the group ECONorthwest. The first step involves determining the amount that mills will pay for the logs. Often the amount projected during the planning stage is not the actual price paid in the end. In 2009 Fairbanks related that "... several of the sales on Biscuit didn't sell the first time [they were bid on]. They [Forest Service] had to re-advertise them at a lower rate" (R. Fairbanks, 2009 personal communication, May 16, 2009, appendix H, p. 306). This can be a function of supply and demand. A large salvage-logging sale can significantly increase supply and thus reduce demand causing lower prices than initially projected. The next step involves subtracting the costs of logging and transporting the logs to the mills. In the case of a Forest Service sale this would be represented by the winning bid. The company involved would obviously have already determined that the sale would be economically beneficial. Included within this particular step are factors that affect not only the economic, but also the ecological impacts on the environment. Often this would be displayed as a negatively correlated line; the faster the logging, the lower the labor costs. This translates to higher profits but also increase risks of environmental harm. Step three is the figure remaining after step two is subtracted from step one. This is what the agency receives from the sale. Step four involves determining the agency's costs related to the sale. This includes preparing and administering the sale on the local, regional and national

levels in the case of federal land management agencies. It also includes cleaning up the remaining fuel after the logging. Planting, herbicides and monitoring are more costs incurred by the agency. Step five indicates if the agency realizes a profit or a loss by subtracting step four from step five.

Within this system there are numerous factors that may be misjudged with the end result of a faulty conclusion. A good example of the contrasting views of the economics of salvage logging can be found in the case of the Biscuit Fire salvage sales. The Forest Service still maintains that the Biscuit Fire salvage sales were economically successful, however there are reasons to question this belief. The original Draft Environmental Impact Statement (DEIS) by the Forest Service had a preferred alternative, which called for 518 million board feet (mbf). This was later reduced to 370 (mbf) in the F.S. Record of Decision: Biscuit Fire Recovery Project (ROD). Part of the reason for this may lie in the original assumption by the F.S. that logs down to nine inches could economically be used while a report by ECONorthwest found that logs less than sixteen inches would have no commercial value. Also the U.S. Fish and Wildlife Service and the Environmental Protection Agency found that the original level of logging would cause unacceptable environmental damage.

The Government Accountability Office (2006) found that only 59 mbf had been harvested through December of 2005. The Forest Service gives two reasons for the amount of timber sold being so much less than they had estimated. The first reason had to do with an overestimation of timber available for harvest. The environmental protections of the Northwest Forest Plan reduced the amount of

area that could be legally harvested and there was a double counting of some hazard salvage sale timber as part of the salvage sales. Also, the estimate of available timber based on remote sensing was incorrect. The second reason was that the amount of decay was underestimated. Delayed harvesting because of difficulties encountered by the agency having to do with adhering to legal requirements of the Northwest Forest Plan and litigation over a number of the sales caused increased decay (U. S. Government Accountability Office, 2006).

The ROD emphasizes economic recovery over environmental concerns through salvage logging. However there are major concerns as to the economic viability of the project. The ECONorthwest report points out that the figures used by the F.S. in regards to logging-related costs are much less than what the agency has actually incurred in the past decade. In administering the sales the F.S. assumed costs of \$27 per mbf while its best figure of the last decade is \$85 per mbf (Niemi et al. 2004). In clean up the agency used the figure of \$48 while its best performance in the last ten years was \$164 per mbf (Niemi et al. 2004). Another concern expressed involved the log prices. The F.S. does not take into account the effect of a large volume of logs on the market in its DEIS, although F.S. economists do point this out in Appendix I: socio/economics of the DEIS. The Sierra Club, through the Freedom of Information Act, has determined that there was an abundance of timber on the market during the Biscuit salvage timber sales.

The value of the timber was overestimated while the cost of recovery was underestimated. Administrative costs as well as on the ground costs were

underestimated (Niemi et al. 2004; Bybee & Cosgrove, 2005). Because of the disassociated accounting process of the Forest Service, the true economic costs of the sales are not known (U.S. Government Accountability Office, 2006). The Forest Service does not include the costs associated with the NEPA process, indirect costs, law enforcement or litigation in its estimates (U.S. Government Accountability Office, 2006). Also the economic benefits are expanded from what the sales themselves garnered for the taxpayers, to include the monies generated in the local communities (U.S. Government Accountability Office, 2006). Using Robert Wolf's figures, a policy analyst for the Congressional Research Service, it is estimated that the Biscuit salvage sales generated a loss of about 13 million dollars after logging 3800 acres (DellaSala, Nagle, Karr, Fairbanks, Odion, Williams, Frissell & Ingalsbee, 2006). Although the GAO report made the recommendation that the Forest Service continue to track the Biscuit Fire salvage sales it is hard to find any updated information after the 2006 GAO report.

An article from Environmental Economics dated February 27, 2006 titled "The science and politics of salvage logging show both are unhealthy" illustrates the portrayal of salvage logging as a political issue (Thoma, 2006). The salvage logging issue was used to portray environmentalists as interfering in legitimate forest management decisions and carried the message that legislative changes were needed to correct the problem. Basically, the choice was portrayed as one of jobs versus the environment in popular culture.

Under the Healthy Forests Initiative the Bush administration attempted to vastly increase salvage logging levels and the Biscuit Fire Salvage sales (the

largest salvage operation in recent Forest Service history) represented a test case for increasing salvage logging. There were numerous ways sought to increase the logging. One was to allow salvage to occur in inventoried roadless areas, which had not occurred since the passage of the Roadless Area Conservation Rule. Another was that logging was planned in reserves that had been set aside by the Northwest Forest Plan as habitat for old growth species (Durbin, 2005). Two thirds (12,540 acres) of the area planned for logging was within these late-successional reserves. The Sessions report allowed the rationalization for the administration to make the tremendous increase in volume over what Richard Fairbanks and his team had originally planned. Although the Sessions report made claims that its recommendations were environmental sound the Forest Service eventually used economic reasons for justifying the salvage logging.

The results of the Biscuit Fire salvage sales are mixed. Logging did occur in roadless and late-successional reserves but the amount actually logged was in line with the environmentally sensitive plan originally proposed. Litigation by environmental groups played a large part in this reduction. The environmental laws also caused reductions in the areas logged. Although neither side was happy with the end results, the gains expected by timber companies have not come to pass. It seems that although salvage logging is still being practiced it has been drastically reduced from the timber industry's expectations.

Discussion

This section summarizes and discusses the findings of the research covered by this thesis. The major issue of the salvage logging debate is centered upon the two conflicting paradigms vying for dominance over the management of our National Forest lands. On the one hand is the entrenched belief that forests having experienced disturbances represent potential economic benefits. This view comes from the strong current of Manifest Destiny that has shaped our history. The view is supported by the long established capital of the timber industry as well as historical precedence and the institutionalized nature of salvage logging. On the other side is the growing scientific understanding of forest ecosystems. The overwhelming evidence has proved that salvage logging is detrimental to forest ecosystems. The environmental laws governing forest management practices are a result of this growing understanding. They have prioritized environmentally sound management practices with the public's support and approval and they seek to embed decisions in peer-reviewed science.

Salvage logging continues to be a complicated issue, and there are no easy answers that might cover all possible scenarios. It *is* clear that a shortage of information still exists on the environmental effects of salvage logging in a variety of different forest environments, especially in regards to specific species. However, enough evidence exists to conclude that the impacts are environmentally significant and that they are primarily negative (Beschta et. al. 1995; Lindenmayer et. al. 2006). Also, much if not all the effects of green-tree logging can be assumed to pertain to salvage logging. The arguments for salvage

logging based on ecological benefits and fire reduction have been shown to be faulty. Economic rationales have also been called into question, especially with regard to roadless areas. Potential impacts to adjacent wilderness areas are also present. It is safe to say that the federal agencies need to adjust their policies about salvage logging so that they are brought in line with ecological goals. Unfortunately, the language of the laws and the institutionalized funding structure (e.g. Healthy Forest Restoration Act of 2003, Nation Forest Management Act) allows for detrimental actions to continue. At present, natural disturbances of a large-scale nature are not addressed in the “Healthy Forests” plan (Cox, 2005). The law should be amended to address large-scale natural disturbances so that continued degradation of forests does not continue under questionable premises as occurred during the Biscuit Fire salvage sales.

Biological legacies have been shown to be essential to the health of a forest’s ecosystem. Removing them through salvage logging under the so-called “Healthy Forests” initiative is ironic. When compared to the scientific evidence presented earlier this takes on an Orwellian quality. The paradigm of patch-dynamics recognizes the endemic and essential place that natural disturbances play in the health of ecosystems, and therefore should be incorporated into management policies. Preliminary work has suggested that ecosystems have adapted to natural disturbances but not to the quick combination of disturbances that salvage logging constitutes. The issue of habitat fragmentation is also of major concern, especially as it relates to impacts occurring in sensitive areas normally off limits to logging. Currently these sensitive areas can be opened up to

salvage logging after an area has experienced a disturbance. The layering of events inherent in salvage logging needs more investigation so that irreversible actions will not continue to happen.

The findings show that if managed through salvage, the initial problems of fire danger and forest health tend to become worse. The area in question will require continued treatments that really amount to mitigation of the original decision to salvage log. It is possible that many of the effects attributed to natural disturbances in the past may in fact have been the result of the salvage logging that followed the original disturbance (Minshall, 2003; Lindenmayer & Noss, 2006). It is highly likely that studies aimed at determining the long-term viability of natural recovery (both ecologically and from an economic standpoint) will increasingly prove the advantages of natural regeneration over the quick “fix” of removal. Economically, factors that take into account the true costs associated with salvage logging as well as the economic and environmental benefits derived from *not* logging must be entered into the equation.

It’s clear that laws and policies that expedite the process of clearing trees from areas for safety (e.g. hazard salvage) and even convenience (e.g. road clearing) make sense and should be retained. To stretch these laws to include sensitive areas like the roadless and late-successional reserve areas, as was the case on the Biscuit Fire salvage sales, makes little sense from any perspective except maybe from a shortsighted political one. Recent events (such as the Weapons of Mass Destruction *not* being found in Iraq or the highly selective “science” about climate change) have shown that administrations are capable of

ignoring facts to further short-term political goals. An old-growth ecosystem is irreplaceable after salvage logging for at least a hundred years, and often longer, depending on forest type and structure. Short-term political goals should not be allowed to artificially alter the few old-growth forests that remain or to negatively impact late-successional reserves identified as future old-growth forests. The consequences may be irreversible in light of increasing environmental stresses due to climate change and pollution. Distinctions between tree plantations and unlogged environmentally sensitive areas need to be incorporated into federal policies governing salvage logging, this can only happen when the ecological knowledge takes precedence over economic and political factors. One way to hasten this change is through educational programs that emphasize forest ecology. Also fostering more partnerships between Federal land management agencies and environmental groups with specialized knowledge would increase the capacity for restoration. Presently, federal policies still allow salvage logging to continue despite the mounting evidence against this practice.

Salvage logging has been shown to be an institutionalized practice through the language of the laws governing National Forest policies. However the public response to destructive logging practices has effectively lowered the amount of salvage logging occurring on public lands. Although the agency has made some changes in policy to reflect the shifting public opinion and goals, the funding mechanism of salvage logging (i.e. salvage fund) has insured that the practice continues and will likely continue for the immediate future.

The mechanisms that have successfully challenged and reduced salvage logging on National Forests identified in this thesis are: environmental laws requiring ecologically sound land management practices as well as procedures that allow for public participation in policy formation and legal standing in litigation; inclusion of the scientific method both inside and outside of the environmental laws; the agencies' methods of policy formation based on the environmental laws and the public's involvement in the policy formation process. Although all these mechanism work synergistically, the laws can be said to be the most important element of a successful challenge to salvage logging as they have allowed a vehicle for the other mechanisms to have an influence. Direct action functions as a mode of challenging salvage logging directly outside of institutionalized means, and can be considered a wildcard within the continuing debate. Ultimately it will be scientific knowledge *along with* clearer economic accounting in regards to salvage logging combined with public demand that will remove the institutionalized status from salvage logging.

Scientific knowledge has already caused the rational for salvage logging to retreat from ecological and fire reduction to an economic rational. Because of the obscure accounting methods employed by land management agencies a clear economic picture on salvage logging sales is very difficult. However, if the agencies change their accounting methods as the Government Accountability Office has suggested the economic losses incurred through salvage logging would become clear (United States Government Accountability Office, 2006). This would probably be the final log removed from the logjam of the institutionalized

salvage logging status quo, which would then cause a punctuated equilibrium type of shift basically ending salvage logging on national forests. This type of transparent accounting by the agencies will require the public to demand it.

At present the agencies are shown deference by the courts regarding issues of uncertainty in scientific information. This allows for the agencies to make decisions regarding salvage sales that may be based on economic or political factors, as evidenced by the Biscuit Fire salvage sales. More transparency and accountability within the decision-making process would limit the influence of these other factors. Again, a strong public demand for this will be necessary for this to occur in a timely manner. The other possibility is that scientific understanding will eventually reach a point where there is no longer an issue of uncertainty, as has emerged in regards to climate change.

This issue of policy change brings up questions posed in the introduction. One such question asked if the mechanisms of policy change could produce needed change in a timely fashion? The question was originally asked in regards to climate change. The answer is unknown because of the inherently high number of uncertain factors involved in climate change. For salvage logging and its impacts the answer is probably yes. The changes in policy have greatly reduced the amount of land undergoing salvage operations. There are also restoration actions being taken on federal lands that will mitigate damage done to forest ecosystems. The second question asked if the fundamental assumptions and objectives upon which current policy is based able to address current needs? This is a grey area. Environmentally sound land management policy is in theory able to

meet current environmental needs. However there are still beliefs ingrained within the agency's economic assumptions and objectives that produce harmful effects on the environment. The last question raised inquired if the mechanisms of change can incorporate ecological knowledge into policy? They can but there is again the issue of timeliness and the ongoing struggle between the two paradigms. The public input has been the driving factor in incorporating ecological knowledge into policy. It was public pressure that led to the passage of the environmental laws. The work of environmental organizations has been instrumental in strengthening and overseeing the implementation of environmentally sound policies. Civil disobedience has played a major role in bringing the issue of salvage logging into the public consciousness as well actually stopping specific salvage logging sales. The conclusion will suggest areas of needed research and make policy recommendations.

Conclusion and Recommendations

Although salvage logging has been reduced on federal lands it still retains its institutionalized status. Further research and policy changes are needed to de-institutionalize the practice. All areas of scientific investigation are important in terms of the impacts of salvage logging, especially in regards to those impacts on specific species. There are two areas of research, which could prove to bring about fundamental shifts in salvage policy. One such area of research is in the higher value of carbon sequestration that intact forest ecosystems (i.e. old-growth forests) offer (Smithwick, Harmon, Remillard, Acker & Franklin, 2001; Luysaert, Schultze, Borner, Knohl, Hessenmoller, Law, Ciais & Grace, 2008). This will help in changing the conception of forests from a natural resource to be exploited to one of an essential ecosystem performing valuable ecological functions including carbon sequestration. The importance of global climate change will ensure that forests are managed in the future to help mitigate global warming. Another issue to be further expanded on is the historical makeup or structure of forests. Studies that tie historical species' health in terms of population dynamics to historically available habitat would be very interesting. They could be instrumental in providing the impetus for returning public lands to a state more in line with historical forest structure to foster a restored forest ecosystem. This would include the reintroduction of natural disturbances into forest ecosystems without salvage operations.

As regards policy recommendations, there are policies in place which need to be better implemented. A lot of this is simply a function of funding. The

National Environmental Protection Act, the National Forest Management Act and the Endangered Species Act and the policies that are derived from these acts all need more funding to be effectively implemented. The Fish and Wildlife Service Agency, which enforces the ESA, has a backlog of species that need to be studied to determine if they are in need of listing. Unfortunately, the agency does not currently have the funds to complete all the studies needed. This is also true for the Forest Service, which does not have sufficient funding to employ the required numbers of ecologists and others needed to carry out mandated environmental work.

It is clear that congress must devise new funding mechanisms for the Forest Service, to replace timber sales and salvage sale funds used to pay for agency programs. If this structural funding mechanism is not replaced salvage logging will continue because it is used to fund administrative costs as well as new salvage logging sales. The costs involved in administering and supporting (i.e. road maintenance and mitigation measures) salvage and timber sales could be shifted to support restoration and prescribed fire projects. Separate funds for firefighting should be established so that capital for environmental programs are not used for other purposes. The problem of funding is a serious issue, which may take a long time to correct. This is due in part to the economic slump the country now faces, but the wars that the U.S. are involved in are also a huge drain to economic resources. The energy crisis, in terms of greenhouse gas emissions, and the related issue of climate change will both require capital investments and are viewed as more pressing issues than forest health. Eventually science will show

the compatible connection between forest health, carbon sequestration and mitigation of climate change. Currently, there are limited economic resources and the majority of them are spoken for.

Stewardship contracts are an interesting new funding mechanism being used by land management agencies that combine restoration projects on National Forest Lands into contract packages called Integrated Resource Contracts (IRC). These contracts work by removing forest products (goods) combined with restoration projects (services). The contractors offset their costs of removal and ensuing projects with the goods removed. The funds generated must be used for on-the-ground projects including, which include the removal of vegetation to increase forest health or reduce fuel hazards, the restoration of watersheds, and the restoration of fish and wildlife habitat. Excess funds must be used to implement other stewardship contracts (U.S.D.A. Forest Service, 2011). These types of agreements are much more likely to provide ecologically beneficial results than salvage sales. One issue of concern with these contracts is that they may increase the use of biomass for energy production. Biomass for power generation may increase greenhouse gasses and contribute further to climate change (Makhijani, 2011). Stewardship contracting should be extended past its expiration date in 2013, but oversight must continue to ensure that environmentally harmful practices are forbidden.

An area of paramount importance for land management agencies is the use of adaptive management. The nature and complexity of forest ecosystems and their current state of imbalance with historical forest structure make it a necessity

for land management agencies to incorporate adaptive management to most effectively carry out restoration activities. Congress needs to clarify that adaptive management is consistent with the NEPA process and mandate its use by land management agencies. Failing congressional action, the Council of Environmental Quality, which regulates agencies in regard to NEPA, should consider reviewing its regulation to encourage implementation of adaptive management practices (L. Moon-Stumpff, personal communication June 16, 2001). Failure to monitor and assess have limited the NEPA process to a one-time procedure that is focused on present impacts of project implementation. Assessing long-term impacts is currently not undertaken in the NEPA process, and severely limits the potential for advancement in environmentally sound land management policies and practices. To work effectively, adequate funding from either the legislative or executive branches of government must support the NEPA process to include monitoring and future assessment. A closely related issue is that of the Adaptive Management Areas as set up under the Northwest Forest Plan. Policy needs to be implemented which will ensure that these areas are used as originally foreseen, as areas to experiment with management techniques so that relevant ecological knowledge can be gained.

Policy reform is urgently needed in terms of scientific uncertainty and the loop-hole this provides for the continuance of salvage logging. Oversight of decision-making is needed. A scientific committee for each region could be established which would ensure that peer-reviewed science meets accepted scientific standards and is used for decision-making. Policy enforcing

accountability to clearly stated objectives would also help in restricting political influence over such decisions. Political influence is a key issue and as long as vested interests in salvage logging are allowed to influence policy and decision-making the threat of salvage logging will continue.

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Appendix A

This interview of Professor Jerry F. Franklin appears in its entirety. It was conducted on the University of Washington campus located in Seattle, Washington on May 5, 2009. Professor Franklin is Professor of Ecosystem Analysis at the College of Forest Resources, University of Washington, Seattle Washington. Professor Franklin worked as the Chief Plant Ecologist for the Forest Service from 1975 to 1992.

JM (Jothan McGaughey): What I'm writing about is how the ecological knowledge that people develop you know going to school and how that gets brought into policies. And I thought you'd be a really great person to talk to about it because of your whole involvement with the Northwest Forest Plan. And I know that there was quite a few groups of people that met Jack Ward Thomas and yourself and some people that put out a few reports before that final plan came about. And the way I'm looking at this is, or the way I've started to, and it might branch out, is through the lens of salvage logging as an example to see how knowledge about that gets brought into policy. And so, I have some questions but I was wondering if maybe you could talk about a general experience with that first off? Or...

F (Franklin): Sure. Well you know first of all you know science gets incorporated into policy in just a variety of ways. And sometimes you know it really turns out to be very straightforward in the sense that well the management agencies are really looking for that kind of information and they simply adopt it. And you know probably the best example of experience to that was when we began to get in, well we, in the late 60 and early 70s we were involved in an international biological program and we got involved in a new disciplinary research program down in the Andrews experimental forest funded by the National Science Foundation. And one of the things that came out of it emerged from it was the importance of coarse wood and specifically the importance of coarse wood in stream systems. And you know in some senses it was a rediscovery of something that you know fishermen have known for a long time (chuckles). But we had been in a process you know in the Forest Service of aggressively removing wood from stream systems. Part of it came out of the history of a whole lot of green slash being dumped into small streams and streams becoming anoxic because of that. So there's you know there's a whole big push you know not to keep a lot of organic matter in the stream. And then we had the 64 floods and you know we just, the 64 floods just trashed a lot of roads. And you know there was a lot of

concern on the part of engineers that a lot of this was due to wood that was in the stream systems. And so in the late 60s there was a really aggressive program that emerged of removing wood from streams. Not just fresh wood and slash but get all the wood out of there. And so we were paying loggers a lot of money to go and pull old wood out of the stream systems. Well it became really clear very early in the research program there in the late 60s and early 70s, boy that wood is really, really important for those systems both from the standpoint of hydrology and geomorphology but also from the standpoint of fish habitat. And it was amazing how you know once that science emerged and it really you know emerged in publications and a series of workshops. The agency, the Forest Service turned itself around in a matter of probably five years from an aggressive program of removing debris to in fact retaining debris and in fact trying to restore it in some systems. Let's say well it certainly it was a complete reversal of policy in a decade. So that was a case where you know wow, nobody had to do much of anything other than just to make sure the management folks knew and understood you know what the science was showing. Now you know on the other hand, you know, a lot of science related to for example our studies of old growth forest you know really involved a major policy change. And so this was a case where science sort of converged with where society was going and it was sort of mutual reinforcement. We had you know owl science and you had old growth ecosystems science and you had just a general social movement in support of stopping logging in old growth. Well in the early 80s you know it didn't seem like a whole lot of that science was going to be incorporated in forest plans. And I can remember Fritz Waltson (?) and I talking about how frustrated we were because there was the forest planning effort but none of this science was getting into it. But what happened in that case was lawsuits associated with the National Forest Management Act and the Endangered Species Act that focused primarily on biological diversity. And in the end of course the agency wasn't able to, the agencies were not really able to respond adequately as judged by the courts to their, to effectively to what they were charged to do by federal law. And ultimately what happened was because of Judge Dwyer basically you know putting an injunction on any further timber sales and suitable owl habitat, the agency and the administration was forced into looking for some solutions. And what Dwyer said basically was you can't do it until you give me a credible plan for conserving the owl. And the Bush administration looked for a solution and just couldn't believe that there wasn't a cheap way around this. They couldn't and so they dilly dallied and after about a year Congress said okay, let's find out what the hell is going on and see if we can do something about this because the Bush administration wasn't going to do anything. So, they brought in four people, John Gordon who was the dean at Yale, me, Norm Johnson forest policy person and a

guy that had written the fore plan program and Jack Ward Thomas. And it goes back to a hearing room and there were three congressional committees in that room. And they basically you know queried us as to what the hell, what was really the story out here, what was the problem and what were some possible solutions? That was the first time that they'd ever heard that we were actually overcutting. Norm Johnson told them that you know we've been overcutting for several decades in the National Forest so we do have a problem. So basically we went off to a lunchroom after the hearing and Congressman Volkner started writing some legislation on the back of an envelope. And I asked him what he was doing and he said, "Well, I'm writing down what we have to put in a law to resolve this." And he went back to that and then he looked up at me and he said, "You know if you could just tell us where the good old growth is we could solve this." And I said, "Well, you know, we could do that," which my partners in crime you know were not at all sure how the hell we'd do it but anyway basically what Congress did was they chartered a gang of four exercise. We called it the gang of four. It was the scientific panel on late succession forests and they gave us ultimately an assignment of mapping and grading the old growth and coming up with a plan for how to deal with conservation of old growth and spotted owls. And one of the last things Volkner said to us as we left this back room was, "And don't forget the fish. We don't want some damn fish blowing us out of the water after we've got this all settled." Basically what happened was, we produced going back and we got over 100 people together and in a matter of about six weeks we produced a report and it was this report. And basically what we did was we got a bunch of scientists together, hydrologists and aquatic biologists and other folks together and we mapped the old growth and graded it and then we developed a whole bunch of alternatives based on different levels of set asides (?) fundamentally and looked at what the economic impacts of those different levels would be. And so this incorporated a whole lot of science. There had been a proceeding report by Jack Ward Thomas and a team on a recovery plan on a plan for conserving the northern spotted owl. And I don't know if I've got it here or not. So we started with this, we started with this thing and what that team had said was, "You need big blocks of habitat and you need to do something about the areas in between those blocks of habitat." So we started with that and then we added what we knew about the science of the fisheries and fish habitat and what we knew about old growth forests and came up with the alternatives there. Now that became the gang of four report and the owl report before it became the sort of became the framework for a FEMAT. And so basically a lot of what happened in FEMAT fed directly off of this scientific analysis. So basically it's a long story. The short of it is, is a result of the injunction, first Congress then the President turned to a group of scientists to develop alternatives for them. Now that's the

antithesis of the woody debris and rivers story in terms of putting a bunch of scientists in charge of developing management alternatives for the Northwest International Forests. That's very extreme. That's not a good way to make policy but that's exactly what they did. So those represent two extremes in how science gets incorporated into policy and obviously in the gang of four exercise and the owl conservation plan exercise and FEMAT, you had a bunch of scientists totally structuring alternatives on the basis of their understanding of these systems and these organisms and how they worked.

JM: Yeah and that was over quite a period of years there.

F: Yeah our report was '90; gang of four report was '91. There was a scientific analysis team report in '93, there was, at the beginning of '93 and there was FEMAT in '93 and then there was the Northwest Forest Plan in '94.

JM: So and I imagine that the alternatives were there as, would you portray that as like compromise, having the different options in there to choose from? Or...

F: Not really. Here's how it worked. First of all, the chafe was the one that asked Jack Ward Thomas to do the owl. He said, "Give me a credible scientific plan for conserving the owl." He said, "A plan." Now Congress on the other hand when they commissioned the gang of four said, "Okay. We want you to look at where the old growth forest is and grade it into good, better, best and the we want you to take consideration of old growth, owls, murrelets, fish habitat and come up with a plan that will...Come up with a plan." Well we didn't do that. Thank God Norm Johnson was smart enough to say, "No, we're not going to give them a plan. We're going to show them what the tradeoffs are between different levels of conservation or preservation on the one hand and timber harvest on the other," and say, "We're just going to give them a marginal cost benefit analysis," and basically the primary access was about 12 steps long from heavy timber harvest to preserving everything. Well and in the end then, well that summarized the whole damn thing. Basically this is what happens as you go, here was the historic, here was the high timber harvest and here was sort of preserve everything and you can see how the timber harvest goes. And then here was our risk analysis for whether or not we were going to achieve various objectives. So what we did in that case, and you can have that if you want it, where they effectively did for Congress is we said, "Okay here's our analysis and you can see you know how the probability of succeeding and preserving owls is going to change with each step along this gradient from brown to green. You decide you know what you want to do. It's your responsibility, not us, to tell you what your decision should be." And the

congressional folks know exactly where their decision space was. Even the most brown of them. And so a republican congressman from southwestern Oregon looked at that chart which was up on an easel and he said, "We won't legislate anything less than eight." What?

JM: And this, eight is off the...

F: No here's, yeah here's the alternative...

JM: Oh, oh I see, less than eight, I see. I thought you were talking board feet.

F: And Norman asked, "Well Congressman, why is that?" He said, "We won't legislate anything with a low in it. In other words, less than a 50% probability of achieving our objectives with regards to those five levels." And that was the first...

JM: Do you think that that was because of the injunction shutting down the timber harvest for...? I mean it shut it down for a couple years, correct? Do you think that that played a big part in that decision to go for the 50% or better in preserving these things? Like that they didn't want to risk another injunction, they wanted to...?

F: Well that probably entered into it but also it was a political statement by him effectively saying that we can't defend any kind of a decision that doesn't have at least a 50% probability of success. And in effect the legislation under which we're operating will require us to do that. So he knew he couldn't go back and change the National Forest Management Act or the ESA and so he was making a judgment. Now in the end, Congress didn't do anything and that's why Clinton said when he was campaigning for President, "I will resolve this issue." And what he had told us was, "Okay, I want you to do a scientific analysis. I want you to give me alternatives, which are scientifically credible, which are legal under existing law. I don't want you to have to change any law and which given those first two try to cut society some slack in terms of timber harvest." So he put you know, "I don't want any alternative from you that isn't going to stand up in court scientifically." So you know he laid it out for us and in the end that's exactly what we did. We, all the alternatives we gave him and they went from green to very green basically would have met those criteria.

JM: I see. Yeah I read an article that you're involved with, with the gang of four fairly recently, well a few years ago I guess now, talking, that was looking back at

the Northwest Forest Plan. And in that, and it went over a lot of what you've gone over here, in part of it, I think that you basically make the recommendation of not cutting anymore old growth. Do you see that getting into policy or?

F: Now I was going to go there. I haven't yet but I was going to. The current situation is this. First of all, in the case of old growth really didn't need to set aside all of the old growth, we thought, as a scientific group to meet the goals of maintaining viable populations and the other objectives. So we didn't set aside all the old growth and we actually assumed that a compromise would require sustaining some level of timber harvest and you can only do that if in fact you are cutting some mature and old forest. So we didn't have to set it all aside to achieve the goals. So the alternative that the President picked was one that in fact left some out. Now, what we didn't understand at that time was society just wasn't going to abide cutting anymore old growth on the federal lands. Where they begin to try to do some, they literally ended up as little old ladies in tennis shoes out there. And so the agencies and the Congressman said this ain't going to work. We cannot end up with police out there taking you know people off to jail for obstructing. And so basically even though it's allowed under the Northwest Forest Plan, nobody is cutting old growth even though it's not set aside. So anyway we misjudged that. You know we followed the rules and we gave them alternatives that met the criteria. The President chose an alternative that didn't set aside all the old growth but in the end...

JM: There's public pressure, huh?

F: Public pressure stopped it. Now, what we've been doing for the last eight years is continuing to fight old growth and roadless areas, both issues that are unresolved. Bush Jr. tried to put them all back on the table. And so what we spent the last eight years doing is fighting over the same damn issues. If we're going to move ahead you know my own thinking was we've got to get that off the table so that we can move ahead on what we do agree to do. So basically there's legislation right now that's about to be introduced by Ron Walling (?) initially just for Oregon. That effectively takes all of the old growth off the table and he's been using Norm Johnson and I as a source of information. And one of the things that we urged him to do was recognize that a policy has to distinguish between moist forest and dry forest. And you take old growth forest off the table in the case of the moist forest but you can only take old trees off of the table in the case of the dry forest because so much of it is an uncharacteristically dense and fire prone condition. So my point is we've encouraged the senator to incorporate a lot of science in this proposed bill, proposed law. And it uses plant associations as a

basis for setting policy. It distinguishes between moist and dry forest. It uses an age definition, an age distinction as opposed to a size distinction, those kinds of things.

JM: Now there's that 80 year for the trees. Is that when they're considered old growth because of the structure or the size of them?

F: Well no. That's got a long story to it too. And basically the way the 80 years got started was in the gang of four exercise where we were considering forests that provide habitat that's important to a broad array of late successional organisms. We figured that a lot of the mature forests also did that. And particularly you know Tom Spees (?) and I were thinking about a lot or the Cusan (?). I don't know if you know the Cusan area. Burned in 1902, the same time the Ackle (?) burnt dead but it only burned once as did some of the Ackle and they had a lot of structural complexity to it, a lot of carryover from the old forest. So anyway we decided we needed to have a broader concept in old growth. We needed to consider a larger population of forests. So we created the concept of late successional forest, which was everything over 80 years old, which included the 1902 burns that happened, okay. So that's how 80 years got in there, 100 years would have been more logical. But anyway and now you know what you take off the table, what you call quote "old" is a political call. And so it was up to Senator Wyden to decide what age do you want to use. He decided to use 120 years. So it, interestingly he now does all that or old growth he calls it mature and old. But anyway that decision about what we take off the table and whether or not you call it old growth in a political sense or not is strictly a political call.

JM: Sure, yeah. Well you know I've seen that the book that I think that you helped put out that I think he was a guy, I can't remember the name, works for DNR.

F: Bob (Robert) Van Pelt?

JM: Yes, yeah, put out those great little handbooks about defining old growth. And yes certainly it seems to be not so much an age thing at all but more of a structural component to it and mixture and the whole thing with disturbances coming in and creating this matrix of different aged forest.

F: DNR made a political decision, a policy decision too but they took everything off the table on the west side that was over 160 years old but not...

JM: Not on the east side?

F: No on the west side. But they didn't take off the table the stands that were 100-160 years old. But just in an ecological sense, just as a footnote, you know generally I consider young forests to be forests up to 80 to 100 years, mature forests to be 100-200 and old forests to be over 200. What the department decided to do was they really didn't want to try to take a lot of those mature forests off the table because that's where a lot of your volume is.

JM: And they, the DNR of course is...

F: Is trust management.

JM: Is trust yes so that...

F: What they did decide to do was to take the old growth off the table and actually go you know down to 160 years and take everything down to that age off the table. On the basis that those are forests that preceded human settlement in age. Anyway they had a rationale but it was fundamentally a political decision as to what age grade they used.

JM: Well I wonder you know I haven't really seen a map that states that of you know about the state of Washington and DNR land I mean how much land that is, what percentage of their overall holdings that represent. Do you know by any chance?

F: It's not big. There is a report...

JM: I wouldn't think it would be very much.

F: There is a report. I think it's about 60,000 acres on the west side. I don't know if I have it here but it's about 60,000 acres and basically the department decided that well we're just going to take that all off the table and you know we'll buy some of it out. We'll use some of it to meet our other obligations under the HCP but we're not going to try and put any timber sales in any of it. It's about 60,000 acres or less than. I don't know if I've gone in the direction you've wanted we to go.

JM: That's fine. I think that's great. I'm just going to sort of review some of this stuff. Do you think that the economic and the ecological concerns were well balanced out of the Northwest Forest Plan?

F: No. No, they weren't because basically the federal government decided to carry most of the load for the Northwest. So you know it was very clear that in the case of the federal lands the priority is to meet the ecological goals. And in a sense you know biodiversity has more of a mandate than timber harvest does. And so anyway no, ecological values came first.

JM: Does that include the state and private land or?

F: No, no it's just the federal.

JM: Just the federal, okay. And about the salvage logging you know I know that since the Northwest Forest Plan has happened and there's been less logging, actual salvage logging has made up a larger percentage of the logs that get done. So what consideration did the gang of four and the Northwest Forest Plan give to salvage logging and the its role I guess?

F: We didn't do a good job on that. And you know we've spent a huge amount of time talking about it but it doesn't show up in the report. And it goes along this way that basically in the late successional reserves and the riparian reserves, only minor salvage should be allowed. That was the intent. But we were very tired and we already set aside so much that we wanted to be, wanted to try to appear to be reasonable with regards to that. So we didn't say no salvage. And I have to go back and look at what the language says in FEMAT and the Northwest Forest Plan but I can tell you the sense of the team was we'd rather not have any salvage at all. That's probably unreasonable so we'll leave a hole for them to do a little bit.

JM: I see. If you had to do it over again would you change that part of it?

F: Yeah we'd probably just flat ass prohibit it. And where this finally you know came to a head was in the Biscuit. And you know I gave, I sent in some comments on the Biscuit EIS and effectively I said you know that you know you have the said to the regional forester, in fact I went out with her. You have the authority to do this but what you're proposing to do is not what the intent of the FEMAT team was. And you in any case cannot justify ecologically. So you know you can do it and you can say you're doing it on the basis of economics but you know all you

will not ever be able to defend it in court if you say that you're doing it for ecological reasons.

JM: And well I guess that brings up the Sessions report which it's my understanding that that was saying that it could be done ecologically or did I misunderstand that?

F: No they claim that. That's correct. But that's not, I disagree completely. Fundamentally, I argue you know I used to work with John Sessions a lot and I called up John and I said, "John, you cannot argue that salvage logging is going to accelerate the reestablishment of habitat for the northern spotted owls." It isn't going to. And in fact it's likely to delay development of habitat. But anyway his vision of what you wanted to do was one of now let's salvage it and let's replant it with create a dense plantations on the area. And neither of those are particularly useful things to do from the standpoint of well I'm going to help you with regards to the owl and they clearly are not going to be advantageous from the broader perspective of biological diversity and actual ecological processes.

JM: Well it really it seems that that's it would be more for timber production to do that, yeah.

F: Absolutely.

JM: And if, I'm not sure how much of that went on because I know it kept getting cut back and cut back the amount that they okayed for that. But then when you do that, there's the whole question of having to manage that planning afterwards or to prepare the ground to site prep and then herbicide applications and eventual thinning as well. So yeah I've looked a little bit into the economics of it. And it seems like in terms of salvage if you cannot do anything and have it come back because there's seed trees, there were seed trees in areas that would get to most of that spot and not have to pay anything versus salvage with kind of a low economic return on the wood versus the costs that are continual for you know five years out or maybe even more with the thinning I suppose. That it just is very hard to make that add up.

F: Yeah well I asked John, I said, "John, would you invest some of your money in reforesting that land that kind of land?" He said, "Oh no of course not. It's for the owls." You know John's a rich man. And so I just, "John, you're talking about spending all this money to reestablish forests quickly. Would you invest your own money on those kinds of sites?" And he said, "Well no, of course not.

JM: Do you think there's anything to it? That it could be, do you think that a human managed forest from say from the start from after it's being burned there's some kind of natural disturbance can be brought to an old growth state quicker than just allowing it to do it on its own?

F: That I do believe in the sense of you know existing plantations for example. I think we can significantly accelerate the development of a number of structural attributes of older forests. So yeah I think you know active management in plantations or other young managed stands can in fact accelerate property by several decades, maybe many decades, the development of some of the complexity that you want. So that I believe you can do.

JM: That does make sense I mean with all the well there's they started out with I guess girdling trees or topping trees. And now I think the thing is, is to inoculate wood with the fungi and put them in and you know that seems to work fairly well from what I've heard. And that obviously would speed all that up. I guess for myself I wonder with the you know there's a lot of forest out there on federal land that you know was planted with the Douglas fir from seedlings and you know they're the same age and stuff. Even though there's a lot of hemlocks in there. I guess I'm familiar with the Olympics I guess. You know there's hemlock in there and some other trees but I wonder how, and I don't know if the information is out there but how closely that resembles what would be there if there hadn't been any active management and what the difference in terms of the biodiversity is, you know, in the fauna and I guess the associated flora that goes along with the forest.

F: Probably quite a bit.

JM: Quite a bit yeah.

F: Certainly the genotype, the genetic makeup of the forest is the Douglas fir component of course is probably different because nature tends to put seedlings through an environmental sieve. You know its issues like heat and drought that are selected. You know we've put those to a greenhouse or a nursery sieve where the traits we select for our growth not resistance to environmental stress. So I would think you know that the old growth spectrum, genetic spectrum is different than it would have been with a naturally regenerated cohort of Doug fir. Nobody's looked at that.

JM: Yeah, do you think that there will be issues with that with say climate change coming up?

F: Very possibly. Someone like Weyerhaeuser doesn't really care. Weyerhaeuser's attitude you know with regards to climate change is well if we get into trouble we'll just cut the stand and put in a new strain or a new species. So they don't worry a whole lot about it. But you know when you're dealing with something like federal lands, then we care a whole lot about it.

JM: That brings up an interesting point I guess in my mind. You know I think that as society is getting close to being able to genetically come up with a super Weyerhaeuser super treatments okay with climate change but then you and you have the federal lands which are being with the Northwest Forest Plan are more being conserved for biodiversity. But then you have this interesting issue, which is kind of similar to the whole Monsanto horn thing where the genetically modified corn got into some guy's field there and Monsanto was actually able to sue that guy for stealing their corn.

F: (laughter) He should have sued them back for polluting his field.

JM: Well yeah but I think it comes down to not being able to hire a good enough lawyer and he lost. But do you have any thoughts on that aspect of it? I mean...

F: Not really because you know I'm not a great fan of genetic engineering but the reality is we're going to be doing a lot of genetic engineering. And you know we may be doing some of it in connection of trying to deal with climate change. So you know I think that's, there's going to be a lot of it in the future but that's not where I want to go.

JM: Yeah. Well I agree with you there. How about institutional structures? I guess you know we could be talking about the universities or the Forest Service structure itself. Can you talk to about how they facilitate or hinder ecological knowledge being used to develop policies?

F: Well you know my sense is and most of the management agencies these days are a lot more open to new information than they were before and really want it. You know we went through a period particularly in the 80s in the Forest Service where boy there was a lot of anger on the part of the management branch of the agency towards researchers. And a lot of talk about we have to get those scientists under control. They're completely out of control. But you know you don't see that

anymore. And I think you know basically part of it is that first of all managers know that they get themselves in trouble if they are not cognoscente of the most current science. They're liable to have to look at it in court. But I think much more positively they are prepared to, they want to know what the most recent findings are and they're a lot more accepting of the notion that the research may really end up changing what some of our you know it may result in some fundamental shifts in what we do and how we do things but that's okay. So I think at least in the Forest Service research is considered to be much more of an ally and a source of useful information than they were in the past. I think you know in the old days the you know I think most managers in the Forest Service sort of looked at scientists as being for the most part harmless enough and you know it's probably good to keep them engaged and keep them off the street rather than getting into trouble (chuckles). Then there was like I say a period of the 80s when there was a lot of conflict. But I think that that's changed now. And I look at DNR and similarly you know the attitudes have changed a lot and as a recognition you know that we may have a mission but you know we'd better at least understand but we want to have the best understanding we can have of how the system works. It's in our interest. It's in the resource interest and maybe in our legal interest. I don't think we've got the institutional barriers we want.

JM: And do you think that that's basically due to societies changing the conception of how they view the forest?

F: Yeah I think so. It doesn't mean you don't get into conflict sometimes but it's not at the agency level. It may be at the level of policy makers. And you know Brian Baird for example was involved in developing with an Oregon congressman I (unclear) but anyway they introduced a bill in a previous session of Congress to mandate salvage. And Brian was not prepared to hear that you know salvage doesn't do ecological good. This was not what he wanted to hear. And you know I paid a price for saying that. So you know there still are people who in situations in which you know a scientist risks telling truth to power but it's not really in the agencies.

JM: I see. That's interesting. Why do you think he's so invested in that, the belief that salvage would do some good?

F: Well first of all you know the notion that salvage isn't good, it isn't good to go out there and get dead trees and capture that value, you know wow that's kind of counterintuitive, what are you saying? You know, they're not valuable out there anymore and you know we can have jobs and isn't it good to go out and do that?

And we can plant trees and get the forest back. And you know the way foresters are trained with the notion that if a forest is destroyed, the most important thing that you can do is go out there and put that forest back and salvage you know whatever commercial value is there. Well given some of the kinds of management pools we have today that's not necessarily true. And so you know you've got this whole history of viewing salvage in that way and then you have a set of political objectives that Brian had in connection of that. He wanted to do some good things for labor and he was pissed at environmentalists. He didn't much give a shit what they had to say. And what do you mean it's not good? So you're you know in that case there's something of a long tradition of momentum to it. So now some scientists are stepping up and saying no we understand all of what's going on. It's not necessarily a good thing to do from an ecological perspective. And so that's why you know I think it had to do with oh my God you know I don't want that science right now. Thank you very much. I have another kind of objective in mind.

JM: Yeah. What do you think is the most the best way to get scientific knowledge into practice? I mean do you think it's at the policy maker level like at Brian Baird or do you think maybe it's the institutional level or a federal laws or some mixture of both?

F: It's both. You know you have to have state law; you have to have federal law that lays down some general objectives and boundary conditions. But at the same time you know that with we've got to have a lot of latitude in adapting to a particular landscape and a particular forest stand so that you can have national policy that comes down to making prescriptions. So basically you know what we're trying to do with Wyden is set a policy that says okay now if we want to take old growth off the table you know we're going to recognize that there's some places where we take the forest off the table because those are standard placement environments and we didn't really influence, haven't really modified them and they're adapted to that kind of thing and there are other places where we screwed things up so we take the old trees off the table but we'll allow active management. We won't mandate it, which is to say we have permission to work in federal forests and dry sites defined by some plant associations that have old trees on it excluded. Okay that gives a framework then for the agency. Oh yeah okay. Old growth forests however that's defined by age or size or whatever it is are off the table on post plant associations, we won't even talk about doing anything (unclear). But on the dry sites you know we're going to go ahead and in some cases we will do a restoration treatment and in other cases we won't but we have the latitude to do that and a number of trees that we're going to manage for the basal

area et cetera are going to vary with different plant associations et cetera. So no I think you know you have to have some broad policies that sort of define how to put it that basically lay out some basic goals and some boundary conditions but provide for a lot of latitude within that general guidance. Then it's up to the agency then to take that guidance from the legislature and say okay, so this is how we're going to do this. This is how we're going to implement this. And in the proposed legislation incidentally we have some third party activity to assess performance on the part of the agency. So we've got some objective third party that's looking at okay how well is the agency meeting the intent of that law and the intent and character of their regulations? Are they doing well?

JM: That would be interesting. In that article from a few years ago, you also talked, you're talking about the Northwest Forest Plan and then you know there was the adaptive management areas that were a part of that too, to sort of to look to the future I guess to find to explore different ways of managing the forest that will work and what not. And in the article I believe you said that they have not been, that they haven't been used to their full potential or something like that. Could you talk about that a little bit and how important do you think that adaptive management areas are you know for finding...? Also in that article, you talk about looking towards the future and maybe even shaping opinion I think or being ready for however society is going to change...

F: Right, that in effect society's going to change its objectives and you got to be aware of that. And at the same time you're learning more from a scientific point of view. That's part of the adaptation process as well. And well you know in FEMAT in the Northwest Forest Plan we tried to provide a lot of opportunity to be adaptive, to be flexible. So the Riparian (?) buffers were interim buffers that would ultimately be changed following watershed analysis. And we created adaptive management areas where it was the intent that we would encourage people to explore different ways of doing things. And in the end this was a place where we as scientists were very naïve. We thought everybody would want flexibility and there's a logic to adaptive management the notion is you've got to learn something that is going to give you better ways of achieving your objectives. You know you've got to learn that some of the stuff you're doing isn't getting what you want, that there are, you're going to have to change or there are other you know you're learning the different ways' they're going to achieve it better. Well it turned out that none of the stakeholders really want adaptability. They want rigidity. They don't want to be told that you know something may change next year because of something new that you learned. And so it turned out that the courts really dealt like building in change, adaptation. It turns out the

agencies don't like it because you know we've got this nice rule and I don't want to get mixed up with making changes in that, the stakeholders, the environmentalists don't want you to change. You know you're going to tell me you might change the boundaries on some of the late successional reserves? Or you know more likely you know you're going to change for (unclear) buffers. I don't want that. Or we allowed for example for restoration treatments in dry forest LSR's. Nobody wants to do that. So they said we could do it. I'm going to get sued if I try. I'm not going to do this. And so for all of those reasons it turns out that not many of the participants really want to practice adaptation. With regards to the adaptive management areas, we in FEMAT basically said these are places, these are places where you can try and you can think. You don't get to change the objectives of the plan but you can try different ways of providing for the owl or protecting Riparian or for that matter you know for the way that you collaborate as agencies or even economic approaches, all kinds of possibilities. Well we wrote the FEMAT that way and they wrote the initial EIS for the draft EIS for the Northwest Forest Plan that way and basically there was a lot of push back by the stakeholders and so at the end when they were revising the Northwest Forest Plan (unclear) I asked the lawyers wanted to be very sure that Judge Dwyer (?) would go along. So they said to the biologist among others we want to make any changes that you think will potentially plug holes, reduce the risk of this being ejected. Well, a lot of the biologists hadn't liked the whole notion of adaptive management areas. They didn't like it when we were working on FEMAT but those of us where were sort of the master group running the thing put it in. Well when they were revising the Northwest Forest Plan, Jack Thomas wasn't there, I wasn't there, Norm Johnson wasn't there, Tom Spees (?) wasn't there. The people that had created the concept of the AMA's (?) including we vary specifically said you don't have to do any plans before you start experimenting. You don't have to do a plan for the AMA's (?) before you start. What the federal biologist did was make the AMA's the most restrictive land allocation in the Northwest Forest Plan. Before you can do anything you have to have a plan. You have to get a multi-stakeholder group, multi-community group together and they've got to agree on, so anyway they put in a whole bunch of conditions. And so after the Northwest Plan was adopted, the agencies looked at the AMA's and said Jesus, we try to do anything you know we're going to have to spend a whole bunch of money and a whole bunch of time. We're going to take that money and spend it where we can get going. And so they just basically said the AMA's are just too difficult to work with and so we're not going to invest either our best people or any money.

JM: That sounds very unfortunate doesn't it?

F: It's very unfortunate. And it wasn't what we intended in FEMAT. It was entirely a process of preparation of the final revision of the EIS.

JM: And you know it seems like that Judge Dwyer it seems like that those that he wouldn't be too concerned about these areas being, yeah I mean it sounds like...

F: It wouldn't. He would have been fine with it.

JM: And another question that occurred to me was, were the AMA's were they actually big enough to be able to do these sorts of things and get answers for...?

F: Yeah they were. They were the size of ranger districts for the most part. You know they were anywhere from oh I drew them all. They were anywhere from the size let's say 150,000 acres to 500,000 acres and some of them actually ended up getting used. The last one I selected and drew the boundaries on was the Goose Nest Ranger District, the whole ranger district on the Shasta of Trinity National Forest. And the forest basically took that and made the whole district into a giant restorational experiment.

JM: That's neat.

F: It was. It was a district that had been heavily logged over, railroad logged, that had a very even structured pine stands, so...

JM: Is it still continuing?

F: Still continuing.

JM: Yeah that's pretty interesting. Let's see...

F: All in all you know with regards to where the plan worked and where it didn't work, it tended to work very well at stopping activities. It didn't work very well at stimulating activities from an active management (unclear). So that was unfortunate.

JM: Yeah it really is. And you seem to be very much believe in this idea of change. That there will be change...

F: There's got to be.

JM: Yeah. And I guess the forests, they change as well, you know there's a natural disturbance and then they start (unclear). The old growth boundary is going to change whether people want it to or not. What do you think about civil disobedience in any roll that it may have played in regards to salvage logging or the Northwest Forest Plan?

F: It played a significant role. You know I think it was civil disobedience that made it very clear that no you're not going to log any old growth forest. We're not going to stand for it. In the end, it pretty much on most of the national forests made it clear that no you're not going to do regeneration harvest on any mature forest either. You know there was a huge long running civil disobedience on the sale on Mount Hood called the Eagle sale (?) and basically it was a mature stand, about 150 year old stand. Now it turned out that the forest, well there was a whole bunch of contributing factors but anyway it was a mature stand and it was in the matrix but in the end for a whole bunch of reasons it was not going to happen and that was that civil disobedience ran for a couple of years maybe 2 ½ years until finally the Forest Service said well we give up.

JM: Can you speak about the paradigm shift that happened with the Northwest Forest Plan? I mean it kind of went from basically you know timber harvest being the main thing to more concern for biological diversity. And that's a really big change, yeah.

F: Huge. And you know as always what happened in this region sets the tone for what happens in the rest of the United States. So in the end you know change has gone on everywhere in the National Forest System.

JM: And how did it, because originally you know it started well the concern was for the owl after the owl was I don't want to say discovered but noticed or something like that. And that it had the association with the old growth forest. But during at some point in the plan it changed from just being concerned about the owl to the whole system.

F: Sure. Well it's interesting and there's no basis for that in law but it did you know Congress when they put the gang of four together said you know this isn't about owls. It's about old growth. Judge Dwyer said this is not just about owls. This is about old growth. And so everybody recognized that but legally the real lynch pin in this was the National Forest Management Act of 1976. And in that act is a little bit of a provision for biodiversity, biological diversity. And from that the Forest Service wrote a regulation that said you will maintain viable

populations of all native vertebrates in each planning area. That seems simple doesn't it? It's not a big deal. Well it turns out to be a huge deal. So that regulation based on the National Forest Management Act was much more potent than the Endangered Species Act. Now subsequently of course the Bush administration did away with that regulation. They also did away with the requirement that national forest planning would involve a NEPA type analysis. But the reality is there's going to be some kind of regulation and the regulations that had been written to replace that maintain viable populations of all native vertebrates have all been ultimately as difficult or more difficult to meet than that one. So anyway all I'm saying is that yes it involved a sea change but it was based on the National Forest Management Act and it was not just about endangered species. And obviously as you think about maintaining viable populations of all native species the only way you're going to do that is maintain a lot of natural and semi-natural ecosystems, habitat. And so if you're going to do that basically ecological stewardship now becomes the overriding goal, constraint. And there's no provision in the National Forest Management Act that says you will provide X amount of timber. So...

JM: Right. There is a law in there that talks about you know economic development or support of communities isn't there in the ...

F: The National Forest Management Act?

JM: Yeah.

F: I don't think so. In any case you know the mandate of stewardship really seems to override economics.

JM: Interesting. What do you think about the categorical exclusions and there's just recently the Supreme Court upheld the fact that salvage logging could be done on 250 acres or less just down on the Sequoia I think it was Forest there was a lawsuit that just happened this year at the beginning of this year...

F: I don't know about that but I know there has been a court ruling that says you can do it on economic grounds.

JM: Okay. And is that just to say you know well if we leave the trees out there we're going to lose the value of them as they are or?

F: Yeah something along those lines. And there's just been one case like that but it's a very scary precedent you know it could set up a pattern of economic return overrides everything else. So we'll just have to see where that goes.

JM: Yeah. And what do you think about that, the size of 250 acres? I mean on the Biscuit they were doing you know much more than that but it got broken down into these smaller units. So do you think that there should be some rule about having to add all of that up in say a watershed or you know?

F: Well I fundamentally think you know that any decisions like that need to be made in a landscape context. One of the things that's upset me a couple of times with the Forest Service is well they said well we're only salvaging 10% of the (unclear) or in the case of the Biscuit maybe 5% of the (unclear). Yeah but you cherry picked the landscape. The areas that you picked to salvage are the only ones that have any large timber in them. And in the case of the Biscuit I knew that absolutely because I drew the boundaries on the LSR's down there to include the concentrations of timber. Again you know the Deschutes did this on a salvage. They had a fire called the Davis Fire and said well they only salvaged 5% of it, yes. The other 95% of it was log pull pine (?). You salvaged the 5% of it that burned it was ponderosa pine. So fundamentally all I'm saying is I think that always you need to be thinking about what you do on a landscape context and it's truer of the drier forest land, it's most true of the dryer forest landscapes. You really have to be very conscious of patterns and heterogeneity in those dryer forestlands because that's the way they work. In the case of the moist forests, the typical west side forest you know, some of the large fire events tend to be pretty large sized patches. And there was heterogeneity out there but not quite in the same way it was in the dry forest.

JM: Are there any documents that you know about that spell out the paradigm shift that happened with the Northwest Forest Plan? I guess the Northwest Forest Plan would be probably the main one (unclear)?

F: Well no I don't. And you know there've been some good materials on how we got to where we did with the crisis with the train wreck. You want to call the wisdom of the spotted owl it sort of analyzes the agency's behavior, how we got there. But I haven't seen anybody sit down and write a book that really analyzes you know that effectively says you know documents effect that this you've undergone a total shift in how we're managing. Everybody knows it. But the closest thing you know that might come that article by Jack and Norm and I and Gordon is part of a series of papers in conservation biology and some of the other

papers may kind of allude to that. But you would have thought that somebody would have wanted to you know write a book about it.

JM: It might be too soon maybe or... There might be one coming out.

F: I don't know. Norm and I have talked about it but Christ we just we're having a hard time writing a new forest management text. So (chuckles)...

JM: And you know the National Forest Plans I guess are required in the Forest Management Act correct? And I believe it's a 15-year time that it needs to be done in. Do you think that, I mean, do the forests pretty much stick to that? Do they draw that out do you think? Or...

F: That's been drawn out. I mean they're way, way behind the schedule that was stipulated.

JM; Oh okay, so they've gone over 15 years on some of the forests. I just you know in terms of adaptive management and change and stuff it seems like that that would be too long a period of time. That and I guess I'm thinking of climate change now too because of the rate of change is probably going to accelerate here. That it you know it seems like 15 years is too long and they're saying that...

F: I'm kind of, I agree with you. You know I think originally it was supposed to be on a ten-year cycle and that would have been you know more reasonable particularly if you had some reasonable process for updating. But you know it's such a ponderous process and of course supposedly you know eliminating the NEPA requirement is supposed to make it less ponderous. I don't think it's going to. It's going to make it more contentious than ever but we'll see.

JM: Because that whole NEPA is kind of a conflict resolution.

F: It really is. It's also a bearing of one's soul. I mean it tends to make the process very transparent. As far as I can tell it's not transparent now.

JM: And that's because of the Bush law that repealed that?

F: Well it was a change in the regulation. It wasn't a change in the law. It was a regulatory change and candidly I don't know how they did it because I thought that the law provided the requirement that the planning be done according to NEPA. But in any case it's a change in the regulation. And the Forest Service you

know certainly wanted it. But I think you know be careful what you wish for because you know the chief at that point in time was talking about what did he call it oh it's sort of something like we were totally overwhelmed by regulations, we're locked into place by all of this documentation and planning and analysis we have. He had a word for it, a phrase for it, two words. I don't remember what he called it. But effectively you know we're totally incapable of moving forward because of all of these requirements and so if we can get rid of that then everything will be okay. I remember confronting him not in this room actually but confronted Mark Ray in this room but in another meeting in saying of the chief you know there's something in paralysis, paper paralysis, analysis paralysis maybe. But anyway I said you know to him you know, "Do you really believe that? You know the real issue that's facing the agency is a lack of trust on the part of the stakeholders. And you think removing these requirements is going to make them trust you more?" "Oh yeah, that'll do the job." That's what he wanted. He wanted to clean out as much of the planning and regulatory types of requirements as he could. He thought that was (unclear). And it won't because transparency is critical to trust. And I told him that but...

JM: And the congressional charge is pretty straightforward. They ask for a group of people to as you're talking about doing the different parts of the Northwest Forest Plan or the studies that came before it that you were given a charge to do by a congressional committee and they have the authority to do that...

F: They have the authority to do that. They don't do it very often. I mean, nobody had ever heard of such a thing. It all started just by being four of us back there that they considered to be experts. Jack on wildlife, me on ecosystems, John Gordon you know just generally a wise you know one of our statesmen in forestry if we have one at all and Norm Johnson who's outstanding economist and planner. But that translated into you know we would like for you to do this for us. And our response was sort of well we don't know if we really want to do this for us and the response to that was well if you don't we will do it. Oh, you're going to map the old growth in the Northwest and rank it? I don't think so! I'll do it. You know so they knew how to leverage us. Oh no we don't really want you, we'd better do this. And then of course what they did was they told the agency they told the Department of Agriculture and the Forest Service to cooperate with us. They didn't give us any money to do it with.

JM: You were unpaid doing that?

F: Yeah.

JM: Wow.

F: But we did have leverage on effectively almost anybody we wanted in the agency. And like I said we brought about 120 agency people together in Portland for two weeks to do the mapping for the (unclear). Anyway, interesting process. But it didn't start with them commissioning us. It started with come in and tell us what's going on. And then that translated into okay here's what we'd like for you to do. We modestly demurred and they said well that's the case you know what's going to happen. Well okay so we'll do it.

JM: Yeah. Well that really, you know that you know they could have chosen quite a number of people I think to do that so it seems like that a large part of the outcome depends on who they ask to do that. So it seems fairly transparent you know like you're saying.

F: The situation was that they didn't trust the agency anymore. That was a problem that would reach the point where the court didn't trust the agencies anymore; Congress didn't trust the agencies anymore. And so they went to four people who they thought that they could trust. Whatever these people are going to tell us is going to be pretty straight. And it was.

JM: That's very interesting. That 1991 report, Johnson, that wasn't the first report to state that it wasn't possible to maintain the timber harvest levels while protecting old growth was it? Or was that...?

F: It was. Could have laid it out for them. It was very clear there's no free lunch. You can have old growth or you can have 5 billion board feet of timber a year but you can't have both and that simple chart showed that too. It was awesome it just...

JM: Is this the chart you're saying...?

F: Yeah, it was awesome. They understood exactly the tradeoffs. You know hey you want owls with a high probability of success in terms of still having them 100 years from now? Well hell you can't do it with the level of timber harvest we have going on right now. And so you know okay you know you decide what you're going to do.

JM: Where is the timber harvest now do you know?

F: It's about 600 million on the federal lands within the range of the northern spotted owl with we did it, Norm and I did an analysis in connection with the Wydno (?) legislation that suggests that we could get that up to about a billion board feet. You do two things. One is you get into an aggressive program of restoration...

JM: In the east side forest.

F: Primarily but also with young stands on the west side. That will give you about 200 million more. The other thing you do is you begin to do regeneration harvests again in matrix forest that is less than exsage (?) and that will give you another 200 million. That would give you a billion. That's probably conservative but you have to get aggressive particularly on the east side forest and you'd have to start regeneration harvest again. Not clear-cuts but you know you'd have to begin to do something other than just thinning. So anyway that's, we're at 600 million on federal lands.

JM: I see. And let me get this straight. You think that salvage logging should not be done on...?

F: It should be, it, what you do with regards to salvage should be based first of all on what is the management objective for that land allocation? That it's ecological? Probably not. I won't say never but most of the time though if it's timber production is a major goal, then salvage and planning makes sense. So basically you know my position is the first thing you look at is what your management objective for that allocation. And just because it burned or blown down it shouldn't change automatically. Now there may be times when you do change it one way or the other and like Mount St. Helens would actually change it from being production land to ecological. And you could also do some the other way. But it shouldn't be done either automatically or without a careful assessment of why you're changing the land allocation. So...

JM: Do you happen to know like the percentage of federal land that is for harvesting the matrix I guess it is?

F: Sure. It's 4 million acres.

JM: 4 million acres out of the whole nation or?

F: No, the federal timberland in the area of the northwest spotted owl I think is something like 24.6 million acres.

JM: Okay, then so of that 4 million is...

F: I think about 4 million of it is in the matrix.

JM: So that's not really a large part of it is it?

F: Oh my gosh no. It isn't. No, it's you know we flipped it over on its back. Matrix 4.0 million acres, 16% of the federal land. And then the AMA's are another 1.5 million acres, 6% of the federal land.

JM: Very interesting. I think I've pretty much gone through everything I could think of to ask you.

F: You could always circle back on me.

JM: Okay. That'd be great. I'd appreciate that.

F: You bet.

JM: Is there anything you can think of that might be good to add in terms of specifically salvage logging and ecological knowledge getting into policies?

F: Not really. No. There's you know I gave some congressional testimony on the bill.

JM: I think I've read some of your...

F: Okay so that's my best statement. And there is another book but it's very general and you won't give anybody any better flavor than, okay you've seen that.

JM: Yes, definitely.

F: Okay. So then you've got all my current thinking on it.

JM: All right. Well it's...

F: You can have that if you want it...

JM: It's been a real pleasure for me to have this opportunity to talk with you.

F: Well obviously I like to talk about it.

JM: Yeah great, I'm glad. I hope I haven't kept you from getting anything to eat or anything like that.

F: No I'm going to go ahead and head home at this point. I think what do we got about 5?

JM: About 5:30.

F: Oh wow, I've got to call my wife. It went a little longer than I thought we were going.

(End of recording.)

Appendix B

This interviewee will remain anonymous. The interviewee is currently employed by the Forest Service as an Ecologist. The interview took place on May 20, 2009 by phone.

JM (Jothan Mcgaughey): Hey, how are you doing?

R. A: Good.

JM: Good. Yeah, just to let you know I'm recording this but like I told you before I won't use any of it until asking your permission for specific parts.

R. A: That's fine.

JM: Okay. And to get started, we talked about this a little bit before but what I'm interested in is the process by which ecological knowledge gets incorporated into policies and specifically I'm looking at salvage logging. And I understand that you don't have a whole lot of work experience with that per se but as a forest service ecologist you do have a lot of experience with getting this scientific ecological knowledge end of policies. And I was wondering if you could maybe start out with talking generally about that?

R. A: Well, we have a program here in the region with ecologists organizing areas. And by region I mean [Redacted] national forests. They have them organized into six areas and each of those areas has two to three ecologists. And ecologists have many roles but they have two main roles. One is to implement regional goals and the other is to make our local needs for services. And that latter regard there functions very much like extension agents. They're providing information to people in the field. They're helping to solve problems. They are generating publications and maps and data people find useful. And at the regional level, they contribute there as well in much of the same way with data products and mass publications. They also have a role in advising the NEPA process, not fully engaged with it all the time but they have an advisory role and those teams need information or to sort of fill in the blanks. That's the basic of what we do. So in all salvage logging, we would have a role in post fire monitoring and helping to design ways to answer those questions.

JM: I see. And in, how is the post fire monitoring done? I mean, are there long scale studies that are going on?

R. A: Well that's a good question because we're in the process of getting our work on this better organized. We have a regional field vegetation team that interagency forest service and BLM and all the disciplines are represented. We over the past five years have established some monitoring standards for post fire events and fields treatments but we struggle to implement them. Another thing we are doing is collaborating with research. We're ramping up our interest in this. We're working with [Redacted] at the lab in [Redacted] on an adaptive (unclear) idea whereas you work with the researchers to set up monitoring post fire and then also potentially with field treatments as well as an adaptive management and a learning exercise. And Bernard has met some success on that, on the biscuit (sp?) fire working with Tom Sensnet (sp?), our ecologist down there.

JM: When you say that you struggle to implement them could you elaborate on that a little bit? Like what are...

R. A: Monitoring is very difficult to do in natural resource management to get funding for it, to maintain the forests. Logistically it's difficult to set up a study and have it carried out over a number of years. We've had problems that you know, 19 forests doing 19 different ways. Although in recent years we've been able to get things a lot more standardized. And you have you know problems. Other agencies look at things in different ways. In a larger sense you also have problems and your different interest groups approach it in different ways. Some people see it as threatening. Some people don't like the answers that they may discover and that's true with both liberals and conservatives. So it's a very difficult thing overall and it's often sort of an afterthought in the process. And you know we're really trying to work with the different groups to make an integral (?) process of what we do. But that's a challenge.

JM: Right. Do you, from your experience, would there be any, have you thought of any ways to improve that process? Or can you think of ways that it might be encouraged better or that it would have a better success?

R. A: Well as I said, there are a number of things that are being coalescing now with, we do have regional standards now. We have the ecology teams for these six areas. So there's a delivery mechanism. We have the field vegetation team which deserves to coordinate all this and it's interagency and it's interdisciplinary. And then the final piece of the puzzle really is to incorporate this adaptive management strategy so that we build it right in to EIS's or EA's right from the start. You know, in some cases making learning one of the specific needs or the

objectives of the NEPA effort. But we're, in a way we've got this figured out but we just need to figure out how to better implement it and improve on what we're doing now.

JM: I see. Do you think that that has to do with possibly the funding for it? You know, having the money to do it?

R. A: Yeah well it's chronically underfunded but where there's a will there's a way. You find out ways to do things. They take time and effort and patience. But you really don't have a constituency that's clamoring for monitoring. That's the main problem from a government perspective.

JM: I see. So, do you think if there was more call for the monitoring... And do you mean that as it pertains to adaptive management I guess?

R. A: Well we think adaptive management is a way to make monitoring more attractive and less threatening by say that this is a way that we're going to learn together rather than this is a way we're going to police what you've done or this is a method that some people may feel has an objective to it.

JM: Do you think, you say that if it was more accepted or maybe more of a call for it, do you feel that public education or a call from the public is an important part in that? Or do you think it's maybe not so much with the public but maybe more with the partners that are involved with it?

R. A: Well in the long run to do anything you want to have public support but that can get (?) eventually challenging and it takes a lot of time and patience because as you know it's a pretty diverse country with a lot of different interest groups. You know, finding that common ground and that consensus on natural resource issues is very difficult. There's a lot of mistrust that's built up over the years. And you know frankly our understanding of the environment is much more complex than it once was and our population is bigger and more complex.

JM: Yes. I think that that's a really excellent point because I believe that so much has been learned in recent years in general with ecology that is really you know changed the way people understand it and use it for purposes. Do you have any thoughts on that or can you think of any examples of maybe major discoveries I guess in the field?

R. A: Well I think it is possible to build that consensus that takes exceptional leadership and a lot of time and hard work.

JM: I see. I guess getting back to the money aspect for a moment. Do you know if the KV funds get used for monitoring or adaptive management?

R. A: I don't believe they are at present. I could be wrong on that. I'm not a KV expert. There were issues in the past about whether it was appropriate or not to use KV funds for monitoring and you know back in the 90s or late 80s and I think the agency sort of went back and forth on that. And just speaking for myself I never really got a clear picture of it. So I prefer not to go that way, not to try to use KV funds for monitoring.

JM: I see. Let's see here. Do you think that it's a fairly straightforward process when things are learned about ecology to bring them into policy? Or do you think it's a mixed bag? And what sort of obstacles have you experienced with getting ecological knowledge into policies?

R. A: Well you know our role is advisory and in a democracy the elected officials you know ultimately make the decision and the hope is that they represent the population as a whole. And as you know that's a very complicated process. But I think conceptually it's set up the right way. And I think society ultimately needs to make decisions about what their priorities are and an opinion poll as consistently ruining the environment is a lower priority and I think what we do reflects that. Our funding has been declining for years and at the end of the day I think the public as a whole doesn't make the environment a priority, particularly in this economic downturn. Although you know I think so you work with things as they are and I think you know with the stimulus funding and much of that's gone into forest work, that's an opportunity to build public support just as the government did during the 30s with the CCC. I think that's an opportunity and it remains to be seen whether the agency will embrace that and run with it.

JM: But one of the things that I've been interested in and really impressed with like you said you feel that overall it's a good system and I guess I'm referring to the you know the endangered species act and NEPA and you know the clean water act and all those things that came about in the Nixon era and how those laws you know provided for public standing in that process. Let's see, where am I going with this question... Do you think that it's, well I guess you know it seems that with that mark is a transition. That maybe the forest service was concerned with timber harvesting for the most part before that and then during that time it

sort of got switched over to conserving biodiversity and being more ecologically conscious about how things were done. Do you feel that this switch is taking place... Do you think like we're still involved in that switch? Or do you think that it's happened?

R. A: Well I think it's in the rearview mirror and I think that in reality happened a long time ago. And what the agency is struggling with now is to find a new purpose which I don't think it has yet done. And that may you know reflect the public's ambivalence as well.

JM: I see. So you think that maybe the agency as a whole is waiting for direction from the public via a vie elected officials?

R. A: But I think the agency could be asserting its own leadership and building those kind of coalitions to develop a constituency on its own you know entirely within policy and the law.

JM: I see. And so I think did you say that you think that they could be doing a better job of that? Is that what you're saying?

R. A: Yep.

JM: I see. And why do you think that they're not I guess?

R. A: Well it's a complex set of reasons. I'm not sure that that's a problem with the forest service. That could be a problem countrywide in the way that we deal with government and how we address problems.

JM: I see. Would you characterize it that certain practices are institutionalized and that there's a you know a leftover sort of way of doing things that maybe hasn't caught up with new ideas?

R. A: It's complicated. I'm not sure you can give a simple answer to that. Like I said, it's a very complicated country now. We're in an economic downturn and leadership is a much more difficult thing than it once was I think. People have a general distrust of government. The issues are much more complicated. You know it seems to be very difficult to ask people for any kind of sacrifice, which makes the government very difficult. Yeah, I mean, I guess if you come from a bureaucracy you tend to follow the roles and norms of that rather than break outside the box.

JM: Yeah, it seems that well it's kind of like turning a boat around or something with the bureaucracies, that there's really a whole set of practices that are there and that to change the way things are done takes a lot of time and takes place on a lot of levels. So that could be you know making a transition a more lengthy process than maybe it should be or something.

R. A: And you know that's where leadership really is a challenge because you may think of certain policy ideas that are rather straightforward and make sense but then when you try to implement them you find out very quickly that people protect their interests and it's difficult to overcome that. And that's true across the political spectrum.

JM: Yes I see. And there's quite, I guess there's quite a history and people are obviously very invested and are used to things working a certain way.

R. A: Well and you know and then people have their own interests and organizations have their own interests. And it may be in the interest in certain organizations to keep fighting the timber wars and to refuse to collaborate with the forest service. And it creates straw man and false arguments. And then you know then there's the whole you know sheer enormity of the problem too with say climate change that becomes a very abstract thing for people when they lose their job or trying to get healthcare.

JM: Yes. Yeah, do you feel that if we weren't in such an economic downturn I guess that this issue would get more publicity and...?

R. A: Well you know in contrast I think it's almost easier in a way when there's a sense of crisis to articulate to the public some changes that may need to be made. And I think in our own case in the forest service we can show some real leadership on the whole carbon sequestration and setting out the forests and then so forth. And like I said it remains to be seen whether we seize that and build a new social contract with the public.

JM: Right. On the question of carbon sequestration you know there's some arguments on both sides of the issue. And I guess I'm speaking or thinking specifically about the old growth issue. I mean, on one side you have people say that there would be more carbon sequestration if those trees are taken out and put into wood products and then new trees put in there that will sequester more carbon. And on the other side there's people saying that there's a greater carbon

sequestration in the older growth lake successional reserves. What's your opinion as an ecologist on that issue? Or do you...

R. A: Well you know in the long run the system has an ability to fix so much carbon over time. And you know what I think we may be talking about is the short-term capability to fix carbon and then opportunities to reduce other forms of carbon use like the whole biomass issue. If we could take these forests and thin them out that would reduce their short-term fire risk. So we have if this were, it's a bit hypothetical, but if we could thin the forests out it would not burn with the same severity. So we would reduce that carbon loss there and then we could turn around and use the fittings to fuel power plants that would reduce our dependence on natural gas and oil. And you know it's an attractive model that there's a number of logistic and economic problems with it. But you know I think we could be showing some leadership there.

JM: I see. Well from what I understand of the thinning process is that often the fine fuels end up being left where it's the larger fuels that get taken out. And so that there's some studies that suggest that that increases the short-term fire risk.

R. A: Right. It all depends on how you do it. And the methods to remove those (unclear) fuels of course jack up the cost of the thinning.

JM: Right. It's a lot harder. As an ecologist, how do you stand on just the salvage logging issue itself? Do you feel that it should continue? Or do you think that maybe east side forest with what's grown, the shade tolerant species that have come in over the years that those sorts of forests that ecologically speaking it would be good to salvage log those areas? And is there a difference between the east and the west side? Can you speak to that a little bit?

R. A: Well I'm not convinced there's an ecological reason for salvage. Now there may be economic reasons but there's nothing inherently wrong with that. In a way, this issue has been a way for both sides to keep fighting the timber wars because the amount of timber taken out in salvage is relatively small. And but you know to argue that there's ecological benefits to salvage; I'm skeptical of that. And again you know it's really our role to provide the data to help answer these questions. So that's what we focus on.

JM: I see. And so you do the monitoring I guess and then after a study is designed and funded and put into place and then you get some results, can you describe the next step in the process? Or am I even correct in assuming that it goes that way?

R. A: Well like I said, we struggle to do a good job on this. And in some ways we're just getting our act together as a regional program on this sort of monitoring. Now there is a number a folks who have done academic studies and some of our folks have been cooperators on those. But in terms of coordinating a regional strategy, we really just are starting to get together. But yeah sure the findings would be made known to everybody and hopefully would shape the NEPA documents that come out.

JM: I see. And now is that, but how does that process work? Would it be considered like a technical report? Or how do you disseminate that information to the rest of the agency?

R. A: Well there's a variety, there's journal papers, there's journal technical reports, there's presentations to different groups, there's working with the folks in the field one on one. Those are all avenues for communicating.

JM: I see. And is there, well it sounds like that there's these different avenues but it doesn't sound like that there's you know a thought out, well that's not what I mean to say, that it's not regulated in a way like that there's not a specific path from inside the agency ecological knowledge to get out or is that not true?

R. A: Well you know it's a complicated problem and when you start one size fits all regulations you very often run into problems. And you know we tend to say that you know certain decisions should be worked out on a case-by-case basis on the ground. And sometimes people feel like that's a cop out where we're banning our duties. But as you know, nature is complex and varies from one place to another and it's difficult when you make one size fits all prescriptions. And you see that when things are implemented. Now on the other hand you know like I said, people don't trust you and they're going to want to see some numbers on things. But again you know both sides keep fighting the timber wars and we spend a lot of time on things that really are now relatively minor issues.

JM: What do you think, why do you think that timber wars continue? And I guess you're speaking about what started happening in the early 90s with the beginning of the Northwest Forest Plan?

R. A: Well you know I guess its human nature to continue you know on the path that you're on because that's what you're familiar with. And there are legitimate reasons to criticize things at times. And I'm not saying that we should just drop

these issues and ignore them. But for example when we did the ten-year report on the Northwest Plan, there were about seven times as many acres lost to fire, as there were to clear cutting. And that tells me that it's not the issue that it once was. You know within the region I think we have real natural resource issues and most of them are not on public lands. I think maybe the number one issue besides climate change is development, lots of land to you know constructing homes and shopping malls and what have you. And then there's a you know kind of a similar thing on water quality issues but again most of those problems are off the national forest. I think sometimes we become a scapegoat for other issues and it's easier perhaps to you know raise money and get people worked up about the government in which they inherently distrust anyway than to talk about private property rights and my summer cabin.

JM: Yes. Well, how do you feel that this issue of lots of land elsewhere on private land and also you know I'm familiar with up in Washington that the state DNR lands, the trust lands, are managed really for timber production and so that there's less of the wildlife support from that land than if it was managed the way the national forests are. I guess my question is, do you think that the loss of land that's happening and that other issue with like private tree farms and that sort of thing, do you feel that this puts more pressure on the forest service to play a role of having managing for biodiversity in wildlife and that sort of thing because of the loss of land elsewhere?

R. A: Well it's certainly a pressure. And there are laws that affect federal lands that don't affect private lands or affect them to a lesser degree. Things like Endangered Species Act and of course you know the forest planning laws. Now I know there are state forest practices acts but they tend to be not as stringent as the federal ones.

JM: Tom, can you talk about an example or maybe two examples of how new ecological knowledge or even older stuff that how it gets incorporated into policy? Like maybe a good example where it happened with relative ease to...?

R. A: Well you know the whole fire thing, you know we used to put out fires and you know we invented Smokey the Bear. But then research started coming along showing that excluding fire was causing problems. That it was in some cases outside the natural range variation that some areas were building up fuel levels that were not occurring historically and then we were getting comparatively larger fires. Now again it's not a simple issue either because there's you know climates involved and weather patterns and different ecosystems. But that's one where I

think the management community embraced that pretty quickly. It doesn't really question that anymore. I think anyone in this profession agrees that not all fires are bad, that it was a mistake to exclude fire so consistently. But then again when you try to change things, you run up against most of public concerns. It might be very well for me as an ecologist to say well it's ok for this forest to burn up because that's what it's supposed to do. Ecologically I know that's true but if there's a whole network of summer cabins in that forest, I don't think people are going to stand by and say yes we support ecology and want the forest to burn.

JM: Do you have any idea the timeframe of that change that happened? Like you know how long it took?

R. A: Well it was really jumpstarted by the 2000 fires in Idaho and Montana. That really caught the public's attention because there were very extensive fires there and smoke in the air in Missoula and other places for days on end. And Congress got involved and they commissioned you know high-level studies. And that jumpstarted a number of things from the agency like land fire mappings of vegetations and fuels and associated technology transfer and it's guided I think a lot of our thinking. So it's really now that our firefighting efforts are constrained by you know this issue of the wild land urban interfaces we say that that area adjacent to communities and homes and other public concerns like smoke. We'd like to be doing more prescribed burning than we are now but one of the issues we run against is that people don't want smoke in the air for health reasons. They don't want wild land fires to go loose because that may threaten their homes and communities. So you find very quickly that you can gain public acceptance of the abstract but when it starts to make concrete impacts on their interests then it becomes very difficult.

JM: Right, yes. Can you think of an example where it wasn't so smooth? Well it sounds like it's still not so smooth with...

R. A: Well the whole thing with climate change, the previous administration denied it for a long time. And then towards the end of the administration they embraced it. But even in the current environment where there's been you know a substantial change in administration and outlook, my hunch is that concerns for climate change are going to take a backseat to the economy, healthcare and other issues. And then something has to be sacrificed in the efforts to familiarize (?) climate change. There won't be these other things.

JM: Right. Well this is maybe off the topic, but do you think that there would be any way to address the two simultaneously?

R. A: Sure. And that's what leadership is, isn't it? It's building a coalition on common goals. It's a social contract through your government that what you think and what I think aren't important. What's important is the goal that we commonly agree on. And I think you know there could be public initiatives with you know renewable energy sources. And in our own area of policy we can look in the national forest to things we could do to mitigate or adjust to climate change and still get people jobs.

JM: Right. Yeah, I don't know. It seems to me that there's a big possibility for something like that. You had mentioned the CCC groups earlier and you know the use that they were put to and you know it seems to me like the time is fairly ripe for a similar type of thing happening in terms of climate change and putting people back to work. Well, let's see. Let me ask you about this. It seems to me that this country has a fairly rich history involving civil disobedience in issues. And I know that there has been civil disobedience with regard to salvage logging and you know I guess the argument can be made that you know people have tried to work things through the proper channels and have felt like that that's not working or that there's not time for that to work and then have resorted to civil disobedience. Do you have, can you say anything about that, what you feel about that?

R. A: Well you know I'm a firm believer in civil liberties and you know I tend to look favorably on civil disobedience as long as you know there's no violence or (unclear) damaging property. But you know again I say it's kind of in the rearview mirror. And I think that as people are fighting about it's long over, that you know again I think the amount of salvage logging we're doing is rather minor and that there are much more important issues to focus on, ones that maybe aren't so dramatic. Or again it's an easy target to beat up on the federal government because there's a widespread public distrust of government and some of that is well founded and some of it I think is sort of a cultural norm that's not always born out by reality.

JM: Well hasn't salvage logging, hasn't it increased in the amount that it has increased it's percentage of what is harvested? Or is that not true?

R. A: Well sure but you know if I used to pay you a dollar an hour and now I pay you two cents an hour, and half of that's you know coming from one source, that

you know the amount's so small, you know we're looking at relative proportions is not an accurate way to look at the picture I don't think.

JM: Well you might not be the person to ask this because you're not involved specifically with salvage logging but do you happen to know you know the acreage or the board feet?

R. A: I don't.

JM: Okay.

R. A: I don't. I suppose if you wanted to know I could find out but...

JM: Okay. Well, I was going to talk to the ecologist in Region [Redacted] so that person may have those numbers as well. Well, [R. A.], is there anything that you could say about this process that we haven't touched onto yet? Anything you can think of that would be helpful?

R. A: Well I think we've covered the bases.

JM: Okay. Well you know I certainly appreciate you taking the time to do this. I can't really think of anything else to ask you at the moment but I sure appreciate you taking the time and helping out like this.

R. A: Sure.

JM: Okay. Thank you very much. Is there anything that you need from me or anything?

R. A: I'm just curious about your studies. So is this a thesis that you're working on or?

JM: Oh I'm sorry. Yes it is. It's for a Master's of Environmental Studies out of the Evergreen State College up in Olympia, Washington.

R. A: Okay. Yeah, great.

JM: Yeah, and yeah hopefully I'll be done by the end of the summer with it.

R. A: Well good.

JM: Yeah, and I'll certainly send you a copy and ask your permission to use this. And is everything that you've said today, is that okay to use and put your name to?

R. A: Sure.

JM: Okay. I certainly appreciate it.

R. A: Okay.

JM: All right. If I have any follow up questions, can I email them to you?

R. A: Sure.

JM: Okay. All right, [R. A.], thank you very much.

R. A: Okay, thank you.

JM: Yep. Bye-bye.

R. A: Bye.

Appendix C

This interviewee will remain anonymous. The interviewee is employed by the Forest Service as an Ecologist. The interview took place by phone on May 25, 2009.

JM (Jothan Mcgaughey): This is Jothan. Hey, how are you doing?

R. B: Well. You?

JM: I'm doing okay.

R. B: Good.

JM: Yeah, like I said before, in this interview I will get your permission to use anything by your name if I decide to.

R. B: Great. I appreciate that.

JM: Yep, not a problem. And so just to start out with...by your name if I decide to. Yep, not a problem. And, so just to start out with, you had said that you're not really so much involved with the salvage logging but that you are involved with getting ecological knowledge incorporated into policies.

R. B: Yes, yep.

JM: So as an ecologist for the forest service, I was wondering if maybe you could start out talking about that in a general sense and maybe give some examples of that possibly?

R. B: Of involvement of science and management?

JM: Yeah, and I guess the you know specifically like any cases you've been involved with where maybe from monitoring or adaptive management plans that sort of thing where studies have been done and you've discovered something or something has come to light that may be an example of bringing that to fruition and into policy.

R. B: Okay. Well I can give you some sort of ongoing examples right now. The first thing that you have to remember though is that decisions that get made by land management agencies like any organization with respect to the way you're going to manage something are based on a lot of different factors and science ends up being one of them. Right, so you've got social issues, you know you've got economic issues, you've got political issues (chuckles), right? There are logistical issues, can we do it, you know? So all of those things are really, really important to understand. And so in the way these things work is that from the science side, some input can be provided but in many cases, in no case is it the only thing that's being considered. And in many cases it may very well be a minority viewpoint (chuckles), right? I mean that's kind of the reality of it. So with that in mind, I'm just trying to think of some good examples. One right now is on the [Redacted] National Forest in the [Redacted] Wilderness. And there we, that wilderness area supports the last populations of the state fish (?) (unclear), right? And that whole area is contained within four grazing allotments. And the grazing there has been going on there for a really long time, I mean you know a century or more actually, 120-130 years maybe more. And early grazing, particularly sheep grazing, ate up parts of the landscape pretty seriously. The way that grazing is done today I think is a lot lighter on the land but be that as it may, the big issue there was you know our grazing practices appropriate in a wilderness area that's supporting you know the state fish which is kind of on its last well it wouldn't be leg, the last caudal fin I guess. And so based on some evidence that the [Redacted] National Forest had from water quality monitoring that had been going on, they decided to shut, to close, well the term is vacate. In other words, they didn't shut the allotments down but they forced the permittees (?) to remove their cattle from the allotments, from two of those four allotments. And then a decision was made, and you know there was appeals and a bunch of things going on, but basically in the end a decision was made to age up to about ten years as we gather data and sort of what things settle out to make a more or less a final decision on whether or not we were going to let cattle back up into those two allotments. So first of all, the very decision to actually close the allotments was based on primarily on water quality monitoring. But what we're doing right now is the forest and my program, the college program, and some other people have been involved in a lot of different studies looking at different facets of the status of the fish populations, the streams themselves both biologically and physically, and the meadow vegetation that surrounds the streams which is where most of the cattle impact happened, or well many of them. So the idea is that in the year 2011 that these different monitoring studies will then have had you know sufficient time to kind of determine what the actual current conditions and trends are and that would at least theoretically feed into the forest decision as to what it's

ultimately going to do with those two allotments. The decision is going to be very political. The Cattleman's Association and some other groups have made it clear that they are going to be heavily engaged in this. And the allotments actually are owned by the [Redacted] Corporation. So there's quite a big political V ridge (?). So that's going to be an interesting one but that's an example of you know the kind of the way that I think that in certain circumstances science can you know provide the necessary information to make you know an important land management decision. And then like I say you know in 2011 there will be sort of a need for a more significant decision made and that is as to whether or not they want to completely actually close those allotments and shut them down completely. And you know to some extent at least, science will play a big role in that and theoretically the primary role but that's tough to say.

JM: Yeah. With these studies, as you go through the studies, how does that information get disseminated to management? I mean do you send in reports or you know what's that, how does that work?

R. B: That's a good question. It can be done a lot of different ways. Since we are internal, the you know its a little bit easier because there's a lot of word of mouth stuff that goes on. But we submit reports as well. It really depends on the circumstances. It depends on who the individuals engaged are. If it's something that is (yawning)... Forgive me. I'm just bushed from this week (chuckles). It's something that is you know highly likely to have a high profile or there's likely to be an appeal or a court case or something and of course will try to generate a paper trail. So yeah I think typically what will happen is there will be reporters who, and then I, more often than not I will try to get a summary of the results out into a scientific publication somewhere in a scientific journal because results in a periodical scientific journal hold a lot more weight in court proceedings than just someone's opinion. So if possible that's the way we do that.

JM: Okay. Let's see here. Do you feel that the different factors that factor into a decision making process like you're talking about, the social, economic, political, logistical... Do you feel like that they're well balanced or would you say that this is kind of one of those things that depends on the situation I guess?

R. B: I think it very much depends on the situation. You know I mean it depends a whole lot on, oh it just depends so much on the situation. I mean, some, well you know how it is. I mean the politics in particular, if you have you know if you've got a group or a person or an organization that you are sort of at odds with that's kind of high profile and strong political connections, then it's likely that politics

are going to play a really big role in the decision. And what you, and so, if it's, where science makes a difference in those kinds of decisions are where you've got really big ecological issues, say. You know what I mean? I mean you know in some cases you don't, you know how it is. I mean it's like a court case right? You don't sue someone if you, you just don't do it if you know number one they have deep pockets and number two that they you know are completely and obviously in the wrong. You'd be crazy, you know what I mean, to even try it. And so you've got to, with every one of these projects you go through those kinds of decision-making processes. I know right now for example the Department of Justice in our, the (unclear) within the forest service the Office for General Council, OGC they call it, they have been pushing a sort of a wave of lawsuits for fires that we've had to combat and put out that have been caused by other people right? But accidents in which there was clearly a breach of law or something or regulation. And you know there are hundreds and hundreds of fires caused every summer by people being negligent. And if the people don't have any resources it's crazy you even go after them. Why do it? You know unless someone, unless you've got a criminal issue where someone perished as a result right? But don't go after them if they have deep pockets and then the issues there become you know can you document what actually the ecological issues are. And then that's where science will get brought in. So you know sometimes science itself may be the principal issue and sometimes it may not be and it may be asked to just support a decision that's been made for another reason. I mean you know how it goes. I mean someone like me has very, very little influence on those kinds of decisions.

JM: I see. When you were talking just a moment ago about you know that it's kind of crazy to go after somebody who has a lot of money because of the I guess you know able to buy the, or get really good lawyers and have all the resources. I think in salvage of, because there's somewhat of a time constraint tied up with the economic value of the wood that anytime those groups file things into court that it actually is somewhat successful because it can slow down that process. And I think that there's been cases where the forest service has withdrawn salvage sales because they got dragged out for so long.

R. B: Oh I think there are many of those cases. I think that's something with the litigant's perspective. I think to a great extent that's the game plan. You know, you know how it is. I mean you just basically out play within the parameters of what a system will allow you to do in the way the court system is set up and the way you know action works here, if you can get an injunction that's good enough. You know because in the end it will drag out. Once you head into your second year then it's over because you simply cannot make, you know, there simply can't

be any financial offset to actually try to get the project done. Now in some cases there may not be a financial incentive may not be the major reason to go actually do that work. I'm thinking of likely a glorifier (?) there in [Redacted]. I mean they're already well beyond any sort of financial payout. And what they're interested in is a couple of things and one is getting a core area within that fire successfully replanted. But also they've got, a lot of people use that forest out there and they've got some pretty major concerns about hazards from falling logs. The other thing is, that whole fire are is in the wild and urban interface and so the other thing that they have to worry about is once the trees start coming down, you create a situation where it gets very difficult to fight fire in there. And I mean you just can't put people in there. And out in the middle of the woods I don't think that's much of a concern but it definitely is once you get in you know within you know a mile of homes. So in a case like that I don't think, and you could drag stuff out as long as you wanted there but if the agency decided that indeed this was something they just absolutely needed to get done for other reasons then it might not work quite as well. But in most cases I think a lot of the salvage is (chuckles) kind of sticky territory. I mean let's be candid. I mean there are, in some cases there may be (chuckles)... I mean I don't know. I don't know whether you can make the argument anymore really that there are ecological reasons per se to be doing salvage logging. That's a tough one. I mean there certainly are fire control reasons to do it and there are certainly economic reasons to do it and I don't think those should be given short shrift. And the reason I say that is because you know this is the Forest Service. It's not the Park Service. It's a very different agency. And Congress perceives it as a very different agency. They will always operate under the assumption that a significant portion of the budget of this agency is going to come from you know production of timber for example. And whether or not that's in the long-term future of the agency I think is a question that has to be answered. But that's the fact and as a result it's been very reluctant to directly fund you know any of this kind of work. And that's where you know the way things get done in the US is to get done by the private, by private enterprise, right? So if an agency wants to conduct something like that it doesn't matter what the agency is, that typically that's going to get done by a private concern. And that private concern is going to win a contract through some kind of bidding process and then they are going to have to make a profit on it, right? Because it doesn't get done otherwise. And currently the only way they'd really make a profit is if they can get some big trees out of it because big trees, you know the whole cost efficiencies are such that you basically need to have bigger trees to make a profit given how few mills there are left, given how expensive fuel is starting to become and how far you have to transport that stuff. There's some major cost-benefit issues. So you know that's kind of the rub and I think that so

agencies, at least for a while there, there was a bit of a loophole. You know it didn't last very long but this idea that oh you know we burned up these forests and then we need to try to you know salvage some of that at timber value. I think that that's, I think that's become very uncommon anymore because it's been made so difficult by the certain litigation environment.

JM: Right. In terms of this aspect of the funding, is that, are you talking about the KV fund by any chance? That through timber harvest that the forest service has funded through that KV fund?

R. B: Well, you mean in terms of... What do you mean?

JM: Well you had a little bit earlier you'd said that the forest service is funded through those type of...

R. B: Oh yeah, yeah. No that's, yeah, exactly. That's right. KV is the main portion of that. And it used to be a huge part of our budget. It was massive. It's not really so much anymore.

JM: Oh it's gone down has it?

R. B: Oh yeah a lot. I mean we don't cut anything anymore. I mean if you look at the volume that's cut. Well certainly you're familiar with the recent settlement there on the Northwest Forest Plan, right?

JM: Well I mean I'm familiar with the Northwest Forest Plan and my understanding at the present moment is that it's time for it to be reworked and I think that they, Fish and Wildlife was redoing the spotted owl portion of it and that the Northwest Forest Plan to be redone was sort of waiting for that to happen. Is that correct?

R. B: Yeah and what I mean is that the timber industry sued the government over the fact that the plan had projected you know when it was instituted and projected out sort of a minimal amount of timber volume that would be coming off of the forest. It itself was a massive decrease from you know what has been getting cut. And what's actually being cut is actually significantly less than the minimum amount they thought that would be coming off. And so there was recently a settlement by which there is supposed to be increased amounts of logging on certain parts of the Northwest Forest Plan and actually the government has been allocating money to the Forest Service to begin the you know there's a variety of

different processes that have to go on to begin to do those kinds of sales. And I think most of those sales are going to be happening on the dry side forests where there's some you know fuel thinning issues in which you could kind of tie those two things together. That's actually a big part of all of this is just that whole economic side of a lot of these plans haven't really ended up panning out like people thought they were going to largely because of sort of the whole litigation environment that developed.

JM: I see. So I guess you would say that that side of things has been effective for the environmental groups?

R. B: Oh yeah. No they've been exceedingly effective. I think you know in some cases for good reason and other cases for not good reason I think that you know thing swing in like pendulums right? They kind of go one way and then they go the other. And I think that what we're in now though is, and I don't know that the salvage logging is such; well it's kind of connected to this but maybe not so directly. But you know we've got the long term effects of fire suppression to deal with now and climate change and you know sort of traditional logging practices that just all of which are resulting in extra fuel in the forest, a lot of densification and pretty severe fires. You know when they do get out of control they tend to burn hot and they tend to burn a lot of stuff. And so yeah the salvage side of it is just an interesting one. It comes down to the questions of you know what you value the forest for and what you think about you know what are the long term visions for those landscapes versus short term visions.

JM: Yeah, and well I guess, yeah that kind of gets back to I guess the early part of the Forest Service history was really you could say pretty much timber production and I guess with the passage of laws and Endangered Species Act and NEPA during Nixon's time that it sort of, that the paradigm shifted away from economic concerns to more of biodiversity and ecology concerns. Could we speak about that at all? (Buzzing sound) This phone seems to be... There we go. Are you still there?

R. B: Yeah I am. You're kind of cutting in and out, yeah.

JM: Yeah there's something that happened with the phone but I think it's okay now. Did you hear that last question?

R. B: Yeah I didn't hear all of it, no. I'm sorry.

JM: Okay. Well I was kind of wandering what your opinion is of if the Forest Service has successfully made this transition from kind of being a timber based sort of agency to I guess a transition into multiuse in there and that now I think what I understand is from the Northwest Forest Plan that it's really supposed to be more of protecting biodiversity and along ecological concerns. Is that a good characterization of it do you think?

R. B: Well I would say the thing you have to understand about the Forest Service right now is really they are primarily a fire department right now. I mean that's just a fact of the matter. Basically half our budget goes to putting fires out. And that is the, the difference between that and when it was largely a timber organization is that the timber side of the organization brought funds in and that's not what goes on with fire. It's essentially just a dispersement. So it's really fundamentally changed the way the organization is and the agency is organized and all those kinds of things. But to answer your question more directly, I think that currently as you know it's difficult to change the nature of agencies because it's like you know gradual change versus revolution. You know I mean gradual change, it does happen. It just takes a long time. And a lot of people get frustrated about that. I can tell you that the rhetoric in the agency has changed a lot. Some people would scoff at that and say that's all that's changed but I mean that's always the first step anyway, you know when you start realizing that there are other issues. But the fact of the matter is that when you look at the agency's current you know strategic goals for example and kind of our focus areas. I mean basically they are at least as stated by you know the headquarters they are climate change, they are you know ecological restoration, they are ecosystem services, you know that sort of stuff. And obviously taking for granted all along that that you know fire management is a huge part of our job. But what I would say, and this is where you know you have to get really careful in how you use my name in this but I will just tell you that although there appears to be a desire within the agency to make the shift towards a you know a what's the right word... Well let's just remember the Multiple Use Sustained Yield Act that's old stuff, right? That was late 60s, right? So the concept of managing for multiple things, that's decades and decades old, all right. So the agency, well we have most of the forests (?) have bought as to a lot of wildlife biologists. You know we've got soil findings (?) now, we've got hydraulics. We didn't have those people before. But the fact is that over the last 10 to 15 years, the numbers of most of those people have been dropping fast. And they were largely funded off of timber receipts, all right, because you need those people to do that work. And the fact is, is that because the budget of the agency has not been going up rapidly and in fact we've lost a lot of people. I don't remember where we are but we, you know, we're tens of

thousands of people less than we were in the 1960s and 70s. And the, you know, I don't know which staffed areas the biggest losses are in but I can tell you that with respect to for example people who are called ecologists in the agency that in [Redacted] we lost 50% of those people in the last 10 years. And I know it's no different for soils or hydrology and for some of these other staffed areas. So I guess the reality is that even though I think we're starting to say the right things, my opinion is, is that we are not staffed to be able to do those things. And I think you would find pretty broad agreement there depending you know of almost independent of who you talk with, whether it was an external/internal you know environmental groups will tell you the same thing that they're just almost chagrined at, how poorly staffed we are on the science side. And you know that's going to change and it is changing. But I think it's a critical issue because when we make these suggestions that you know climate change, ecosystems services and restoration et cetera are our top goals, we've got to have the right people to do that. You can't for example you couldn't say that fire management was our top goal and then have an agency that was 95% you know bondness (?) you know and hydraulics (?). It doesn't work. And you know we're kind of in the reverse situation right now where I think we're getting a good handle on what the actual issues are but we have not had or been able to yet make the kind of changes and modifications in staff to be able to actually appropriately deal with those kinds of issues. And I think you see that to a certain extent in the record over the last say 10 years in, well you brought it up. You know some of the salvage logging stuff for example. I mean come on let's be candid. I mean most of the salvage logging issue came from the fact that that was an economic imperative that was driving that, right? But you know we try to clothe it in sort of a quote-unquote "ecological" terms but you know there isn't for a lot of that stuff there just really isn't an ecological term to cloak it in. I mean come on you know (chuckles). And we lost a lot of court cases for a lot of years and continued to because we just don't really have the right kind of staff to be able to make you know a coherent case for the ecological necessity to do a lot of these kinds of things. And that's basically because really you know what we were for a long time was a timber organization. We're now a fire organization and you know we know how to do that and to do this but in terms of doing a lot of that timber and fire stuff for ecological reasons, we've never been really good at that and we need to figure out how to do that. So I don't know. I got (unclear) growing pains. I think all you know some of the other agencies still (unclear) has exactly the same issues, probably even worse. On the other hand you know National Parks System, the National Parks Service has got a much easier job it. You know, they're not managing for multiple sustained use. You know they're managing you know landscapes and natural usually can (?) for people to go check out and walk around

in. And so they haven't had nearly the trouble you know dealing with sort of the schizophrenic nature of how you manage for you know timber, watershed, fire suppression, recreation, watershed, wildlife, rare species. You know you name it all at the same time. Or oil and gas, you know, all that stuff, coal. You know and so you look at their staff and again I speak from you know from the side of the agency that I work in, from science and from ecology and that. They've got, you know, they have three, four, five ecologists on every unit and they have permanent standing crews of technicians who are out there monitoring and doing studies on a constant basis. I mean every unit has got a couple of these crews that are there every year. And we don't have anything like that although we should. But the question comes down to whether Congress is ever going to find any of our tax we provide as a funding to have that kind of staffing. And that's why they haven't.

R. B: Yeah, and so well this brings up a couple things I guess. It seems kind of obvious that funding from Congress can greatly help or greatly hinder the development of ecological knowledge I guess you might say. And but with this kind of I guess I would portray it as a deficit from what you're saying of resources to develop this sort of knowledge. How does the Forest Service as an agency supplement its own ecologists and stuff? I mean is there a process for that or does it just kind of happen haphazardly? Or...

R. B: So what do you mean? I guess I don't understand.

JM: Well I guess if we're talking about maybe these adaptive management or monitoring of certain areas and ecosystems to help in developing management plans or to direct management to meet certain goals, and if there's really not the people on the ground necessary to be able to do this sort of ecology work, does it just remain not done? Or do the management seek the answers to their questions elsewhere possibly or?

R. B: Yeah, yeah well all of those are true. I mean there are definitely occasions where you know as in all agencies the analyses just don't get done right (unclear). You know you've got deadlines, you've got to have to sound that out and if you don't have the staff or the people have to pick up. I mean that's just the way it is. So on the other hand though, there are other times where, yeah, it's more and more common for us to contract out a lot of the... You know what NEPA is I'm assuming. A lot of the NEPA work is contracted out now, lots. It depends on usually the forests. Some of them have the skills and the staff to do it but many of them now are contracting out to mostly internal contractors. There are groups that

we call enterprise teams that are Forest Service employees but they essentially are like internal businesses and they'll have a you know they'll have a specific set of skills that they'll market. And they'll go around and they'll do you know in this case there are a bunch of them that will do the NEPA work for forests.

JM: And you called them internal...?

R. B: Enterprise teams.

JM: Oh enterprise teams. So are they actually on the Forest Service clock while doing this or?

R. B: Yes, yes they are but they're their own business. They're very interested. And that's actually been going on for quite a while. And you know they serve some important functions. The only thing that worries me a little bit about enterprise teams is that they can be kind of pricey. The other major issue is that they're not on the unit. And actually you know for NEPA maybe it's some of NEPA it's probably not that important but it's really important at least from my viewpoint that you develop you know a knowledge of and understanding for the land for resources et cetera locally, you know so you can manage the stuff. And when everything you're doing is actually being done by fly by nighters who are coming in you know for three, four, five weeks and then splitting for some forest on the other side of the country, you're not developing that local knowledge base. You know, you know how that goes. And it's like, you move into a community you know it's a while. It's four, five, six years before you're really part of it, right? You get to meet people, you learn people you develop connections, you find out what store to go to, you know those kinds of things and managing resources is the same way. And that really concerns me. But yeah I think those are kind of the main things. And then you know sometimes they'll share (unclear), you know forests may be able to get someone to come help from a neighboring forest if they've got the skills to come help them out. And in some cases they'll contact externally as well to have work done.

JM: Right, yeah. Well I guess briefly maybe because I think we're sort of running out of time here. When the Forest Service, I mean I know that the Forest Service has been contracting out numerous things, engineering departments and recreation and different things. Just as a personal thing for me, I kind of feel like that it's not really a money saver but that it's sort of a shell game in a way that maybe on paper it can make it look like you know money's being saved. But in reality I'm

just not sure how it's possible that having contractors do the work would actually save money.

R. B: No I don't think it usually does. No I don't think it usually does. I don't think that... And some of the units have started to come to that realization that it can be really, really, really expensive. You know so I'm with you. And you know I think it depends on the circumstances and you know how often you need them and all those kinds of things as well. But that's absolutely right. That's been, to be candid with you, that's been mostly my experience, is that just the price has made it impossible to continue to do business that way.

JM: So is that, would you say that that's maybe a tradeoff between having a study or whatever it might be that these contractors are doing done correctly? But at the cost of money and maybe having being able to do more projects balanced with doing more projects but maybe not having as good a job done for the data possibly?

R. B: Well, I don't know. I think it's like the whole outsourcing thing in general. I mean in the end you don't save money. Come on; let's be honest, you know. What it does is it means that you don't have to have those people on staff though and it makes your life easier, at least if you're willing to overlook the you know all the inconsistencies in the issues because you could just bring someone and say well I need task X, Y and Z done, here's the money, don't bother me. You know, come back when it's done, hand it to us and we'll move on. The problem is, is that very often you have to redo a lot of that work. There has to be, you know, people have to review it and the cost I mean I don't know. It really depends on the situation. And then again there are some contractors who are efficient. They get the work done incredibly quickly and they actually, maybe you end up saving money if you do it that way. I think it just depends. But my concern is just the fact that if you don't have you know that sort of a basic level of scientific capacity on the forests, then that information is not available on a day to day basis for management, right? It's only available on a spot by spot basis and typically from someone who may not know the system all that well at all. And that's the major issue and that's what concerns me a little bit about just kind of the trends in the agency right now. I mean all of our major, the agency direction is all in you know this science based management and all these ecological issues that are really complex and simply are not staffed to really deal with them properly in terms of, well what's the right word, I don't want to use... Well it's kind of from the intellectual basis. You know what I mean? In other words thinking about the problems and determining you know what to do about them. Not so much just the

issues related to the on the ground blue-collar kind of work. This agency has got a lot of really, really good people with great technical capacity, you know, on the timber side and the fire side and in a whole bunch of other places. But in terms of the capacity to actually you know sit down and think of these things strategically, I'm just not convinced that right now we're really all that well staffed for that.

JM: Yeah, so that's kind of the scoping process I guess?

R. B: Yeah, yeah. What is the issue and what do we do about it? And why do we do something about it? On the other side you know what to do about it I think we have a pretty good handle on but the question is where do you apply what tool? You really have a lot of tools, we have to use a lot of them but the question is where do you use which tool? And that kind of thing, we need to do a better job of that.

JM: I see. So in, I think from what I'm hearing you say is that funding is a real roadblock in terms of getting this ecological work done. So would you say that that's, then it sounds like that would affect would then kind of as a cascading affect would affect policies if the work's not getting done. Do you think that that's the biggest issue involved here with getting ecological knowledge into policies as just the straight funding of things?

R. B: Well and it's not so much necessarily the amount of funding but the distribution of funding. Yeah I think the amount too is an issue but yeah I think it's simply... You know, right now we've got a lot of issues to deal with and putting out the fires is a huge one. You're talking property, life; you know human safety, forest resources. And the problem is as a government agency it's very difficult for us to be proactive, right? I mean we're basically; reaction is the safest political thing because you don't have to ask for anyone to pour (?) their input, right? We've got to put it out, for example. And when you start trying to do, right now we're going into forest planning, right? And that is, there again is a place where we really need lots and lots of up front ecological input and it's going to be a stretch. It's really going to be a major stretch for us. But the planning process is where this is supposed to happen. You should be thinking about the stuff up front, not afterwards, right?

JM: Right, right. What is the situation with the forest plans? They're supposed to be done every 15 years...

R. B: That's correct, yeah.

JM: And is it on schedule to be, I mean it can be done sooner. Do you know where that process...?

R. B: Yeah, well we're, in [Redacted] we're starting the process right now. Lake [Redacted] is pretty far along. The [Redacted] are less far along and we're doing all the other forests in the region more or less contemporaneously. I generalize a little bit but yeah that's going on right now. And so that will take the next three years or so, three to four.

JM: I see. And so will those plans be, will they be updated right around the 15-year mark?

R. B: Yeah, and somewhat longer in some cases, yeah.

JM: Okay but they get an extension for that I guess.

R. B: Yeah well the National Forest Management Act which mandates this stuff doesn't I don't think specifically state it has to be this or that. I think it's more like well it should be done about this often. A big process involving lots of people, lots of input, lots of money, lots of time. And so it's not an easy thing to start.

JM: Right, right. Do you think that that way of doing things is a good way? I mean with all the cost involved in doing forest plans and doing them every 15 years or so, is that... I guess what I'm getting at is that like the way that knowledge and our technology is, is that things move very quickly...

R. B: That's a great point.

JM: And so do you think that that's really a good model to continue with? Forest plans redone at these step stages or?

R. B: No I don't think so but I think that you should go and look at the new planning rule. Although I think there's some likelihood that it's going to lose in court here at some point, but basically you just got to the heart of the issue which is when conditions changing the way they are and with our scientific understanding of those conditions changing right all the time, you've got to be able to make course directions right ultimately rapidly. But in order to do that the public has got to be willing to trust the agency because currently right now the way our plans look is they're kind of straightjackets. You know what I mean?

They kind of force us into doing this and doing that and you know you can't cut things bigger than this and you know you can't this particular part of the ground always has to be old forest. It's like what? What if it burns down and it's not old forest anymore? What do we do about that? You know, and you know what about climate change? Are we supposed to manage for this species here but in 20 years anything living within 20 miles from here? You know, so those kinds of changes have to be made constantly. And currently the public doesn't trust us enough to grant us that kind of leeway and we are going to, I'm telling you, this is going to be fascinating the next three years or so as we get into the planning process and the public has to come to grips with the fact that climates are changing that systems (?) are changing. Science is changing just as fast as all of them. And so the current planning rule basically creates very different kinds of plans. It doesn't even involve NEPA, there's no NEPA engaged in the planning process. Basically it sets up a framework for you to on a like about an every five year basis, develop an analysis of condition and trend and you know where necessary make changes to the plan. So it's much different and a lot of people don't like it because it gives us a whole lot of freedom to do a whole lot of things we couldn't do before. And of course under the Bush administration in particular it just freaked people out (laughs) between you and me.

J. M: So it sounds like it's really maybe going towards a real adaptive management sort of model of things.

R. B: Right, no exactly. And you know adaptive management; we talk about and talk about it. To be candid, you'd be hard pressed to find a really good example of it actually working anywhere. You know, the concept is fantastic but it's really difficult to actually pull off. And it requires a completely different planning framework. You really do have to have the ability for science to be actively engaged in management and for management to change its direction rapidly. And right now we just don't even have that ability. It just doesn't exist, you know.

JM: I see. And well it sounds like that may be an up and coming problem if the new planning rules are going in that direction and the agency isn't really able to do that. Is that, would you say that's true and if so...?

R. B: Isn't able to do it why, because it's not ready to or because the public won't let them?

JM: Well that's a good point. Are you saying that the... I see. You're point was...

R. B: Well (unclear) the people we get sued by all the time. They want to make us do X, Y and Z. They're not really willing to give us the freedom to say well we were wrong on that and we need to go and do this instead, you know. That's going to be the big issue.

JM: So that's really the environmental group...

R. B: Oh yeah, that's just them and the industry groups as well, you know...

JM: Okay, right. Okay so on both sides of things. Well this is very interesting to me.

R. B: You know, Jothan, I actually I have to go to a meeting but if you want to chat again in the future I'm perfectly willing to do it.

JM: Okay.

R. B: I'm going to be working out of my [Redacted] office for most of the summer but my cell phone is a really good place to call me.

JM: Okay. Yeah, I think that I would like to talk to you a little bit more about this new planning rules and maybe how what can be done to make it work better on all sides type of thing. But I certainly appreciate your time and so I think that I will try to contact you again to continue this for a little bit more at least.

R. B: Good, good. Well it was great talking with you.

JM: Yeah, thank you very much.

R. B: You bet. Bye-bye.

JM: Bye.

Appendix D

This interview of Doug Heiken was conducted in Eugene, Oregon on May 18, 2009. The interview has been modified by the interviewee, although the original content and meaning remains intact. Doug Heiken has worked for many years for environmental groups and is currently the Conservation and Restoration Coordinator for Oregon Wild.

JM (Jothan Mcgaughey): Yeah, and your name's Doug Heiken? Is that...

DH (Doug Heiken): Heiken.

JM: Okay, great. And yeah, I was going to ask you some questions about the mechanisms by which environmental knowledge gets incorporated into policies, and specifically with regards to salvage logging. That's what my thesis is about. So I was wondering if maybe you could start off with what the organization you work for kind of you know an overview of what they do and maybe what you do for them and then maybe we'll get into other issues.

DH: Okay, sure. Oregon Wild started out in 1974 as Oregon Wilderness Coalition and then shortly after that it became Oregon Natural Resources Council, which is at that name for many years. And so we recently changed it to Oregon Wild and we primarily got started as a wilderness advocate and we're trying to get other wilderness areas established in Oregon and working on federal forest issues. We had a couple of Republican senators who went along up to a point and then basically said no more wilderness. ..., we're going to log the rest. But that was not consistent with our mission so we switched gears a little bit and started using the Endangered Species Act and the viability requirements of the National Forest Management Act to .. use species protection as a new way to protect the forests. So the spotted owl and salmon and Marbled Murrelets and all these things .. kicked in and we got the Northwest Forest Plan out of that process. Now we have a new crop of senators and so we're .. simultaneously going after additional wilderness areas and trying to protect the last of the old growth forests that remain. But it's really .. wrapped in a restoration framework. ..., now we have a vision for how .. federal forests should be managed. It's not about saving the last scraps and .. sacrificing the rest but we really want to restore a lot of the damage that's been done and there are so many old clear cuts out there that we .. see their great opportunity through thinning to see some benefits that .. help ease some of the political pain of pure wilderness. But maybe we can .. do some thinning in the

short term and just enter fire and putting to bed roads and .. getting a healthier forest out of it and that win-win sort of thing.

JM: Yeah, and you're position for this organization is?

DH: Okay, and I'm the conservation and restoration coordinator, which doesn't mean that much of those words. But basically what I do is we track all the projects on all the national forests in Oregon and the BLM districts and we have .. a triage process. So we prioritize .. the things that we care the most about .. big timber sales that might enter roadless areas or cut old growth forests. And then we .. they go down to .. painting the picnic tables in the campground. .. we're not commenting so much on the things at the bottom of the list and we're .. filing lawsuits on the things at the top of the list. And we have levels of involvement in between. So we maintain a database. We .. know who's the decision maker and we enter their effect (unclear) in the comments. ..., when to engage the attorneys and all that .. stuff.

JM: When you first started out you were saying that you were using the Endangered Species Act to file claims to stop logging of old growth. Did you, was there any concern in your organization about using the Endangered Species Act too soon and like thereby not using it to its full effect possibly by acting too soon on it for the Northwest Forest Plan or?

DH: I'm not sure exactly if I understand your question. Maybe you can rephrase it.

JM: Well I've done a lot of reading on the subject and somewhere in there I remember seeing that there was a debate between the different groups about when to use it, that some groups, and it may have been the Sierra Club possibly, didn't want to use it too soon because then it wouldn't be able to be used to its full potential.

DH: Yeah, I guess I wasn't here, or wasn't in a position .. to get invited to those key meetings where that decision was made. I .. came in at a point of enforcing .. the injunctions that have been put in place .. by my predecessors. And there is often tension in deciding the use of litigation that .. if you sued on the Endangered Species Act too much then you create a political tension that could encourage Congress to .. to reign in the Endangered Species Act and make it less enforceable but it just hasn't turned out that way very often. And if you don't use the laws then they're really not there. ..., so you either have to use them and use them to

their fullest or basically they're not doing their job. And the group conservation or Center for Biological Diversity, .. they've used the Endangered Species Act more than anyone and .. all that work has not lead to the .. the softening of the Endangered Species Act, at least not in the last .. 10 or 15 years. Although Bush did some things. And then obviously budget cuts are a big issue. If they don't have money to list species then not much new gets listed and that's been a bit of a problem but at least the law is there. We can force them to list species that are truly endangered and enforce them to protect their habitat.

JM: Boy, that's something that I was going to have... Well why do you think that the Endangered Species Act has been able to not be watered down? Do you think there is any particular reason for that?

DH: I think it's a very popular law. I mean the idea that human activity will drive a species .. completely off the face of the earth and lose that .. that look in our genetic library, .., the American people are not interested in burning books or in .. losing that genetic information. And so .. there's obviously some political elements that completely disagree with that but the majority seems to think that it's a wise thing to reign in human activities .. when they're on the verge of pushing species (unclear) to extinction.

JM: I see. So do you feel that the public support for that is instrumental in keeping that...?

DH: Absolutely.

JM: Okay. So that seems to be saying that the getting public support is obviously a huge part of what your organization does? I mean...

DH: Yeah, we have to .. work at all levels. .. we're bringing science to bear in our comments. We're bringing the law to bear through our lawsuits. And then if you have a successful lawsuit that may threaten to destabilize .. the Endangered Species Act for the northwest forests then you've got to have the public support behind them to make sure that .. there's reinforcements there to keep the law strong. So it's an all of the above .. strategy and we're directly talking to members of Congress and we're talking to our members, encouraging them to .. write letters to the editor and talk to members of Congress.

JM: I see. And that's, when you talk to your members that's kind of like outreach to the public. I guess you have a newsletter that you send to people to inform

about the issues. Do you do any other sort of public outreach or educational type programs to educate the public about things?

DH: Yeah, we had a full variety of things. Obviously the Internet's a big tool now. .. we have a big website that has a lot of information on it. We have activists .. alert network so we can email a whole membership or subsets of our membership to engage in certain issues. We hold these things called Wild Wednesdays which is .. a little .. science seminar or an adventure .. slide show. Somebody's .. hiking on the waterfall or something like that. So anyway we have .. those public in person events. We've held events here at the Eugene Public Library where people come and .. we can get them up to speed on climate change and how forests store (?) carbon or some new scientific engineering (?). And we attend conferences and .. gather, we're both, it comparably we'd both be gathering information and .. sharing our perspective on things.

JM: I was looking at some of the flyers back at the office there and I remember seeing in I think it was the latest one that your organization got an award for demonstrating the old growth role in carbon sequestration. Is that true? Was there something like that...?

DH: I don't know about award.

JM: Or was it recognized for that or?

DH: I'm trying to think. There was a...

JM: I meant to bring that with me but I think I left it on the table.

DH: Yeah, I can't think of an award. I mean it's something that we're definitely interested in and we're .. doing a lot of work on but I don't know about a specific order of achievement, a .. ongoing effort.

JM: Well I guess, right. It sounded like that that was something new in that it was demonstrating the importance of old growth in this time of climate change. Have you guys been doing work on that? And so there has been some new findings that you guys have found or?

DH: Well we're .. collecting all the information that's available out there and .. the pace of scientific research in regards to climate change in the global carbon cycle is .. really accelerated. So .. we've been raising this issue since the early

90s. I mean it's been going on a long time. And then we've been especially focused on it for the last three or four years, bringing all the new information into line and it's the science is just phenomenal in terms of lining up with our objectives because forest conservation is a great way to store carbon and a great way to prevent future carbon emissions. So it .. is a double bonus. And it also helps prepare ecosystems for climate change itself. ..., maintaining these intact biodiverse places. They're already .. well prepared to be resilient in the face of (unclear) of climate change.

JM: I see. Well it sounds like from the perspective of my paper I'm looking at the mechanisms for incorporating this. It sounds like your group that one way they do this is to collect all this information and organize it and then present it to...

DH: Yeah. We wrote a big report on it, .. like a 50 page report, and then we summarized that down into a slick .. publication with more photos and desktop publishing and took out all the footnotes. We have a slideshow on the web. We've gone around presenting the slideshow a bunch of times. We've had personal meetings with different elected officials .. bringing that information to them. Trying to educate our members, we're trying to educate our colleagues; other people in the environmental community are still getting up to speed. ..., we're a few steps ahead of them. We're .. we're educating them and bringing them along. And we're also having to basically confront all the misinformation that's being put out there by the timber industry. .. their interest is to try to convince people that logging is creating fast growing young forests and storing carbon in wood products makes sense but when you review all the studies they're just not fairing that out and they're showing a much stronger value in forest conservation rather than logging. So anyway, responding to that, correcting that, trying to make sure that we're getting the ear of decision makers before they do.

JM: Right, I see. And so you take that to Congress and talk to the representatives and...

DH: Or their staff.

JM: Or their staff. I see. Can you quantify or can you say how much of an impact you think that has?

DH: It is difficult to quantify. And .. we're .., we've been trying to become more quantifiable in terms of our goals and how we've measured progress to our goals but I think I've had low expectations since the beginning and I do not have my

expectations increase since then. It's just very difficult in this .. environment or this .. area to measure progress. We're not .. we're not saving acres exactly. .. because if, it's just too complicated. I guess I'll leave it at that rather than trying to explain it. Unless you want to ask a more probing question.

JM: Well that's kind of one of the things I've found going into this. I guess I was somewhat naïve coming into this and you know because I wanted to look at well you know we have this knowledge. What's the process for getting it into policy? And it seems like there's quite a few different avenues that it can take and that it's not a straightforward process. I mean it can be. I've heard examples of where the Forest Service has learned something and within a decade they've changed their policies completely around which I guess for the Forest Service is fairly quick.

DH: Yeah, that sounds like a good example. I mean, it would be pretty quick.

JM: So I think when you say that it is a complicated issue I mean that's what I'm certainly starting to find out. Does your group focus in with the different like the Forest Service and the BLM? I mean we were just talking about how you go to Congress and try to educate members of Congress and...

DH: Yeah, we engage with the agencies on a daily basis. That's the main thing that the Eugene office does is we .. contract all of these proposed projects. We do salvage sales or thinning sales or old growth clear cutting and we can get the environmental documents, review them, .. check with their approach to the science is correct as one of the things we do and then write a letter trying to set them straight and get them to do a better job. You either stop a bad sale or make a good sale better.

JM: I see. And so there's that clause in NEPA I guess which says to use the best possible science?

DH: .., I don't think NEPA has that clause but they do have one similar that says use accurate scientific analysis. And so they definitely do. NEPA, one of the basic principles is full disclosure and accurately weighing the environmental information and then looking at alternatives in ways that (unclear) for a different alternative. So yeah they do something that's unscientific in a NEPA context. There's a way to .. correct that. At least there should be. It doesn't always work but that's the intent.

JM: And so if your group sees something like that say with the salvage timber sale what's the process for trying to bring that to light? That they're not using the ecological knowledge and (unclear) the steps involved with that.

DH: Well, do you want a long answer or a short answer?

JM: Probably a long answer I guess.

DH: Okay, well I'll .. frame it as the NEPA process but then there's a bunch of appendages on the NEPA process that might enhance the understanding. So basically we would .. say they propose to do a timber sale or .. a forest (unclear). It's a salvage timber sale. And the NEPA process has basically three main time periods when the public can engage .. formally and officially engage in the agency. And so and we participate in all three of those. So they say they want to propose a salvage sale at this location but they don't tell you exactly .. where the units are going to be or what the salvage logging .. methodology is going to be. And so in our scoping we try to bring in information say that .. that area is a habitat for black backed woodpeckers or that the retained structure in that area is needed for spotted owl prey. And there's nearby nesting, roosting and foraging habitat and so that might still be important. And then we'll say please analyze this in preparing your environmental (unclear). So that's .. stage one is scoping. Stage two is they write a comment on the document and in there they supposedly address these issues that we raise in scoping and then we see that they did so accurately or adequately and we write a letter explaining what they did wrong. And if we think they are really blowing it, then we might even include a scientist to write a report or write a letter or try to go find a scientific study that's just right on point .. to make that point. And we include that to our letter. We'll attach it to our letter and then they take their draft environmental document and our letter and they write a final document and a decision of some sort, usually called a ROD, record of decision, or some .. decision notice at the end and once they make a decision then we can appeal. So those are the three stages, scoping, comments on the draft NEPA document and then administrative appeal. Through those three avenues we try to bring all the science in that process but along the way there might be .. letters to the editor, there might be opinion pieces in the newspaper, there might be talk with the congressional office (unclear), there might be bringing the scientists out in a peer review to look at it, there might be .. hiring somebody to do some field work and .. try to bring some accurate scientific information there. Because when we go to file a lawsuit we .. step outside the NEPA process is litigation. In litigation you're limited to the administrative record, which is everything that went on it in prior conversations. And if it wasn't

in the record then you can't bring it up in court later. So we're trying to build that record and get all of the scientific data that supports our (unclear). And sometimes they listen early and they get it right and they say oh we'll stay out of that area. And other times they just say they read it differently or they say .. even the science says this will be bad, the forest plan says it's okay to do bad things in this land allocation. .. this is the scenario saying set aside for doing bad things. Sometimes they're right .. but what we'll say well you'd have to really carefully consider the impacts of doing your bad things and they write the report saying (unclear). They're very reluctant to admit how .. they're very reluctant to admit negative impacts in general. So that's one way for us to .. nail them is that we just .. getting them to admit the honest truth that this has a negative impact is often a pretty .. head to head battle.

JM: Sure. I don't want to put words in your mouth. Because it's, why do you think it's so difficult for them to admit that there's a problem with something? And specifically for salvage logging. I guess what I'm trying to get at is, do you consider salvage logging as being kind of institutionalized within the Forest Service? Like that it's become, it's no longer questioned. Its just sort of accepted type of things in normal business.

DH: Yeah, I mean it's not become that, it's been that forever. I mean as long as there's been big fires and a tolerance for roads. ..., there's been big salvage sales. There may be a long time ago there may have been places that were burned that were so remote that it wasn't worth it to build a road out there because they had plenty of old growth version (?) timber .. that's (unclear) that was near the road system. They didn't need to go way out in the boondocks but since the 70s there's been a road system practically everywhere and whenever a big fire happened, automatic big salvage sale. And what we've done over the last .. 10 or 50 years is we've scaled them back. And so they're salvaging a smaller fraction of the total fire area and they're building less roads than they used to. But the (unclear) of the salvage logged was really very a little different from what they've always done. And I think that things were starting to change under Clinton and then Bush came in and it .. it all got erased. .. we're all backwards, several squares backwards and have a real big challenge now to get Obama to .. get back to the starting place we were with Clinton and make some progress.

JM: Yeah, I think that's true. I was reading the National Forest Protection Act I guess a while ago and I happened to be reading the '74 version and then there was the '76 version, which amended one of that. But in that first one, and I'm going to have to look at the second one, but you know the, my understanding of that is the

reason for putting that in there was so that there would be sustainable harvest and that biodiversity would be protected and that sort of thing. And that things would be done correctly and there would be this process for doing it in conjunction with NEPA I guess which came a little bit later I think. But in there it specifically exempts salvage from the rules in there. So it's you know it was odd to me, I guess I don't have a question in that (laughs). But you know it just really seemed like that it was at that sort of point (unclear) into it being institutionalized. That that section was exempt from these environmental concerns which...

DH: Right. Not salvage logs would be considered wasteful and be morally questionable to let (unclear) run the forests, ignoring the fact that forests .. recycle perfectly and all that wood is put to some valuable ecological use or hydrological use but .. the Forest Service mentality that were basically an agricultural model. .. if you let forests rot in the woods that's a waste. So it's .. ignoring the whole back half of the carbon cycle in the forest. But yeah it is very institutionalized.

JM: Do you guys deal much with the economics of it? And like I looked into the Biscuit Fire which was down here in Southern Oregon and you know there's that whole Donato thing that happened in the Sessions report and everything but I think EcoNorthwest put out a report about the economics of it and they were basically saying that you know that the sales don't pay for themselves. And I know there's been a GAO report that basically said a similar thing. Do you have any opinion about that sort of thing on the...?

DH: We .. use it opportunistically, .. when we're trying to stop something and they try to use economics as a pro argument. We can .. counter with some other information but it's a little bit of a slippery slope because .. we don't want, .. if timber prices skyrocketed or if they find some patch of really bad old growth trees and suddenly it makes economic sense, it doesn't mean we support it ... So we have to be a little bit careful. But another problem is that the cost side of those cost benefit things, the cost side is all these environmental reviews that we want to see done. .. they could make salvage profitable in a flash if they stopped doing it in NEPA. It's not doing environmental reviews and they did it in like private land. Private land salvage logging is very prominent. So anyway it's a little bit of a dangerous area and so doing salvage sales correctly and doing all of these environmental reviews and figuring out all of the sensitive areas you need to avoid and only logging the narrow subset in investing all the staff time in scientific resources and public process reports. .. democracy is a big waste of time. Democracy takes resources. So involving the public and having public meetings and responding to public comment, those are all big costs that we want

to keep in the equation. But when you consider all those things it doesn't make any sense. You might as well not even salvage it.

JM: Yeah, and the whole standing issue is fairly recent historically for the public to have say in that. And I mean if it came about with NEPA and those laws there. And so how important do you think that the public standing is for...?

DH: .. it's something that's .. like one of the t's you have to cross, one of the i's you have to dot, it's not that big of a hurdle. The standing law hasn't changed dramatically over the last 15 or 20 years. There's recent Supreme Court decision that tweaks it this much ... But really they're affirming most of what the lower courts had said and basically the public just has to be harmed by a proposed activity like salvage logging. So if you go to .. forests and you enjoy hiking in it and you might see a black backed woodpecker there and if they salvage log and take away that opportunity you're harmed. And so you just need to have, .. members of these environmental groups have to be (unclear – background noise) visit these forests. But they actually are fun to visit (?) and .. they are in places that select to recreate despite of them being burned. They're not necessarily ugly. So it works out. I mean it's something you need to pay attention to but it's not a huge barrier.

JM: Yeah, there's that recent Supreme Court case that was decided about the salvage area that was down on the Sequoia in California. Do you know about that case if this happened?

DH: Yeah and that 's the (unclear) case I was just referring to.

JM: Yeah, where they did have somebody who was, that's the standing they were talking about. But the Supreme Court I guess upheld the categorical exclusion clause of under 250 acres per salvage. Is that right?

DH: I mean they didn't necessarily uphold the CE. They basically said that the lower court stepped over the line by deciding the case when there wasn't a direct conflict about .. this issue. So anyway since they basically settled the issues about that salvage sale, since those issues were settled before the Appeal Court made a decision, the Appeal Court decided to side anyway. .. Even though it's been settled we're going to decide because .. there's a broad issue here and the Supreme Court said no you can't just, .. there has to be a case in controversy. There has to be an actual dispute about an actual set of facts. And there are some exceptions. That appeal court wasn't completely .. making it up. There is an

exception where certain issues that are subject to repetition can be decided even if there's not a case in controversy and that reports (unclear) can do that. So anyway it wasn't really, the Supreme Court didn't uphold that CE which basically said that the lower court had decided it wrong. And it's .. a legal technicality.

JM: So do you think that that decision about the CE do you think that will find its way to the Supreme Court in a different case?

DH: I think it will be decided by another court. I don't think it will go to the Supreme Court again. I think it will be, I think it will find its way up and be decided by another court and probably get them changed .. in a different way.

JM: I see. Do you think that they will take away the categorical exclusion for timber sales under 250 or?

DH: If I had to guess, my guess would be yeah. See there was a before they had this current acreage limitation there used to be a board foot limitation. So for green trees it was 250,000 board feet and for salvage sales it was a million board feet. And that was determined to be arbitrary by a court that says well just he volume of the trees doesn't matter. It really matters how ecologically significant they are. Where are they located? How big are they? What's the habitat? Those are the questions that need to be answered. And the agency responded to having that rule thrown out and they came up with a new thing based on acres but it's just it's arbitrary. So and in a way it's far more liberal than the old rule, which was found to be arbitrarily less. I'm looking at it at (unclear) right now up on the McKenzie district of the Willamette National Forest where they want to log 60 acres of mature timber that's great elk habitat under that categorical exclusion. And so the old limit was a quarter of a million board feet but this is one unit that this is one unit that's like 4 million board feet. And so they're doing 18 times the old limit under the new acreage limitations. And so anyway I just .. think that that will probably be overturned someday. But we have to wait for the right set of facts to .. percolate up through the court system.

JM: I see. That's interesting. And that's not what you were just talking about. That's not a salvage sale.

DH: No that was a green tree.

JM: Just trying to do it for elk habitat.

DH: Yeah and it's funny. I looked at aerial photos and all around the unit they're going to log growth habitat is elk habitat. .. it's like a whole bunch of old clear cuts and shelter wood harvests. So I don't know where they get the idea that there is a need for elk habitat in that area (?).

JM: That's interesting. Are there any specific salvage logging cases that you've worked on that you can tell me about?

DH: Oh man I've had some big fire areas so we've been involved in most of the big salvage sales .. around Oregon for the last ten years. Obviously the Biscuit is big with all the timbered rock fire on BLM which is one of the few times that the salvage sale got to the 9th circuit and they said that it was inappropriate to salvage log in a late successional reserve, one of the protected areas under the Northwest Forest Plan. So that was a big win. We've been involved in .. the Davis Fire, the Eyerly (?) Fire, the B&B (?) Fire, the Winter Rim was a big, couple of big salvage sales on the Freemont Forest that we've been involved in. And so we've been involved in (unclear – trailing off)...

JM: You talked about the Biscuit Fire a little bit. For my thesis I'll probably be using that as a case study actually.

DH: Yeah it would be good because that whole Donato scenario provides a good contacts for your interests yeah. Well what do you want to know about it? I mean you probably know a lot already.

JM: Well I guess maybe your role in it and your group's role in it and if there was any example that you were personally involved with like a group involved with of trying to get ecological knowledge brought up there in terms of the salvage sales.

DH: Okay. Well yeah here's one interesting example. The whole idea of salvage logging in spotted owl habitat or .. salvage logging large trees, whether they are alive or dead, that could become part of spotted owl habitat in the future, is a really big issue. And so when they wrote, when they were writing early drafts of the Northwest Forest Plan they basically seemed to think that salvage logging would not be beneficial to spotted owls because even if you have a big black .. thousands of acres that wouldn't seem suitable for spotted owls, if you remove all of that large wood, then you're not going to be able to replace that for 100 years or more. And that structurally complex large wood becomes then .. carried through to the next stand and becomes, it makes the future stand more complex and more higher quality habitat for spotted owls. So anyway they .. started with

that assumption. And then you could see through the process of revising the Northwest Forest Plan from draft to final to decision. ..., it got weaker and weaker and weaker. And so they, ..., made bigger and bigger loopholes for logging those large trees out of what should be spotted owl habitat. And so that was one of the things I tried to do is I tried to point out .. what the original scientific intent of the Northwest Forest Plan is X and then it got... .., so please explain in your NEPA document why X is not a good idea. And so that's one of the key things I did. And I really try to get the agencies to think .. that their approach to salvage logging is well as long as we leave two big trees per acre, we're meeting the forest plan's standard. Therefore everything's good. And I point out well okay if you meet that two trees per acre right after your salvage sale, that's the last two large snags that stand is going to see for the next 100 years. So how are you going to meet the two trees per acre for 100 years unless those two trees never fall over? And so I'm trying to get them to think about the overall process of creating and recruiting large trees over time. And I use the concept of the 'snag gap.' And so say you have a stand of trees that burn heavily and you start having this huge pulse of dead trees and then they slowly fall over time but they don't all fall like clockwork. They don't all fall at the same time. You've got 10% would fall this decade, 20% will fall the next decade, 30% maybe the next decade. And you end up with a .. wave of mortality, a wave of snag fall rates but at some point out in the future about 30 years, you actually have a .. depression. That your original pulse of snags is gone, mostly gone, and you have a real decline in a level of dead wood, but your new stand of trees is still fairly small. So they're not recruiting big trees yet. And so there's a gap between the loss of the fire generated pulse and the accumulation of the future in future foresting, and that gap is .. a key thing to think about. And if you look at salvage logging you can only make that worse. They claim to be making it better because they're moving the future stand forward in time a little bit because they're going to aggressively salvage and then aggressively replant and move this forward an inch. But in fact they're pushing the, they're moving the .. front end of the gap by a couple of decades, .. because it's really and you have that .. that snag gap has started right away instead of way out in time. So anyway that's one of my main .. methodological scientific understanding that the long term flow of snags across the landscape. And it's been an uphill battle because .. there's the famous quote that basically people cannot be made to understand something they're paid to ignore, something. .. it's so contrary to their objectives that they basically cannot see the forest through the trees. But I can share the materials I've prepared about salvage logging which ... illustrate those things.

JM: That would be great.

DH: Another big one is this, there's a paper that came out by Rose in 2001 or 2002, which .. was a great treatise on all the different roles, that dead wood plays in the forest. .. it's not just habitat for woodpeckers but it provides hydrologic things. It provides snow fences. It captures sediment that's running down the slopes and there's just all these different functions for deadwood in the forest. So it .. all that stuff together and then it looked at the way the agencies track snags and deadwood in the forest and what their management standards require. And it basically said that these methods are really not scientifically credible. They are not retaining to enough snags and their whole approach to it doesn't account for the way the critters really use the habitat over time. So anyway, that, once you have a scientific paper that says that the government standards are inadequate you'd think that agencies would respond to that and correct themselves. But that's been sitting up there since 2001 and they haven't done a thing about it. So I'm constantly bringing this to their attention, and trying to get them to use .. better methods. And they do have this new thing out there called DecAID. Have you heard about the DecAID advisor?

JM: I don't think so, no.

DH: It's pretty interesting. It's a web based...

JM: Decade advisor?

DH: Yeah, DecAID. Decadence advisor or something like that. Well anyway Decayed Wood advisor. It's not a new forest plan standard. It's not a new set of rules. But it's this new set of information to .. bring to bear on these decisions. And they keep using this thing. Well even if our old standards are inadequate, we're used to the best available science. But we need new standards. ..., we need to know what are the new bare minimums that you should be doing because you're still .. making all the decisions based on old standards that are inadequate and you have some new information you're .. using but you're not using it in a way that makes you do anything more. Adding .. this next (unclear). So anyway that's another big a big pet peeve of mine and I'm trying to bring that into the agency's decision making.

JM: How do you get an agency to recognize that it's not using up to date scientific knowledge? Is that an, that's an individual battle I guess.

DH: Yeah, yeah. You can .. win at one project or get one district ranger, one biologist and one forest to .. figure it out and understand and agree with you and start writing things differently. But that doesn't necessarily mean that it transfers to the next forest or the next project. And so I've got a handful of analyses that I agree with that are useful and then I .. copy those and say see how your neighbors have done it, see how your colleagues have done it on the Cottage Grove District on the Umpqua. And that's been .. useful but it's still funny. .. with thinning sales it's another big deadwood issue. Thinning they say benefits dead wood because it grows big trees faster. And they're exactly half true about that. Thinning grows big trees faster but it grows fewer big trees faster. And when you don't thin it doesn't mean that the trees stop growing. It just means that they grow slower. And so what they're trying to say is that by thinning we win the race to produce the first large tree but they lose the race to produce the most large trees over time. And so they're counting thinning in the benefit column when you think about dead wood in the stream or dead wood for woodpeckers or dead wood on the forest floor for fungi or salamanders. So every time they thin they say its benefit, benefit, benefit. But really they need to count that as a detriment. And I'm not saying they shouldn't thin. I just mean they need to think about it and put it in the right column. It's a benefit or a detriment.

JM: Yeah. What's your opinion about in the agencies Forest Service that for those people that move in the agency it benefits them to move around and the whatever the rangers and whoever's involved with the timber sale, administrators and those folks. Not everybody moves around obviously but I think that there's a lot of people in the Forest Service who do move around a lot. Do you think that that helps or hinders the process of educating those people or?

DH: .. it's really double edged. In some ways there's .. a culture within the agency that moving around is better because you don't develop inappropriate relationships between local managers and the local power structure. So that you don't end up having the timber industry or the school board or the county commissioners or whatever really calling the shots through their buddies who've they've known since high school and happens to be the district ranger. And so you have a moving, they're shuffling the managers around and they're .. keeping them insulated from the local power structure. But in reality that doesn't work all that well. And you're losing the connection of actual knowledge of the landscape. So if you had managers who were there a long time that have actually become familiar with .. where are the key resources. I mean you wouldn't just start throwing timber sales on the landscape in ignorance of what is going on out there. So it .. goes from both sides. I don't know which is right and which is wrong. ..

An interesting person to ask that question would be Andy Stall at Forest Service Employees for Environmental Ethics. Because .. this issue is debated within the agency too. It's .. (unclear – trailing off) an interesting question.

JM: When you're talking a little bit earlier about the snag gap and about how the cutting produces that snag gap and you were talking about how it's hard to get people to you know see something if they're getting paid not to see it then I guess for me what that kind of points to is that this whole thing of having fires or natural disturbances creates this matrix of land out there that's changing. And so you know burl (?) naturally you have a fire go through and you'll have a lot of snags and through time that'll go down and the species that live there will that need those snags will prosper or whatever in that area at that time and then as time goes on and that they start to fall more and there's a fire someplace else it moves somewhere else. So there's this organic shifting mosaic yeah that goes on that which is very much a part of the forest or whatever. And the Northwest Forest Plan was one of the first times that a great expansive land was to be under this umbrella of management that you would think would take something like that into account. But I think what you're saying is that the agencies, even though they're kind of more driven now by a biodiversity goal as opposed to a timber production. You know there's supposed to be more biodiversity protective now. It's sort of in a way it seems like they haven't really made that switch over to that that they're still based in...

DH: Right. There is a new mission for how the lands are supposed to manage but there hasn't been a new, the agency hasn't developed new tools and Congress hasn't given them a new budget structure to really facilitate that. They're still being paid by Congress to go do timber sales. They're just doing those in a smaller fraction of the landscape. So all the Northwest Forest Plan really did is it didn't really say biodiversity is king. It just says do your timber sales but only in the matrix. So they're still .. doing business as usual and using the same old tools because the hammer is the only thing they know and everything looks like a nail. .., that's .. the problem. People say the real solution would be if Congress funded them in a completely different way and I don't know exactly what that would look like but it probably wouldn't be timber sales. It would be stewardship contracts that are .. just different.

JM: Right. So do you think that that is kind of tied up with that KV fund?

DH: Yeah. There's a whole group of slush funds. KV is .. one of the more well known. But yeah that's another thing. The agency doesn't get all their money

from Congress. They get their money from .. cycling, churning on those projects that they're working on. And so if they stop doing timber sales then there's less money to skim off. So there's internal incentives not to change the budget structure and not to shake things up too much.

JM: Which kind of points to the institutionalized nature of some of these things. Let's see. What's your opinion of civil disobedience in this thing of getting ecological knowledge into policies?

DH: I guess I'm not really sure. I've never thought about it in a science context very much. Although there was a group .. of kids that was doing tree sitting about the same time that the survey management program was being debated. And they started .. merging those two things with their tree sitting skills or their tree climbing skills. They would go find red tree voles and protect that acre of ground. And in a way it brought the radical fringe that projected the process and just they just waited until the very end to jump into the trees. Well now they had an incentive to actually be drawn in earlier and actually engage in the administrative process, my factual input into the decision making process and if it had an immediate payoff in terms of protecting acres they were drawn to. So in a way it was a real .. benefit to .. early resolution of problems instead of .. waiting until the very end and having it (unclear – trailing off) in a civil disobedience setting. So anyway that's just one real observation. .. our group doesn't do civil disobedience. .., its just .. part of the democratic process. .. it .. takes all stripes but it's not our role. And generally they're not that .. they're not doing .. they're not citing papers when they're up in the trees. They're .. they're spouting slogans and (unclear) just have a different role usually except for this exception with surveying... Do you know what 'survey and manage' is? It was part of the Northwest Forest Plan that basically said...

JM: Survey and manage?

DH: Yeah, survey and manage. When they did the Northwest Forest Plan .. they set aside these reserves for spotted owls and if the reserve was full of clear cuts already because the Northwest Forest Plan came along in 1994 after they'd already logged the crap out of the forests. You couldn't find .. intact old growth areas of that scale. And so they just flopped the reserves on fragmented landscapes. And so .. during the healing process while those big reserves were actually re-growing to become healthy intact blocks of the forest, they were still going to be clear cutting old forest in the matrix in between the reserves. And so they decided to mitigate for that by asking the agencies to survey for a list of rare

species. It's a big list. I mean you might only have five species that could potentially exist in any given acre of ground because of the .. range of the species was limited or the habitat of the species was limited and it's not like they all could potentially .. out of the 400 species they couldn't all potentially exist everywhere. So they had a short list of the species they had to look for before they could log. It's just .. 'intelligent tinkering' 'look before you leap.' And then if you found the species you had to put a buffer around it, a subset of a species. Most of the buffers were a tenth of an acre or two tenths of an acre. The red tree vole got a full ten acres. And there was one fungus that got 600 acres because there was only three instances of it in the world or something like that. So generally the red tree vole is .. the focus of a lot of attention because it actually did get more than a postage stamp buffer and the kids could find it up in the trees. It's really hard to find from the ground. You have to climb a tree to really find it very well. So anyway these tree climbing kids were finding them left and right and well saving forests a pock mark of forests but if .. we found enough of them they would basically cause a unit to be dropped or cause them to give up on a certain area that they wanted to log.

JM: How would they document, I mean, what would keep them from just climbing and saying you know I found...?

DH: There were, the red tree vole is a unique interesting species that has, that builds its, it mainly eats Douglas fir needles and it eats it with these specialized hands that are extremely articulate and they eat the good parts of the needle and throw out the bad parts. You didn't even know that there was two parts but the red tree vole knows. And so it would discard as resin ducts, which are the bad part, and it would make its nest out of them. And you get enough of these resin ducts in one place and it's just an absolutely indistinguishable feature of the red tree vole (unclear). There's no other thing. So basically they would collect a sample of the nest and flag the tree and GPS it or take a picture and then the agency would have to follow up later and corroborate it.

JM: I see. That's interesting. (unclear) I'm just going to look at some of my notes here. What, in your view what's the most significant mechanism of you know the sense that I've been using it to get the ecological knowledge into policy?

DH: Well it's hard to pick one thing because it's .. an 'all of the above' approach that has to work but for me it's .. writing the NEPA comments that go into the administrative record and the ultimate backdrop is litigation. ..., you never get an independent third party review of the situation until you get into federal court.

Even when you do an administrative appeal, it's just being handled by the boss of the guy who made the decision. And the boss isn't going to overrule his .. his hired gun except in limited circumstances. But you can't do a lawsuit without the administrative record that we built in the lower levels. So those .. two things together are a pretty powerful tool and we have a lot of examples where we .. we've been able to affect policy and get them to improve the way they do things.

JM: And that's really interesting but it just seems like that there should be some kind of safeguard. Like say if you go to court and you're trying to do something and say some new information comes about that sheds light on it that wasn't known during that you know setting that ground work there. Is there no way to add anything to the administrative process?

DH: Actually there is. It's .. a limited exception but there's a clause in NEPA that says, it's a requirement for the agencies to basically constantly be on the lookout for new information. And if new information arises that significantly changes their analysis or undermines their analysis, or if they change their decision in a way that substantially changes the analysis, either of those two things trigger, you have to do a new EIS..

JM: I see. So it would just start the whole thing over again.

DH: Yeah. And we have used that at times, usually not in the middle of litigation but it is a way .. of bringing in new information. Sometimes NEPA documents can be .. seven or ten years old and they're still... .. we had a timber sale outside Eugene called the Fall Creek timber sale, or no it was called the Clark timber sales in the Fall Creek watershed. And I think we first appealed it administratively in 1992 and we were still in court on it in 2006. So .. a lot of things happened over all those years. And there was a fire nearby, a survey manage program came in, the Northwest Forest Plan came in, .. just all these different twists. And oh the tree sitters found a bunch of red tree voles that the agency didn't know about. .. and so that was successful.

JM: Yeah, it almost seems like if there's a, if those things went over a certain time then it would almost be like automatic because of...

DH: There's .. a general rule that after five years a NEPA document is stale and needs to be redone. But in actual fact it doesn't seem to work that way. It has to be about ten years old before you can really use that as a lever. And often we don't always have to litigate. Sometimes it's the threat of litigation that allows us

to get the agencies to do something better. So they have an incentive to avoid litigation and it saves them time and trouble. They don't have to tell their bosses that hey I'm getting sued. So sometimes we can get into a good settlement or good conversation about changed practices .. with .. the threat of litigation hanging over them.

JM: That like in this time of, I guess I'm speaking about like climate changes you know finally being accepted as actually happening by the government and what not. And then it seems pretty clear that actual, the rate is a little bit quicker than what the IPCC was saying originally. Do you think that this will lead to significant changes in the institutional struggle in regards to salvage logging? I mean do you think that we're in for a big change here in how things are done?

DH: I'd like to think so but I'm not super optimistic yet. I mean I think the science lines up very well for us. But when I read the Forest Service climate change document, there's some of the very most obvious things they should be doing differently don't show up in the recommendations ... So it's .. depressing. And salvage logging to me is definitely would be much better to store carbon in the large unmolested tree boles. Even if they're dead it would be better than processing them and turning them into wood products and sawdust and slash fires. But there's some even more obvious things they should be doing and they're not even doing those. So they're not going to get to salvage logging until they've figured out just logging green old growth let alone dead old growth.

JM: Do you have any examples on the top of your head of what they're not putting in their reports? Are any reports on the climate change issue that you were just talking about that would be worth looking at or?

DH: Well the obvious thing is they're not saying we should be staying out of roadless areas, which would be staying out of old growth. I mean old growth should just be permanently and forever off limits. .. just don't touch it anymore. I mean there's absolutely no reason to log old growth...

JM: Is that because there's so little of it left from what there was?

DH: No, mainly because of its carbon value. And you can only make the carbon situation worse if you log it. I mean I guess there's one exception to that. It is if you really, really carefully remove small fuel from classic ponderosa pine old growth .. that was actually stressed by drought and was suffering .. then you might do it not because you're reducing fire hazard but just because you are

perpetuating .. trees that are drought stressed. So I guess east side old growth, dry old growth, you may not draw a line around the stand but you may draw the line around the biggest oldest trees. But on the west side you'd draw a line around the stand and just say do not cut. But anyway those are just really obvious things. Roadless areas are another one. .. we don't have a road system in there. They're functioning ecological islands. ..., let's just leave them alone. And that would be a great thing. And I'm thinking mainly from a carbon storage perspective but in addition there is just the .. biodiversity and climate mitigation (unclear). Old trees are in general more resilient and more resistant to climate stress. It's a really well established and deep root systems, thick bark, high crowns .. all these things make them more resilient in the face of stress disturbances.

JM: Yeah. And then I guess well hmmm. You know I know that the salvage timber sales have been over the sense of the Northwest Forest Plan. They've been taking up a greater and greater percentage of the timber harvest. So that there's been more of them happening. Do you see this as a continuing trend?

DH: Not really because fire is so variable. .. I think part of the reason for that trend is that there was some bad fire years and I think that fire is probably on an increasing trend but it's not a linear one. It's going to have lots of ups and downs. And there's going to be periods with not .. not very much fire. And I think that we're slowly getting the agencies to focus on a smaller and smaller subset of the area that burned. You could be doing dumb things or dumb things on a smaller subset of the landscape. So in a way that .. that's going to help alleviate that trend I hope. And politics also plays .. under Bush every fire had to be salvage. I mean it seemed to be a policy that they couldn't leave a fire alone. But under Obama I think that will probably change. I'm not saying that salvage is going to go away but the pressure's going to be (unclear – trailing off).

JM: I see. What's your opinion of that size, the scale issue with 250 acres? They're saying that they're getting smaller and smaller. In terms of an ecosystem or a watershed. I mean I guess obviously it depends on the whole size. But can you say how much of an impact the 250 acres has? I mean is it significant? Is it, I mean obviously it depends on the area...

DH: Yeah it depends on the setting and in the Northwest Forest Plan there's a thing that says that disturbance is natural and in LSR if you have a disturbance less than ten acres, just leave it alone. But under that same logic .. why wouldn't you say larger disturbances are also natural and also add to the diversity so you should leave those alone as well. So it's .. an arbitrary limit there. .. at 250 acres,

that's an arbitrary line and I don't think that that would stand. I mean any salvage sale in the wrong place at the wrong time could have significant impact. And really .. patches of dead trees where complex early seral forests, complex young forests, those are a very rare thing on the landscape. They're probably more rare than old growth. And a young complex forest maybe as diverse or more diverse than old growth. And so I think there's slowly .. that scientific realization is slowly sinking in and hopefully .. they'll realize that salvage logging is in no way beneficial. It's a negative and a big negative and they should stop, especially (unclear).

JM: Has there been a scientific paper that's been focused on that point about the diversity and the rarity of the young forest?

DH: Yeah, actually there's a couple. God, I can't remember the name of the paper but there's .. a famous paper that says .. young forests indeed are one of the rarest forests. I believe it was the Jerry Franklin thing. But there's another one that comes to mind which is, a grad student at OSU named Etsuku Nonoka (?) who worked with Tom Spies (?) and they did some really interesting modeling of the coast range. And they have pretty good information for the coast range on the severity of past fires and the size of past fires. And so they ran some simulations across the coast range province. .. like a 3000 year simulation which they ran 1000 times .. hundreds of times to try to get .. the average outcomes. And they figured out .. what was the, what were typical proportions of different forest types. .. old forests with lots of dead material, young forests with lots of dead material, middle aged forests with not very much dead material. .. all those .. different combinations of features were portrayed and young forests without structure like a clear cut is extremely common now and is extremely rare historically. Young forests with lots of structure were much more common historically and are very uncommon now. .. and then old forests obviously with lots of live and dead biomass were very common historically and are very rare now. So anyway through this grid box you can .. see where we're overrepresented and where we're underrepresented. To me that's a perfect little model. Okay what do we do with our restoration? We take the areas that are overrepresented, try to nudge them toward .. the areas that are underrepresented. I can share that with you. I've got that .. stuff.

JM: That'd be great. That'd be fantastic, yeah. Have you gotten that into litigation as of yet?

DH: No I can't think of an example of what (unclear) in litigation. I've been using it in my comments quite a bit.

JM: So that's in one of the first steps of the NEPA process.

DH: Yeah. And it's interesting ... Part of my job is actually to lobby our lawyers. And I need .. I need to educate not only the agencies. I need to educate our lawyers so they know what the key issues are and what needs to be litigated. And salvage logging is one of the things that's .. hard to sell the attorneys on because they get up in front of a judge and they're talking about dead trees and the judge .. needs education too. He doesn't know that .. how important ecologically valuable dead trees are. And so it's a whole sequence of educational steps that are still not as far along as I wish they were.

JM: Do you guys use the same lawyers? Do you have lawyers on your staff or do you contract out to certain lawyers or?

DH: Yeah we have mostly outside lawyers. .. I have a law degree but I'm not a practicing lawyer. And but we work with the Earth Justice Legal Defense Fund (?) in Seattle mostly but some of their other offices. Western Environmental Law Center, which is here in Eugene and a handful of other lawyers, Pacific Environmental Advocacy Center and Cascade Resource Advocacy Center, both in Portland. There's a bunch of non-profit law firms out there that work on this .. stuff. Ralph Bloehmers (?), he just did a big salvage sale litigation of forests in the Umatilla...

JM: Bloehmers?

DH: Yeah Bloehmers, it's Bloehmers or something like that. Now I can't remember. The h I know is on the other side of the m. But he's with, if you look up CRAG.org, that's his law firm. Cascade Resource Advocacy Group is CRAG, but I think it's CRAG.org. And he just did this big litigation of course on the School Fire, which was in extreme southeastern Washington.

JM: The which fire?

DH: The School fire. Yeah he might be an interesting one to talk to because he involved expert witnesses ... You can submit affidavits to the court and stuff like that. That's .. an exception to my point about .. we're limited to the administrative record. Sometimes you can get expert declarations submitted to the court, which

don't really, aren't supposed to add to the record but they can .. enhance the record. It's .. an odd little loophole. And sometimes .. people fight over whether or not they're admissible or not and how much a judge can rely on them. But he got some experts to talk about issues. One of the big issues there was the Forest Service was logging trees that are dying, not dead yet but dying, which allowed them to use an exception to cut the biggest trees. If the trees are alive you can't cut them if they're over 21 inches and in certain circumstances. And so they wanted to cut trees that were not yet dead but were over 21 inches. So they were trying to say well they're dying. They're not really alive but then and the court says, "Dying means not dead." (chuckles)

JM: That's interesting. That would be interesting to talk to a lawyer too about this for sure. What's your opinion, I think this is probably about the last question here. What's your opinion about this process of bringing these things you know into bear on things? Do you think it's a good system that we have in this country you know for deciding these salvage logging type deals or ecological knowledge in general? Or do you think that it needs to be overhauled or changed or completely scrapped or?

DH: I mean I can certainly think of ways to improve the process to make science .. a more, to make it a more robust process of including science in the decision making process. But right now the trend seems to be .. going against us where there are really .. a lot of people complaining about 'analysis paralysis' or the 'process predicament.' .. if the agencies study it for too long and don't get to action soon enough. So people like.. (unclear on name) who want to streamline the process. He has a bill out there right now. It's not introduced but it's on his website. They're creating categorical exclusions up to 20,000 acres, potentially up to 50,000 acres.

JM: Who's Ron Wyden?

DH: Ron Wyden? Wyden. A US senator from Oregon. .. restoration is in the eye of the beholder and obviously there's nothing guaranteeing that (unclear) were going to do wonderful things for our forests.

JM: Yeah well that's true. I mean how it gets framed seems to be an extremely you know like the most important issue in a way. I mean and I'm thinking of the Biscuit Fire, Sessions and that whole thing. I mean what the models he was using seemed a little out of context. You know to say the least or whatever. So say if

you had the power to be able to change the system, what would you do to make it better?

DH: Well I'd get rid of categorical exclusions .. for one. And .. maybe there should be some .. like a scientific ombudsman process or some way to so that when the environmentalists bring scientific issues to the agency, ..., we can't see because they're paid to ignore it it would be nice if there was somebody we could appeal to and say can you help us bring this information to the agency in a way that .. forces them to have it sink in better. So a scientific ombudsman is one idea. And another one is, yeah I guess I'm .. stuck thinking strictly about salvage.

JM: Is there other changes you'd make that maybe don't have to do with salvage?

DH: There's a lot of tweaks that we would do .. to make the public process work better. Like .. right now the agency publishes notice of their decisions and obscure newspapers in rural Oregon. .. why don't we put this on the web? .. they don't put decent maps out, they don't have decent internet communication and it took a lot of years to get involved (?) kind of crap.

JM: The map things is one of the things that's specifically called for in the laws too that you know as the public process of there be a map so they're not good maps.

DH: Yeah there often are maps but .. if the maps don't have section lines .. you can't really locate where you're at. Or they'll have the units on one thing and the roads are being 15 pages later and you can't tell which roads go to which units ... Just .. that using new technology like Google Earth, they could so easily make it totally, .. for the very first time this month they'll ever see a Google Earth .. file from the Forest Service which had roads, streams, units, ..., a key, everything and you could just click on the different layers you want to see and it's overlaid perfectly right over .. this amazing high res aerial photos on Google Earth. So but that's the first time in all these years. And that guy for all I know gets fired for doing that ... He was doing it on his own. He wasn't necessarily really instructed to do it (laughs).

JM: Well I just, I know that those agencies can get into trouble for using that stuff even though you can download like Google Earth on your personal computer that if you use it for the agency's business would they're losing money. The Google is because if the agencies are using it they should pay a bunch of money for that whole thing. So probably what you've got was the guy doing it on his own. I've

heard that before, they're not supposed to do that. So better incorporation of the public to get their involvement, more transparent process I guess. Anything else?

DH: That's all I can think of right now.

JM: Would you say overall it's a pretty good system?

DH: Oh yeah I can definitely answer that question. I mean I think it's better than most other countries that I've seen. .. it just it seems good in many ways but it's far from perfect. So .. the fact that we have .. individuals can get standing to defend a piece of ground. You can't get that in Canada. Their legal system does not support that process. So I can't imagine .. our system without that. It would be a really scary prospect. So in a way I have to defend .. what we've got is pretty cool but it could certainly be better. And now .. everything we've been saying for the last 20 years it's just come (unclear – trailing off). .. if we could only get resolution of these things 20 years faster than we are currently it would be so much better. Right now we know that .. climate change is a huge issue. We know what we need to do to stop it. We need to have .. stop logging old growth wilderness areas, longer rotations everywhere else, .., restore the plantations, do all these wonderful things. And we probably it won't kick in for about 15 or 20 years even though .. we knew yesterday what was going to happen. So anyway its .. frustrating that it's not more efficient but it's just .. you have to accept .. the messiness of the democratic process. And everything is ultimately .. politics. There is a layer of politics in everybody and even NEPA is not just pure .. pure science and analysis. And even the courts .. the courts are very political. Gordon Smith who was the other senator from Oregon until recently, his brother is a judge on the 9th circuit court of appeals. And his opinions are always pro timber, anti-process. So .. it shouldn't be a lottery depending on what judge you get but it totally is a lot in what judge you get.

JM: Interesting. Is there anything else you can add to this?

DH: I can't think of anything right now but I do have quite a collection of .. salvage related .. comments and science I've tried to bring into the process.

JM: That would be great. That would probably be...

DH: It would explain that whole snag gap thing and...

JM: That's great. Do you have like an electric file of it?

DH: Yeah.

JM: Yeah. Could you send it to me or?

DH: Yeah.

JM: Okay. Yeah that sounds great. Well...

DH: What did you do before you got to Evergreen?

JM: Well let's see. I was working for the Forest Service as a firefighter and I used to live in California but I got offered a job up on the Olympics, was how I ended up in Washington about five or six years ago. It's not a permanent job. Then I left the Forest Service last year and started working for DNR just before the big budget cuts happened. So this year I'm actually going back to the Forest Service for summer employment. I really hope to get a job with the nature conservancy is what I'd like to do. They have a lot of fire related positions.

DH: Well they just had massive layoffs though (unclear). I think it will bounce back.

JM: I think so. And I think just everything is in a dip right now before it comes up.

DH: Yeah and it's just interesting ... You picked an issue that is important to you and me and .. 90% of the people in this room have never even heard the word or wouldn't know what you were talking about (unclear) salvage. So .. climate change .. means something, old growth .. means something, .., fire is still a big bad thing for them. .. and salvage logging is .. so far down the list. .. the idea of making huge progress on that is a little depressing to think about. .. it's going to be slow I guess. That's .. what I'm expecting.

JM: Because it's just so far back.

DH: Yeah. It's just .. back there. And I think that the other side exploits that. They know that it's far back and they know that they can .. continue to be paid not to know the truth and get away with it for a while.

JM: I see. So that really points to the importance of public education or it's almost, I hesitate to say advertising but almost an advertising campaign.

DH: Possibly, but also maybe the fact that some of these mechanisms like using the courts can actually .. leap frog the public. .. even though we have to educate our lawyers and ultimately educate judges on the importance of this thing, .. it might be possible to get some progress on that front or using science. I mean this may (unclear) the courts. But just .. if you had a big public conference and had enough players from the Forest Service and enough players in the scientific community that really knew their shit then you would .. get a transformational Obama flavored .. salvage policy quicker than if you waited for the advertising campaign to kick in. Or if you waited until .. educated (unclear) judge. I don't know. I'm just .. thinking out loud. It's a complicated process. I don't know how it's going to happen but it needs to. So why don't you give me your email address? You might have given it to me earlier. And I'll give you my card. So what are the predictions? Is this going to be a big fire year?

JM: I think so. I think so. I haven't been keeping up on the fuel moistures and everything like that. But California is certainly in the third year of a drought and probably realistically it's longer than that. Yeah I think that it'll probably be a good fire year or a bad fire year you know depending on your point of view.

DH: (laughing) It depends on how it burns (laughing).

JM: Yeah that's true. And well and you know the thing is you know with the intensity of the fire. You know the Biscuit Fire was sold as a high severity fire and that it really needed to be rehabilitated by Sessions. But really the truth of the matter is, is that there was a lot of spots inside the fire that had seed trees left there and really there wasn't, there shouldn't have been a problem with having, getting it reseeded. That's interesting.

DH: Yeah there were certainly a few big days where it went on big runs and took out some areas. But there's a lot of nice mixed severity and low severity in there. The recent FIA reports that came out for Oregon and California recently, Washington hasn't come out yet, but for Oregon and California there is a little analysis of fire severity trends. And they say that there's not an observable trend yet of increasing severity. But the only problem with the analysis is it lumps .. forest rangeland and grass land. So if you pulled out the forest, .. might it be different, they didn't show that analysis. Maybe there's not enough data for it or something. But it's .. interesting. If we're just having a bunch of mixed severity

fire like we did historically, what's the problem? .. we're having a big fire deficit. So let the correction occur.

JM: Well I think that would be a really complicated issue to resolve you know because of the ecology of place or whatever. But you know these west side forests and certainly up in Washington, you know they're historically stand replacing fires which you know happens when there's a whole cascade of events to where it's ready to burn and there's a wind and it happens. So I'm not sure if when that happens because eventually it will happen, that all of a sudden you know that, the whatever, the gauge will move, will jump quite a bit when that happens.

DH: But as you say those are not uncharacteristic. So hopefully whatever methodology you have will account for that. It's really I guess the .. more dry forests and mixed severity forests that you would see that signal and see it change. I'm sure that there's been, I can see the argument from both sides. Well I'd better get back to work. Nice to meet you.

JM: I sure appreciate it. I'll send you an email. I have your email address and just I'll remind you about that group of whatever. That sounds really interesting to me. And with this interview I will send you an email or whatever about what I might want to use from it and get your permission.

DH: Okay that'd be great, that'd be great.

JM: ...you know before putting your name down or anything like that. Does that sound good?

DH: Sure.

JM: I really appreciate it. It's been very interesting.

DH: Yeah. I'm sorry I didn't .. had to cross wires and almost miss it.

Appendix E

This interview of Josh Laughlin appears in its entirety. It was conducted in Eugene Oregon on May 19, 2009. Josh was employed by Cascadia Wildlands Project at the time of this interview.

JM (Jothan Mcgaughey): And well I guess I'll just say the same thing I just said (chuckles). You know I'm writing this paper about how ecological knowledge gets incorporated into policies, specifically with salvage logging. I kind of think with you know with climate change and those sorts of issues that it's going to become more important as time goes on to speed up the process at least you know. And so I was wondering, Josh, if you could tell me a little bit about the organization you work for and maybe your position and what you do and then we can start talking about this.

J (Josh): Yeah, absolutely. Well you know I work with the Cascadia Wildlands Project. We're a non-profit conservation organization based here in Eugene. And I have a field office up in Cordova, Alaska, the northern reaches the Cascadia Bio Region where the temperate rain forests peter out. And yeah we've been around for about ten years and yep celebrated our ten-year anniversary this year. And ultimately working to permanently protect remaining old growth forests in the region, share in species recovery and you know one thing that dovetails into that is you know how best to manage post fire landscapes. So it's quite relevant to you know the questions you're asking in the paper so. And I work as the conservation director for the organization. You know overseeing their conservation campaigns and work with Dan. He's our staff attorney. And you know our staff up in Alaska is a conservation staff as well.

JM: I see. And so you have an attorney on staff then for the litigation and filing things?

J: Yeah, exactly, yep. One of the first cases that Dan actually brought on behalf of the Cascadia Wildlands Project and some other plaintiffs were specifically around post fire logging a couple of years ago. The aftermath of the, oh boy, I've got so many things in my brain right now. Dan, post fire case that you brought that we settled...

Dan: Black Crater.

J: Black Crater. Thank you. Up in the Deschutes National Forest on the eastern flank of the Cascade Crest up by the Three Sisters. There's a fire that burned up there. And the typical response forever by agencies after a wildfire is you know by golly log it. Otherwise it's you know going to go to waste when we can be clear cutting it and generating profits for you know private industry. And that's one of the things that we really have taken on as a challenge and have embraced the need to really challenge that type of thinking that you know post fire landscapes are a lot more than just standing dead trees waiting to be clear cut. And you know we follow the best available science that's come out over the years and which talks about the you know the need for these unique landscapes for a host of different species notably up in the Cascades. There's a handful of woodpecker species that thrive in post fire environments. A lot like for example the northern spotted owls thrive in you know dense old growth forests. And post fire landscapes have historically been clear-cut in the aftermath of the fire. And consequently they're one of the more rare types of ecosystems out there, affecting species like black back and three toed woodpeckers.

JM: Nice. The reason why I jumped on the lawyer is I was just talking to Doug and he was saying that part of the issues that he's dealing with is to actually educate the lawyers who are bringing the litigation so that they know the issues. So it seems like in a way you short-circuited that by actually having a lawyer who's specifically focused on this.

J: Yeah. You know a lot of the lawyers in the conservation community aren't as knee deep in the issues. But say for example the conservation staff on a day-to-day basis they more know the statutes and the law of the land. That's the beauty of having an in house attorney like Dan who's you know not just working on behalf of the clients but works on you know behalf of the staff and the organization and is in the field often times doing a lot of you know frankly the conservation work that gets done in the office. So Dan you know really wears a number of hats and it's not just the staff attorney hat. We tag team a lot in conservation work and policy.

JM: Yeah. And going back to some of the first things you were just saying here talking about how we sort of from ground zero or whatever that salvage has been looked on by the agencies as what you do you know not to support waste or whatever, to allow this to go to waste. Do you think that that points to like an institutionalized state of salvage logging? Like that it's just so accepted that...?

J: Well yeah. I think that's you know to a great degree the problem. I mean for almost 100 years now Smokey the Bear has been telling us that wildfire is bad, snuff it out on the heels of that is you know let's clear cut the forest after to clean them up. And you know the word and the concept of salvage is you know it's a really good thing. We all like to salvage things to keep you going from the dump you know to reuse things. It's a good word in you know for decades that word's been bastardized in the context of logging and that salvage logging is supposed to be put forth as a good concept because it's salvaging something. Yeah it's salvaging logs and providing wood volume to communities and profits to the private industry but you know the big questions aren't asked. What's the ramifications or implications for you know the post fire ecosystems and species that rely on them. So I mean it's a real uphill battle for us you know taking on this you know almost century old mindset that salvage logging is good, that you know wildfires are bad and we're still decades behind where we currently are with the need to permanently protect green old growth forests. You know there's been many more decades of advocacy work done there and just really over the last you know ten years there's been a real change in mindset and new science emerging, a lot more grants being administered to the science community to frankly go out and just conduct the science. Like what you know there's a lot of emerging science. You know for example like down in the Biscuit area after you know in an area the Biscuit area is down in southwest Oregon. I don't know if you heard about that at all.

JM: Yeah, certainly.

J: A large series of fires burned together into one fire later dubbed the Biscuit Fire in 2002. But some of the science that was done after that is they looked at an area that was salvage logged years prior to the Biscuit Fire in the Silver Fire complex and replanted with you know dense even aged saplings. And they looked at areas that burned in the Silver Fire that weren't salvage logged after the Silver Fire. And you know just the juxtaposition of how the forests responded. I mean the plantations just got torched in the subsequent Biscuit Fire not lending to a real fire resilient landscape. I mean there's plantations, once the dead trees are clear cut and replanted with homogenous saplings they just they roast, often times setting things back. And you know we've just been spending a lot of time just trying to do just real basic education because you know the issues can be confusing but we just like to you know describe and portray you know these post fire landscapes. I mean all forests you know whether it's east coast or west coast or the Midwest have evolved with fire. I mean that's a basic tenant of forest ecology that a lot of people just don't know that wildfire is actually a good, healthy natural dynamic

element for species, for vegetation communities and that we just really need to start from scratch really and reframe the issue and break 100 years of myths that wildfire is bad, that salvage logging is good and start to get you know the American public to think a little differently about post fire landscapes and their role in the ecological balance of you know life on Earth really.

JM: Yeah totally. Do you think that part of that is kind of a function of how much people have learned in recent decades? I mean it's kind of like the rate of knowledge about things has really kind of expanded. I mean you have the whole spotted owl thing that came about because of a graduate student. And so I guess what I'm getting at is that you know some of these things weren't known or certainly weren't known on a broad scale. Do you see that as playing a part in this?

J: Yeah. Well I just think there's you know especially over the last ten years. Really the catalyst you know for change in this particular issue kind of how the public looks at post fire landscapes is this issue around the Warner Creek fire. Does that come up in any of your research?

JM: Yeah.

J: When I spoke with you on the phone I suggested one other person to talk to, Tim Ingalsbee. I don't know if you got a hold of him at all. He's a good person to talk to.

JM: I haven't. That's the FUSEE?

J: Yeah, the FUSEE. He's kind of my go to expert about Warner Creek but to make a really long story short, there was an area that was set aside as an owl conservation support area, spotted owl support area up in the Cascades, you know kind of during the height of the spotted owl wars in the late 1980s. And if you can believe it, criminals went in there with gas jugs and burned the forest down you know in an act of arson in protest of the area getting designated as an owl support area. And coincidentally or incidentally I should say, after that intentional arson happened, the Forest Service plan, the clear cutting project in the owl support area. Even though it wasn't a you know lightning ignited wildfire it was you know human caused fire. It you know once the fire got going it certainly showed the effects of a fire cutting through a forest. And it really turned into this research laboratory up there. And a hotbed of protest because the agency wanted to go in and clear-cut this area after it was intentionally torched. And like I mentioned it

kind of captivated an audience and there was a lot of education done in the community and ultimately the area wasn't clear-cut. There was a long ridge history of civil disobedience that happened up there for about two years. And really put the issue of post fire clear cutting on the map. This was, the arson was 1991 and the clear cutting proposal surfaced in 1995, 1994 or 1995. And you know so far at least the past ten years, 12 years, it's become an issue where now when there's a wildfire that burns in the forest or an arson fire that's set in the forest, the agencies don't just propose clear cutting projects because they know it's maybe not A and easy sell to the public anymore but also that there's a lot of science that's surfaced that really opposes you know just reckless clear cutting in terms of impacts on landscapes and species. So yeah, really the last you know 10-15 years it's really come to the surface. For example you know in the Northwest Forest Plan area, which is a 24 million acre area in western Oregon and Washington and northern California. Are you familiar with the Northwest Forest Plan?

JM: Yes.

J: You know it was a system that was set up to recover the owl from going extinct with reserve allocations in areas you can clear cut and so forth. One of the big things that we've been at the forefront of is well what happens when the reserves burn, you know the green reserves that were set up and designed for owls. And that became a hotbed of controversy. In the Biscuit Fire area a number of post fire clear cutting projects that surfaced on the Willamette and the Deschutes National Forests when these what are called late successional reserves and they burned, the agencies are like alright we're going to clear cut them in there. We're going to clear cut in there and replant as quick as we can. That's going to be the best thing for the owls to get green healthy forests growing again. And what we've brought again to the forefront is opposing scientific studies by real prominent owl scientists that's just surfacing the last couple of years that basically say you know burned forests aren't necessarily bad for owls and they use you know the telemetry studies they're doing. You know they put these little devices on owls now where they can track their movements and there is a lot of research going on in post fire environments and owls are coming back into them. You know they're not necessarily nesting and they burned Douglas fir trees but they'll forage and roost and so forth. So yeah that the whole tenor and the whole climate around post fire clear cutting is changing and we have actually litigated to basically stop the agency from clear cutting in reserves because there's a lot of science that says you know burned forests aren't necessarily bad for owls especially you know low and mixed severity fires. You know you've got low, mixed and high severity fires,

high severity meaning stand replacing which owls typically won't use for nesting, roosting or foraging. But the low and mixed severity you know they're finding owls back in old historic territories. So we've really I'd say you know changed the way the agencies think about managing post fire landscapes especially in the reserves in the Northwest Forest Plan. For example there's a fire up in an area called the GW Fire Area. The east side of the Cascade Crest is called the GW Timber Sale. Is that for George W Bush, Dan? Is that why it was called GW Fire?

Dan: I think it's on this side of Washington...

JM: I think its George Washington.

J: Okay. I was like why do they call that the GW Fire? Okay, yes. It was on the eastern flank of Mount Washington on the Deschutes. And they opted after you know Dan on our behalf settled the Black Crater Fire, which kept them out of the reserves. They decided not to, the following year when the GW Fire happened they decided not to pursue clear cutting in the reserve but only in the what's called the matrix, a logging based area. And that decision is a direct result of you know the litigation that we brought prior in the changing stance.

JM: Now is that the same forest? Or was it an adjoining forest?

J: Same national forest, the Deschutes National Forest, which is just on the east side of the Cascade Crest, kind of eastern range of the spotted owl.

JM: Do you, I'm sorry to interrupt you. You're on a good role. Do you think that the different administrative units as you know the different forests that that sort of puts in a block to, would that have happened on a different forest do you think?

J: Good question. Ideally yes but realistically no you know because for, what's the best way to put it, for knowledge, legal knowledge to transfer from one administrative unit to another let alone one agency to another like Forest Service to BLM isn't as quick as it travels say from our office to Oregon Wild's office. But you know ultimately you know if it ends up in court the Department of Justice is the one that's going to represent the Forest Service and you know they follow the case law and that would get settled. And what the law of the land is. So I think slowly it ripples down you know it all, every all the forest planning that happens out of here happens out of a place of what's called Region 6 up in Portland. It's for all the national forests in the Pacific Northwest and theoretically there would be direction coming out of there to all the national forests in Region 6

that would basically say post fire clear cutting in late successional reserves is probably not a good thing anymore. I'd be surprised if that document wasn't circulated after you know the Black Crater Fire, possibly it was settled. I never saw anything like that but I'd be surprised.

JM: Another thing that you had brought up earlier was the issue of grants in producing knowledge I guess. Do you know who's giving those grants I mean...?

J: Yeah. The federal government is actually the one that's been doling them out especially on a lot of the post fire issues. For example a lot of the research that's being done out of Oregon State University they call them joint fire science dollars. It gets money administered through the Department of Agriculture. I could be wrong. You might want to double-check that. But its money that's doled out from the federal agencies to you know the schools to implement the joint fire sciences research. So ironically a lot of the conclusions that are coming out of some of these papers directly contradict a lot of the policy. For example that Oregon State University's been advocating for or the agencies themselves have been advocating for. So it's created a little bit of a conundrum. Yeah. But it's very much so. Actually it'd be best to talk to people within the joint fire sciences to you know get the inside scoop on it all but it's federal money. It's not you know private foundation money with strings attached.

JM: Yeah that's interesting. Well you were talking about, just talking about Corvallis, yeah. That I mean I have you know looked into the Biscuit Fire and into Dan Donato's paper and then the Sessions' report. Really kind of you know extremes right, or maybe not extremes but definitely a difference.

J: Yeah, one was a science paper and one was a recommendation, yeah.

JM: The Sessions was a recommendation you'd say?

J: Yeah, yeah. I mean it was basically how do they came up with a board foot target for Biscuit and funded by the Douglas County commissioners. You know its clearly orchestrated operation. You know I think they called for I think the initial Biscuit recommendation was 90 million board feet. I think this called for like, correct me if I'm wrong, like 500 million board feet after the Sessions report. Is that what it was Dan?

Dan: 2 billion.

J: Oh 2 billion. Yeah, was the Sessions Report. And I think the final environmental impact statement was like 372 or something.

JM: I'm not sure of the numbers but yeah it was quite a bit less.

J: The initial recommendation by the Biscuit planning team was 90 million board feet. Then the Sessions report came out calling for 2 billion board feet. Then the supervisor flew back to Washington DC to talk with Mark Ray and then came up with this you know happy medium of 372. So it all gets, it was a very politicized issue and that was I mean that whole Biscuit and Oregon State University. I don't know to what extent you followed Oregon State University's role in how the Donato study was being dealt with in the media? Did you follow that at all? Hal Salwasser the dean of the forestry school, yeah.

JM: I little bit. I mean I know that there was a lot of well I know that Dan Donato got called back before Congress and had sort of a rough time in the questioning and...

J: Actually I was at that hearing and it wasn't a rough time. No, he held his own and looked like an A scholar who really came off looking a little whacko as one of the democratic congressmen from Washington. Brian Baird, he was one of the ones they called for the hearing. He was a House national resources subcommittee. It's ended up being a field hearing down in Medford. And Donato did an absolutely amazing job defending his fieldwork and his methodologies and so forth. So yeah it was interesting. But to jump back to my point a second ago, when his study came out it was right around the same time that congressman Walden from Oregon's Fifth Congressional District down in southern Oregon and eastern Oregon where a lot of the wildfires are occurring. He was calling for his bill that he was working to introduce into Congress at the time was called an acronym Farrah Forest Emergency Ecosystem Recovery Act or something. Basically, it was a piece of legislation that would mandate and streamline clear cutting after not just post fire events but all natural disturbance events. So you know South Sister explodes in the volcanic you know lava happens. You know all the dead trees would get clear-cut under that bill when the bug outbreak happened. It was basically a piece of legislation that would take you know it wouldn't let the natural world function as it's supposed to. If you looked at the language of it, it was pretty flabbergasting. So he was introducing that bill. It actually got introduced, Senator Smith was introducing a companion bill in the Senate at the time called the Forest For Future Generations Act basically saying similar to bill. And then Donato's paper came out which just really took the wind

out of their sails and basically I don't know if you remember the conclusions of the Donato paper but it cast a lot of doubt on the and contradicted a lot of you know what the post fire clear cutting advocates were suggesting. And Oregon State University got really involved because the sciences coming out of OSU, Donato was a student up there, and Hal Salwasser the dean of the forestry school up there was subsequently found to be coaching a lot of the timber industry on how to respond to Donato's paper and trying to basically spin it in the media and kind of downplay the importance of the Donato study and the effects on this forest legislation that was happening in Congress. And that all got leaked to the Eugene Weekly actually. And they did a public records request. And I'd encourage you to do a search on the Eugene Weekly's archive for some feature articles that appeared. We worked fairly closely with them on those about the what was coming out of OSU at the time. If you just yeah do a search for Donato or State School of Forestry or Hal Salwasser I'm sure the articles will come up. There were a couple of cover stories they did. So yeah Biscuit kind of you know there was a silver lining in it. A lot of the Biscuit Fire area got logged including some inventoried roadless areas down there including late successional reserves for clear-cut. But the silver lining in it was you know the public education effort that accompanied the whole debacle really. People learned as another opportunity to teach people and we've led dozens of hikes down into the Biscuit Fire area explaining the not just the role of wildfire but the need for wildfire on the landscape especially down there where a lot of the species down there rely on wildfire to exist.

JM: Is that with like students or the general public or?

J: Yeah the general public, students. We did some hikes for the University of Oregon (unclear) outdoor program. We have public hike series that we do here. We do campouts down there, shipple (?) off the world renowned resource, the Klamath-Siskiyou ecoregion and we led a couple of film crews down the Illinois River through there. There's a film documentary made of the Biscuit Fire. So it was a great organizing tool to be honest with you. And those bills never, they died on the vine. They never made it through Congress and I don't foresee a place on the committee agendas anytime soon for bills like that. There's just not popular support for them or scientific support.

JM: I see. How important do you think that public knowledge and support for issues is?

J: Oh I think it's of paramount importance. It's, I think that's what catalyzes change you know when the public is demanding change. I think that's the only thing that's really or one of the greatest things that's contributed to real change in the past. You know if we could turn out you know as many people to a forest rally about the importance of post fire landscapes, as we could to a you know Oregon Ducks baseball game. We'd be making some noise and we'd be making some change. You know, unfortunately we're not quite at that place yet where it's that relevant of an issue for people. But the more people that are weighing in on the issue you know the fact that it you know when those cover stories in the Eugene Weekly were coming out they were covering Biscuit. It kind of became a regional story. If it was news up in Olympia and The Seattle Times at all. But you know the more people that hear about it and demand change, that's going to affect policy change and affect the ways Congress critters (?) vote. You know it's those kind of bills. Like I said don't really have a place right now because there's not support in Congress for that kind of thing or scientific support to back it up. So you know if enough of the public is out there you know calling for something, I think that's going to make that change happen.

JM: When you say enough, do you think that that's like, well say if we're talking about a senator, is that going to be like enough people that would affect the election? So it would be you know somewhere like you'd look at percentages of the votes they got before and how many people are undecided and try to figure out how many people you need to educate to swing a vote or?

J: Yeah that's a really interesting calculus. You know right now it's just sitting down over at lunch with Dan. Senator Wyden's currently talking about comprehensive forest legislation for the state of Oregon you know theoretically to protect old growth and expedite you know thinning that would theoretically enhance forest conditions. And you know we're trying to figure out ultimately you know what his intentions are with the bill, if it's to truly pass legislation or if it's to you know just neutralize criticism. You know, he's got enough people saying protect the old growth Senator Wyden or enough of the industry saying you know we need to speed up you know thinning the forest. And I guess to ultimately answer your question; I'm not quite sure what the answer is. I think it really depends on the politician. Yeah.

JM: All right. Yeah that certainly makes sense. You were talking about the civil disobedience on the Warner Creek fire and I think you were basically saying that that made a huge impact? Or was that, you said that it educated people about that issue I guess. Did it, was that a significant role I guess?

J: Yeah. You mean the role of the civil disobedience at Warner Creek played on the greater mindset of the American public or communities around the importance of post fire landscapes?

JM: I would say on a national scale I guess.

J: Yeah, I mean there were articles in National Geographic, articles in The New York Times; it was front-page news in The Register Guard for a long time. So it got out there. And you know when an article gets out there to National Geographic we know that the circulation is you know and there's a story about a committed community of people that are willing to basically spend a year and a half like on a logging road talking about this issue of post fire clear cutting and logging without laws. This is during the salvage rider when Congress suspended environmental laws and the Warner Creek logging project was the first timber sale that the salvage rider, that was authorized under the salvage rider. So it was you know not just educating about post fire landscapes but also this concept of logging without laws up there. I think it you know educated tens of thousands of people about that issue that otherwise have just you know taken you know what Smokey the Bear has said for years.

JM: Do you think that those people's purpose, do you think you could put it in light of trying to educate and trying to get ecological values recognized? Or was it maybe, or was it different in that it was an issue about old growth? Or is that kind of the same thing maybe? I mean, I guess what I'm getting at, when they were blocking roads or, I don't think they were spiking trees there but tree sitting or whatever else might have gone on. Was it for the purpose of just stopping it there? Or was it an actual attempt to change the process?

J: Now my observation was you know it was an experiment that just evolved into you know what it became. I don't think there was a real hatched you know plan of action. I think it just evolved into a national story. There was you know a number of you know really just kind of looking at it and reflecting a lot of the stars kind of aligned in a number of different ways there. You know you've got issues of endangered northern spotted owls. You've got an owl reserve, you've got arson, you've got the agencies rewarding arson with clear cutting, you've got the salvage rider, and you've got a community in Eugene that was real ripe for stopping what they saw was a real gross injustice to the comments. You know to this place that was all of a sudden threatened and logging was proposed without laws. So I think the stars really aligned and it became what it did.

JM: Yeah I think you're totally right. In your opinion what mechanisms do you see for incorporating ecological knowledge into policies? And out of those, which would you, say in your opinion is the most important?

J: And clarify for me when you say ecological knowledge just so I have a, make sure I understand what you're talking about.

JM: Well that's a good question (laughs). I would say just as you know as knowledge gets brought into the literature about ecological issues and environments.

J: And so I'm sorry was your question, what role does that play?

JM: No. What I asked was, in your organization and in your position here, what mechanisms do you use to try to get that knowledge into the policies?

J: Right. One of the most powerful tools, there's a couple of real powerful tools that we utilize and that's you know just the power of you know just our grass roots advocacy in getting humans out to these threatened areas and to you know once we build a demand for the support of a place and that demand is leveraged, that's when we see policy change happen. You know when Joe Six-pack can relay his story from hiking down to the proposed Devil's Staircase Wilderness to you know a politician that's on the fence and can relay to why it's important that X senator cast his or her vote to protect this place. It's just powerful.

JM: Do you see that as the grass roots advocacy do you see that as confined to support of a place of Joe Six-pack and his favorite fishing hole? Or do you see that eventually like you know reaching a critical mass point to where it becomes a blanket thing for the whole country? Do you have any thoughts on that?

J: I'm sorry. Say that again one more time.

JM: Well when you are able to do advocacy for a certain place, do you think that there's, does it stay confined to that issue or place to that locale? Or do you think that at some point there's some sort of, what is it, not the monkey effect but there is critical mass point type deal?

J: Yeah, boy, you know if we'd had that one, if we could figure that one out I think we could solve a lot of the world's problems (laughs). You know as far as the whole multiplying effect and you know bringing about you know real change.

JM: Because it seems like if it's by a place, if it's by a locale it kind of seems like that it's going to be a continuing process that you're going to have to advocate at each location that it's going to continue on. Is that, do you find yourself doing that now?

J: Yeah let me give you an example. So for years since our inception you know for the last ten years we've been knocking on Defazio and Wyden's doors basically saying here's another old growth timber sale that the agencies are preparing. We need your help to stop it. You know, here's 2000 petition signatures of you know community members that live in your district that don't want to see this happen. So you know they've engaged a few times, written some letters. We've got some degree timber sales cancelled in part due to their participation. But that gets old you know. That gets tiring for them; it gets tiring for us to try and nip this timber sale here and that one there and so forth. And that's I think partially why both of them have really put forth concepts to pass legislation that wouldn't just protect this area or that area but it would take old growth off the table. So I don't know if that specifically, it kind of gets at what you're talking about?

JM: I think so.

J: Yeah it's a little more, you know it's yeah it's a little bit more of a strategic way of looking at a really good way of utilizing our time rather than trying to stop this sale and that sale and that sale.

JM: I imagine that there is some risk involved with as an organization accepting some like making a deal and accepting some sort of legislation like that because you know a lot of this stuff comes down to fine print and lawyers you know to, and it gets litigate goes, you know there's an injunction and it goes into court. So I imagine that that would be an issue, like that you'd want to be really careful about whatever you signed up for.

J: Absolutely. You know and that's why we're following it so closely. Dan just wrote us a real detailed comments on Wyden's most recent draft legislation that's out and we've provided feedback to Defazio's in the past and Wyden's earlier on. Yeah if we're going to put our name on something and support it, you know we're

going to have a reason why. You know that said, you know I'll be the first one to say I don't want fear of the unknown to prohibit us from getting something done. I'm tired of trying to stop individual timber sales. I've been doing it for ten years and it frankly just gets old in... It's just a tired strategy that we use to engage politicians, engage the public. And you know I'm ready to pass comprehensive forest legislation that's going to take old growth off the table and if there's going to be a you know an alleged bone in it for the timber industry in which you know there more than likely would be you know we're going to figure out what that is and figure out if it's something that you know we can live with. If it's going to be at the end of the day a lot better than the status quo. Does that make sense?

JM: Yeah, yeah it does. So it sounds like that you are in the process of trying to step out of individual sales into...

J: Absolutely. Yeah, yep. And yeah, Wyden and Defazio, if both... Defazio's introduced bills in a number of congressional sessions in the past. Wyden's been trying to do something for the last five years. Now he's got a bill that would cover the entire state of Oregon, dividing it into more sites and dry sites and different civil cultural prescriptions for the different sites so...

JM: And now when, during this process that's going on now, do you send suggestions to the senator? What are kind of your actions? Because it sounds like it's a critical point if they're putting the legislation together, do you start marshalling your members to write letters?

J: That's a really good point. You know we're absolutely making sure we provide the member or the senator feedback you know, what we think is right with the bill, what we think is wrong with it, how it can be improved. You know we don't want to just write it off and say this is bad. He wants to do something so we're going to engage and try and make it better, try and make it into something that we can support. There's a lot of (unclear) that's out there that have basically written it off and they're not going to work on it at all. But basically missed the train and the opportunity to engage if that's the position we take so we've decided to engage. So yeah, getting membership, you know putting out an action alerts kind of thing, getting community members to weigh in, generating media pieces (unclear)'s editorials, by you know The Register Guard and so forth. It's typically the sweet of tactics that gets unrolled once an issue needs addressing.

JM: Okay. If I can direct it back to kind of that question about which mechanisms you use. You were talking about grass roots advocacy.

J: Yeah, a thing that comes to mind is just the power of the picture whether it's video or still photos, digital images. You know we're talking about people that sit in ivory towers all day. You know these politicians don't you know come out to the forests very often. They just, they're responding because their constituents are telling them things and they want something done. For a decade you know people have been telling Senator Wyden they want the old growth protected. That's what we've been telling our base to tell Senator Wyden. So you know he writes legislation for example and hypothetically we'll send him pictures and say listen your bill doesn't go far enough. These types of forests from this you know forest that we were just in would currently be threatened under your bill. You know because we're the eyes and the ears of either the district or the congressperson or you know the senator for the state. So we have just you know a massive library of photos anytime we're out in the field. Like if we're looking at a Bureau of Land Management timber sale or (unclear) timber sale that we're trying to oppose, snapping pictures and put them on the website and sending them back to DC, basically saying listen, this is what's being authorized out here. Are you going to you know get off your duff and do something while they're clear-cutting the public's heritage forests or not? So the camera's been a real powerful tool for us.

JM: Is there a question between quality versus quantity? Do you guys have a lawyer on staff? Do you have like a public relations or an advertising person?

J: If we had the budget for it, it's probably something we'd you know hire. We don't so it's just something that we all take on. You know writing press releases or generating media, that kind of thing. It's all self generated. You know some of our colleague organizations that are a lot bigger and more well healed than our organization. You know they have specific what do they call them you know just media people that deal specifically with that kind of thing, public relations people. So it's you know we're all kind of Jack-of-all-trades in here and fill the niches that need to be filled. So...

JM: I see. I was just kind of thinking you know the lumber companies or what not, they have a lot of money and they've definitely put time and energy into campaigns to change public opinion. I was just curious if you find yourself outgunned in that area?

J: I think there's always the underdog effect that's going on. But you know when you've got the truth and passion behind you; I think that's oftentimes a lot more powerful than dollars. Yeah, I mean I've witnessed that with, I don't know if

you've been following the deal on this western Oregon plan revision, the WOPR. You know we've all but defeated that. At this point it's in court right now and there's not public support for it and you know the industry and county commissioners that have pulled out all the stops to that are really get the cut out and try to build support for the WOPR. And occasionally you know when we work with colleagues and pool resources and you know we do some of our own polling and trying to figure out what the American public's thinking about these issues. And you know and we find stuff that you know resonates with what we're trying to advance in polling conclusions. You know we'll get that out there and generate media on that. Yeah, we're kind of our own little media machine.

JM: I see. Do you find that phrases like the WOPR type of stuff that those are useful in conveying ideas kind of like an advertising snapshot to bring an issue down to something really...?

J: Yeah, WOPR couldn't have worked out any better. Generally we try and steer clear of acronyms and things that don't make sense to the American public but yeah the WOPR we just you know we couldn't help but seize the opportunity there. So yeah we did some fun stuff with that. Even with the Biscuit, you know it's too fun not to do some fun organizing and grass roots actions to involve biscuits. And so yeah, try and make it fun.

JM: Okay, yeah because I hadn't heard the WOPR before. I mean I saw the acronym and actually looked at part of the plan. Kind of, correct me if I'm wrong but wasn't the BLM kind of getting out ahead of the game, overstepping themselves because the Fish and Wildlife Service is doing a review of the spotted owl plan?

J: Well yeah, there's a couple of things going on there. So yeah, Fish and Wildlife Service under the previous administration put out a new spotted owl recovery plan and in order for WOPR to proceed in what WOPR was or is, it basically, forgive me if you're familiar with all of this stuff, but it basically divorces the BLM from the Northwest Forest Plan's reserve strategy. You know that the plan in '94 when it came about was you know Forest Service and BLM work within a 24 million acre framework, design a reserve strategy amongst you know the agencies to you know keep the species from going extinct. And WOPR you know is a settlement agreement that the industry sued years ago. They actually sued a couple times on this. And most recently the Bush administration's like, okay we'll settle this. You know we don't even; we're not going to go defend a step back. The industry sued and said these BLM should have never been part of the Northwest Forest Plan

reserve strategy. They should only be managed under the 1937 ONC Act and the Bush administration said, let's settle out of court you know. Let's find something that works for you. And you know they born this thing called WOPR, Western Oregon Plan Revision, that you know by December 31st '08 they'd come up with a decision which considered removing or greatly reducing the reserve strategy on BLM lands to ramp up the cut. And so the only way that could legally happen is if there was an owl recovery plan put forth that was really weak. So the Fish and Wildlife Service also within the Department of the Interior worked on putting together a recovery plan from '06 to '08 and got caught up in all the Beltway politics in DC. There's a lot of media generated on it about how Julie McDonald, if that name rings a bell?

JM: Not offhand.

J: One of the head figures in the Department of the Interior, her fingerprints were all over it. She was part of the oversight committee and basically trying to water it down and make it put more emphasis on bard owl as a threat to the spotted owl and less emphasis on habitat loss as an issue, basically weakened it as much as she possibly could. And it came out under a GAO or an inspector general's report that she was implicated in meddling with like I don't know 15 or 20 different endangered species recovery plans.

JM: I remember this now, yeah.

J: So we sued over this and a coalition of ten or 12 plaintiffs, sued the owl recovery plan saying it was illegal for X, Y and Z reasons, one of the reasons being it was based on recovering a species that you know had Julie McDonald's fingerprints on it. The Obama administration has decided not to defend that in court because frankly they're going to lose. You know Julie McDonald you know erred on you know an illegal, what she did to the endangered species recovery plans. So it wouldn't work for them in front of a judge. So what are the implications then for the WOPR if the owl recovery plan is not going to proceed? So we're in pretty heated legal discussions right now. WOPR is being litigated; the owl plan is being litigated. And just yesterday, Dan's talking to our other attorney now, the government just asked for another 60 days to respond to our WOPR complaint. They're trying to figure out how to deal with in a legal owl recovery plan. It's looking like they're probably going to do it over. To what extent or how much they're going to do over is up in the air and part of a legal discussion. But that clearly has implications for the WOPR. So a lot's still

unknown right now but it looks really good for or a lot better than it did for imperiled species. So...

JM: Okay. Any other sorts of strategies, mechanisms? You've got the advocacy and ...

J: Yeah, I think I mentioned just getting the public out there. You know until people become engaged and see threatened areas firsthand, it's really hard to advocate for them. That's what I've found. So we really placed a lot of emphasis over the years on getting people out to threatened forests and recognizing they are theirs. You know the national forests, the comments and I think once people make that connections realize that national forest lands beyond districts are their federal lands and they have a say in how they're managed. It's pretty empowering for people. So you know most weekends we're found leading hikes to threatened areas or areas where we're working to currently protect.

JM: Do you think that being there in person, getting the people there in person, works better than say a video of a place?

J: Absolutely, yeah. And you can't always get a politician down there. We've gotten Defasio and his staff down to this place called the Devil's Staircase that we're working to protect as a wilderness. But you know you're not going to get all the politicians in suits you know with a pair of cork boots on and you know a flannel on to go hiking eight miles down into a roadless area. So you know we do what's most effective for the particular person. And for the general public you know we try and get as many people into those areas if you know they're not able or they're elderly, host presentations for example. We've got a presentation on the Devil's Staircase area in town in early June. Try and turn out 60 or 70 people.

JM: I wonder what would be a good term for that. It's almost like a personal witness or something like that you know that makes it stronger than a video image or whatever.

J: Yeah, definitely, yeah. When you've been somewhere and you can feel it, you can smell it, you can taste it. It's different than watching it on a computer screen. So that personal experience is really impacting, can really embrace that.

JM: Do you have any specific examples of your organization's involvement with salvage logging and the process that you went through to, I'm hoping for like some sort of ecological knowledge to get brought into it. But maybe just the

process of opposing it and what may have happened. Were you involved in the Biscuit Fire?

J: Yeah.

JM: Could you talk about those?

J: Sure. Well like I was saying, boy that's a good example because there is a multi year campaign. We worked a lot with other colleagues, Klamath-Siskiyou Wild Land Center and the Siskiyou project a bid (?) and others to just draw attention to what was going on down there you know. Just to backtrack a little bit, this whole area, are you familiar with the County Opis (?) in southwest Oregon?

JM: No.

J: Yeah it's been recommended, as a global heritage site by Unesco and it's an ecological hotspot by these different global outfits. It's just got rare types of soils that are called serpentine soils that only certain species grow in, endemic just to the Siskiyou's. And there's within the Klamath-Siskiyou there's about a 200,000 acre wilderness called the County Opis (?).

Dan: I've got this meeting. I've got to run.

J: Cool, Dan. We'll see you later. There's a wilderness area down there in that around it is a lot of inventoried roadless forest that's unprotected. And the fire burned in the heart of the wilderness and spread out and you know all told it was about a 500,000 acre complex, really large. And sure enough you know big proposals, not just the logging the matrix but in late successional reserves and the inventoried roadless areas there had been proposed to become future wilderness. So yeah we just you know pulled out all the stops, had rallies trying to get Congress involved, getting Wyden's office involved. We had a real colorful demonstration at his office one day. We called it a Biscuit's breakfast. We showed up with fresh baked biscuits and had fun with it and dragged the media over there and it was just kind of a lighthearted event trying to get him engaged. He engaged a little bit. Post fire is a tough issue for politicians to engage in because you know it's easy for them to get behind old growth protection because the public's there. You know, publics not totally there on post fire. You know like I said we're decades behind. So and that's reflected by the way Congress acts you know. Typically Congress you know responds to what their constituency is saying. I can tell you right now the majority of Oregonians aren't going to tell you

that post fire logging is a bad thing. So we still have a lot of work to do there. So yeah we had colorful demonstrations down at the forest supervisor's headquarters in Medford down at the Green Bridge which is the site into the contested logging area, had letter writing campaigns, pretty much just pulled out all the you know tactics that we do as an organization to draw awareness you know brought a lot of media down there, hiked them through threatened areas. There's a spread in Time Magazine about it. So it got some news, brought those issues to the forefront.

JM: Yeah, right. Well also Bush kind of used it as a platform for his healthy forest initiative. Yeah so there I mean there was a lot of whatever about it going on too.

J: Yeah, yep, yeah. It was a real political lightning rod. Politicians were using it to advance legislation. You know the fear of fire and the forest burning down. We need Forests for Future Generations Act legislation and we need to fireproof the forest. We need to just stop a wildfire from happening. You know this is keep in mind this is an area that historically burns often for since time immemorial it's been burning often. I mean the Siskiyou's were born in fire and all the old growth hardwoods you see down there are a direct result of you know high intensity wildfire. Just you know spreading back up from their bases after they burn. Yeah that's truly a unique landscape if you have the opportunity to go down there.

JM: Yeah. I'm interested in this the publicizing of the Biscuit. You know Bush was there trying to do his healthy forests which was thinning to make the forest more fire safe apparently but it kind of called for a lot of cutting and on the other side there were groups opposed to the salvage logging and stuff. Do you think that the publicity behind this thing skewed it or changed how people perceived it? Like the actual real ecological issues were sort of not as important because it became more of a media event to some extent?

J: Yeah it's really hard to completely engage that. You know I wish there was a way to you know take a temperature of you know the public's reaction you know before during and after and kind of their thought process. Yeah, yeah. I don't know what the answer is to that. You know I'd like to think that you know they understood it. I know all the people that were led out into the field and took hikes through the area recognized it. But the broader public, I don't know. It's a little bit hard to really answer that.

JM: Yeah because it seems like the people who would be I guess physically able to go on your hikes and then willing to that you're going to be preaching to your choir in a sense and that you know the Bush healthy initiative type of thing is

peoples whose grandparents grew up logging out here. It may have just polemicized (?) I guess is the word at issue.

J: Yeah you know and the post fire issue especially you know. You know the ones you know the demographic that you know ideally we're trying to outreach to is you know the ones that are on the fence. I mean otherwise people have their minds made up. You know it's either a good thing or a bad thing. So again it's a little hard to gauge but you know it's my hope that you know we change minds and you know open people's way of thinking about it up.

JM: Yeah I certainly hope so. Do you guys, you mentioned poles earlier to find out people's perceptions I guess about things. Do you guys rely on that a lot and do results of...? Do you ever put out any of your own poles or?

J: No. 2002, we were part of a consortium of conservation organizations called the Northwest Old Growth Campaign. It's had a number of different names and iterations. It's for the most part not defunct now but just you know it's not operating under Warren Moniker (?). But there was some poling that took place that year, Davis and Hibbits (?) up in Portland, pretty renowned, you know, non partisan poling firm that dems and republicans and their own uses (?). And we commissioned, the campaign commissioned them to pole Oregonians and Washingtonians on the issue of old growth logging. And we got some good numbers out of that and we use those and we did some media around it and just talking points for advocacy. We found seven out of ten wanted to see old growth forests protected. Not really mind shattering numbers but...

JM: Pretty good though.

J: Pretty good. And it was not you know just urban areas. It was you know across states, party lines and so forth.

JM: I see. Do you think that like the image that can be brought to an issue like with old growth you know obviously you can have these big majestic trees and it kind of lends itself to a picture you were talking about earlier and you know the spotted, the Northwest Forest Plan had at its heart you know the owl which can be personified I guess. You know they're very interesting creatures or what not. Do you think that that sort of image of an issue will help define its process or where it goes or how people bond to it maybe?

J: Yeah. You know I wonder about that sometimes you know. The owl, you know, became kind of the focal point of the old growth struggle. And you know it's not really about the, I mean it is about the owl in the sense that you know it continues to decline at nearly 4% a year across its range. But you know there's a larger issue of you know what do we do with the remaining old growth and you know where is a place in this world for remaining old growth? You know I wonder about that in terms of you know an effort to bring about more attention to post fire landscapes and you know species associated with those. And you know do you find a poster child critter to you know throw on your outreach materials and you know put to the forefront you know and you know figure out the trends in populations and so forth if that makes sense. I don't know. I don't know if, yeah. I don't know what the answer is. I've gone back and forth about that a couple of times.

JM: Yeah you know I mean I wonder if it was like no disrespect to slugs or whatever but some creature that's not whatever or maybe some yeah some microscopic thing. I mean where's this line going to get drawn on endangered species. You know, I don't know. But just down in California where I'm from there's my girlfriend's grandfather who you know I really appreciate as a person or whatever but politically it's just been kind of out in nowhere land in my opinion. You know there's this kangaroo rat or something that stopped these developments down there and they guy is just always you know complaining about the damn rat (laughs) you know.

J: Right. Yeah rats, that's a tough one to have as your mascot, yeah.

JM: There was something I read a while ago and I wish I had the actual quote but it had to do with Confucius. One of the things he said was that the image or the language that's used to frame an issue or an idea is what ultimately is going to determine its outcome, that if you can control that issue of how it's framed or whatever that you've already won or lost that issue. It was something; it was really an excellent little piece of wisdom.

J: I'd like to read that if you had it.

JM: If I find it I'll email it to you, yeah. It was pretty nice. I think, oh one thing I do, another thing I want to ask you is if you could do anything you wanted in this realm here, would you change our system of policy making to make it more streamlined or maybe make it better so that ecological knowledge could get there?

Are there any problems with it that you see or do you think it's pretty good or?
Where do you stand on...?

J: You mean as far as creating laws?

JM: Well yeah creating laws that then create policies. Or any way of getting that knowledge recognized and into policy because I think I talked to you about this when I first came in about the energy thing and we pretty much knew that there was this problem coming and they never you know the cars are still getting under 20 miles to the... I mean you can still buy a car that gets whatever gas mileage. There's that issue and there's other ones where there's this knowledge about what would be better is there but it doesn't get used. Is there, if you could do, is there some way that you would change the system or?

J: Yeah. I mean I think you know one thing where you kind of overlook every day or at least I do and almost take for granted is you know how the internet has really been able to facilitate that knowledge transfer. You know it wasn't ten years ago that we were you know sending faxes on a regular basis to you know back and forth across the country as a way to transfer messages, photos, whatever. You know like it or not it's here. I think it's been a pretty powerful tool in terms of, I mean I can you know go out to a forest, take some pictures, download them on my computer and send them to Washington DC in you know a matter of a couple hours. You know before it would take weeks, throw them in the mail and mail them off. Just the ability to you know all these little networking capacities, capabilities now to communicate your messages whether it's email or these chat things that are going on, blogs and so forth. It's just a pretty powerful tool that we've got at our fingertips now that a great deal of the population is using you know across you know class lines. I mean I think you know the majority of people now are you know and schools and so forth have access to the Internet for knowledge and transferring you know thoughts, communications and so forth. So you know what would I do differently? Yeah, I haven't really, you know I feel like we you know if the internet never came around and email never came around and we were where we are today you know I think we'd probably be having this conversation saying I wish there was a way to you know communicate quicker without having to mail something to someone. So I think that, that was solved in one sense. It's you know the internet has revolutionized our ability to activate our base whether it's if we need a volunteer in the office or we need people to you know call Senator Wyden's office or tow (?) the deal on the timber sale stanks (?) or what. It's just quick at our fingertips. So...yeah.

JM: Okay. Do you have any thoughts on the phrase of the best available science? I think that's something in the NEPA laws that the agencies are supposed to use best available science. Is there, do you have any, is there any sort of conflict between what somebody is using as the best available science and what someone else might think is the best available science?

J: Yeah, like you know you brought up the issue of the Donato paper and the Sessions report earlier. I mean that's what that was. One was you know peer reviewed literature and one was a colleagues report is you know how I saw that and I think how Sessions would relay you know as a recommendation. So yeah I never got the sense that they were trying to you know push that off as science because it wasn't science. It was just you know as a recommendation how much they could log based on acreage and how much was burned and so forth. Yeah I mean, yes. Science is an interesting thing. You know I'm not a scientist. I read, as much as I can that's relevant to issues that we work on just to try and stay engaged and so forth. You know theoretically scientists are you know objective and unbiased and you know I think it's good for them to, what am I trying to say... I think there's a, I think it's important that you know if you're going to call something best available science it goes through the peer review process I guess first and foremost and it's you know peer reviewed by scientific colleagues you know to directly respond. You know the notion that scientists are you know objective and nonbiased, you know frankly I think Dan Donato personally doesn't like post fire clear cutting. That would be my hunch. I don't know him personally. And figured out how to create a science experiment that had objective results that worked in his favor you know. That was my read of that. You know I don't think anyone except Brian Baird and Greg Walden criticized his approach and his methodologies. You know it was two politicians ironically enough that were criticizing him. But he had the backing of the scientific community other than his you know the head of the school of forestry that you know underground he was coaching the industry and others about that piece of published literature. So yeah science is an interesting thing. So I you know I think it's just you know my job is to read it when it comes out and digest it and see how it's relevant and you know we pick and choose what we put out there. We're not going to put something out there when we're talking about a timber sale that's going to not work in our favor. You know we're going to cherry pick the science that works for us. So...

JM: Well yeah. From what I've been learning about this subject is that it seems like it seems like you know we do have a pretty good system. I mean the whole thing of public standing to even be to be allowed to make comments on the

process of logging and salvage logging is fairly new you know the last 50 years or whenever it was, the 70s I guess was when that happened as far as I know.

J: NEPA yeah.

JM: Yeah, that you know that it is a pretty good system, that it allows that voice in there.

J: Yeah I think so too. I think you know the essence of the NEPA process is engaging the public you know as the statute says, rigorously exploring alternatives in the process and you know analyzing the best available science to you know really come up with a worthwhile project.

JM: It's kind of, it's sort of a cost benefit thing I mean in that you have the different alternatives and then you know it's given to whoever makes the decision to choose from those alternatives. And so they weigh the different consequences of it as opposed to the most ecologically sound or the most economic benefit of something that's kind of you know this range or whatever that's handed over. Yeah. I think that's probably about it...

J: Well I hope that I was able to answer some of the questions you had and you got what you're looking for.

JM: Yeah, yeah I think so. And then if what I'll do is if I, I'll go back over this interview and if I use any parts of this or want to quote you I will write to you first and ask your permission if that's alright.

J: Sure. Absolutely.

JM: And I may you know it's very quite possible that I'll listen to this and think oh I you know that I meant to ask you that or...

J: Yeah give me a call or an email or whatever.

JM: Okay.

J: Yeah, you have our number here if you have any...?

JM: I do, yeah I do.

J: Yeah it should be at the bottom of my email signature as well.

JM: Okay.

J: Great, well....

JM: Well, Josh, I really appreciate it.

J: Yeah. Thanks for coming by. Yeah I'd love to read your finished product too.

JM: Okay I can definitely do that. I can definitely send...

J: That's a nifty little device you got. It's a little digital recorder?

JM: You know yeah I just got this. It's an mp3 player but it records too. It was \$70 and it has better quality than...

(End of recording.)

Appendix F

This interview with Chad Hanson appears in its entirety. It was conducted by phone on May 28, 2009. Mr. Hanson founded the John Muir Project in 1996 and has a Ph.D. in ecology.

JM (Jothan Mcgaughey): Just to let you know I'm going to go ahead and record this and as I am writing my paper if I use anything that you have said or anything I'll ask your permission again if that's alright?

C (Chad): Sure.

JM: Okay. Yeah, I'm, just to get started here, I'm writing a paper, my thesis, on how ecological knowledge gets incorporated into policies, specifically about salvage logging. So...

C: Let me ask you, are you, where are you at?

JM: Oh at the Evergreen State College in Olympia, Washington.

C: Oh sure, yeah. And you're a grad student?

JM: That's correct, yeah, and a Master's of Environmental Studies.

C: Ok, got it.

JM: Yeah, Chad, just to start off I was wondering if you could talk about the group that you're working for and you know what you people do and maybe the length of time that the group has been involved in this sort of thing.

C: Well the group is a (unclear) year project. We are a project of Earth Island Institute, which is based in San Francisco. We are based in Cedar Ridge, California, which is in the western slope of the northern tier of Nevada. And projects of Earth Island Institute basically function like independent organizations. They raise their own funds, they have their own staff, they have their own policy direction. But they do not have their own 501C3 independent tax cuts. They're not an independent corporation, a for profit corporation. The Earth Island Institute is sort of like an umbrella for smaller organizations that don't have their own corporate status. And so they do bookkeeping, they take a certain

percentage of the funds we raise for to do that sort of management activity. So that's how we operate. I founded the John Muir Project in 1996 and for the first several years mostly we were public education in our focus. I went back to graduate school in 19... I'm sorry, 2003, and got my Ph.D. in ecology from the University of California at Davis in 2007. And I published some studies on the issue of fire ecology in forest ecosystems, well, before I graduated and since I've graduated, and that's really the focus of my research is the fire ecology of forest ecosystems. And I've definitely dealt with post fire salvage logging and its impacts. In fact, one of my studies in part of my dissertation directly dealt with that. So that's, oh and John Muir project basically at this point in time what the John Muir project does is basically three things. One is scientific research and obviously I'm the one that does that but I have some people who work with me at various points in time on a various basis. And two, well I guess two is sort of related to one which is basically, well no, the first one is basically just independent, the scientific research. But basically what I do is I focus on questions that where there's an independent, well actually let me say it this way, I focus on questions where there's a high relevance to forest management decisions so it's not just an abstraction. And where management decisions are being based upon an assumption that hasn't really been empirically tested. So that's really where I focus.

JM: Okay, so you're testing assumptions.

C: Yeah, exactly. I'm testing assumptions, typically kind of long held assumptions about fire and forest ecosystems, assumptions that generally seem to make intuitive sense and in fact they seem so reasonable that no one ever bothered to test them.

JM: I see. So that would be somewhat similar to what Donato did, testing the...

C: Yeah, yeah, yeah, exactly. There's definitely a lot of overlap. And he's done some stuff since then that's very much in line with the sort of things that I do. And that's really what interests me the most. And I think that's it's also what's important from my view because then the findings are relevant to management decisions. But what's interesting to me probably above all is that the answers in fire ecology tend strongly to be counterintuitive. And so what I consistently find is that the assumptions that managers have made and often times scientists have made over the past decade are generally either only part of the truth or completely opposite of the truth once we actually get data.

JM: I see. Could you give an example of that?

C: Well there are a bunch of them but let me just kind of give you a list. This is in no particular order of priority. Well one is that where you had frequent low severity fire in the past which has been documented by fire scar records or scar dendrochronology data, that you would not have had any significant or meaningful occurrence of less frequent high severity fire. That was the assumption. And it made intuitive sense because if you have frequent low severity fire then the thinking went you would basically never be able to accumulate enough surface fuel or understory vegetation to facilitate high severity fire because the low severity fire would keep that surface fuel and the understory foliar fuel to very, very low levels and would basically preclude high severity fire. Well we've since found out that's not true at all, that there was, these two things operated on two different spatial and temporal scales. So basically what you have, it's sort of like, well to kind of put a technical term, you've got basically frequent low severity fire spatially nested within infrequent high severity fire. But basically both things are occurring on the landscape simultaneously but at different temporal scales but one doesn't preclude the other at all. And so the thinking was that you know the first precluded the second but the problem was you can't directly test, well you can't test at all the extent of high severity fire and historic extent with fire scar records because there aren't any fire scar records. That's the whole point of high severity fires. You've got you know most of all the trees were killed. You can't do it that way. You've got to figure out other ways to do it. And it's much more difficult. Well it can be more difficult but whatever the case, people just really didn't do it and there's been a kind of surge of research on that question in the past several years and it turns out that these areas that have had frequent low severity fire in the past and where that's been documented prior to fire suppression, it turns out there was quite a bit of less frequent high severity fire. In fact, what we're now coming to understand is that we have a massive fire deficit currently relative to the pre suppression extent of fire at all levels of severity, not just low severity fire. We also have less high severity fire than we had previously. And that has major implications for wildlife, especially the wildlife species that are associated with burn forest habitat when you add especially the exacerbating impact of post fire salvage logging. Okay so that's one big one. Another big one is where you do have high severity patches, no I'm sorry. Let me go into one other one that's really quick first. Another one, this one was repeated for years. It's amazing how much this was repeated. No one bothered to actually check. People assumed that currently because of fire suppression that in recent years fires are predominantly high severity. It turns out that's not even remotely true. And it's a really easy thing to test now because

there's decent satellite imagery that's gathered every year by government agencies and it's even available online. You can download this into a GIS analysis and actually check it out but people didn't bother to do that. And it turns out that current fires are mostly low to moderate severity. In fact, very heavily low and moderate severity. In California, Oregon and Washington, according to the United States Geological Survey's report over the past 25 years, actually it was 1984 through 2005. There's always a lag time with the satellite imagery in processing it. But basically we're generally left to quarter of a century. In the Pacific Northwest, high severity sectors were generally on average per year in the 10-12% range out of the total area burned per year, and in California generally in the 12-15% range. So again, very heavily dominated by low and moderate severity fire but that's very contrary to you know a lot of popular conceptions. People turn on their TV news in the evening during the summer and they see the typical footage of the 100-foot flames and they just think that that's all that happens out there. And it turns out that's just what you know is a very arresting image and so it would end up getting on the TV news and also on the front page of the newspaper and but it doesn't reflect the norm.

JM: Right. And just to kind of I guess maybe jump a little bit here, that's sort of, it seems like the healthy forest initiative by Bush was kind of taking advantage of that in a way.

C: Very much so, very much so, as has some other statutes and regulatory things. We can get into more of that later but yeah, very, very much so. And let's see, another one is where you do have a patch of high severity fire because these things always happen in mosaics. You know, even where you get high severity fires it's not like this particular fire is a high severity fire. It's generally some percentage of high severity. But where you do have a high severity patch the assumption in the past was that basically an ecologically damaged or destroyed portion of the landscape that supports very little wildlife habitat or plant species diversity and basically you know the terminology that's been used you know destroyed, damaged, ravaged, you know these things I'm sure you've heard of before. This is not just in the popular media. This is also just by policy makers. This is also by people, land managers and even a lot of scientists bought into this years ago. But now we're coming to understand that these areas are actually biodiversity treasures. They are extraordinarily high in data biodiversity and higher plants and wildlife species and invertebrates. They support a considerable number of species that are largely restricted to that habitat type. And by and large these species, rare endemic species, are in trouble from a conservation biology standpoint, a viability standpoint. They are by and large in trouble. Either they are

declining or the populations are so low that we can't even detect their population trend, which is an even bigger concern. Of course the response of the land management agency is they say, well, we don't know if the population is declining so we might as well keep salvage logging and suppressing fire which is scientifically a very inappropriate response but that has been the response so far. So that's another one. And of course the one that you alluded to before which is if you do have a high severity fire patch there won't be natural conifer generation. Of course that's turning out to be wildly incorrect. Sure, there are always going to be patches you can find here and there where *Mantage Deperelle* (?) will come in after a high severity patch and will persist for some decades even more than a century which is actually a really important thing ecologically because that's extremely important habitat for wildlife and it has declined fairly dramatically since the 19th century because of fire suppression and post fire salvage logging and plantation establishment which eliminates the chaparral. But even so that is actually very much the exception to the norm has been high severity patches for natural conifer generation to come in very vigorously. And so you know on and on. There are a number of them but those are just a few examples. Oh here's one more I should mention just because it just really contradicts so much, some very deeply held assumptions. You know in fire suppressed forests, forests that have missed the most fire returnables (?), the assumption that these are the areas that will burn most severely and that they will burn almost exclusively at a high severity. It turns out that's not true at all where we've gathered data. There's three different studies on this. And all in California, it's possible it would function differently somewhere else but I don't see any reason why it would, but the bottom line is, is that the areas that missed the most fire returnables still burned overwhelmingly at low and moderate severity. In fact if anything the high severity of percentages or proportions were a little bit lower than the areas that had missed fewer fire returnables. Again, totally counterintuitive. We think we've figured out why this is. And basically as the stands mature since the last significant fire event, they get more big trees, the canopy closes more, there's less sunlight reaching the forest floor and this has a number of implications. The crown base side of the forest increases. It's higher above the ground because the big trees are self-pruning their lower branches because they're not getting enough sunlight. So they're an energy drain on the trees. And the small trees are self-thinning because some are dying off because of competition for increasingly scarce sunlight and the surface fuels on the forest floor are staying more moist later into the fire season because of the cooling state of the forest canopy. And on top of that you've got more large tree bowls which decreases mid play (?) wind speeds when a fire does come through. That's a fire physics issue but all of these things combined basically create a tendency, it doesn't always work this way by any means, but a

tendency for mature and old growth canopy forests to burn at relatively lower severity or to have relatively lower rates of high severity fire. And of course it's important that some mature and old growth closed canopy forest does burn at high severity periodically because there are some species that actually really, really need dense mature forest that burns at high severity. That's their habitat, like the black beak woodpecker. It can't be just any habitat. It has to be a very narrow type of habitat. So anyway, and the other thing the John Muir project does public education still basically primarily related to fire ecology and forests, trying to get out into the public some of these notions to sort of, in hopes of getting a public speaking to be more in line with the current state of scientific knowledge on these issues.

JM: Right. And where do you, how do you try to focus that or how do you try to bring that into practice? Do you focus in at young people at schools hoping for this...?

C: All of the above. I mean you name it, all of the above. And honestly most of the time it's people contacting me. It takes a lot of different forms. But before I lose my train of thought, the last one is forest legal defense work. Basically, where we see a project on National Forest land and typically they're post fire logging projects but once in a while they're also green tree mechanical thinning projects where there would be significant environmental damage in our view, particularly to wildlife habitat and where the Forest Service has misrepresented in a fairly substantial way the scientific data. Then we sometimes will go to court basically to stand up for science and management decisions because the law is basically one of the basic principles is the government is not supposed to lie to the public about the impact of decisions. It's not supposed to misrepresent or fabricate scientific data. And so if that happens we are prepared to do that. We on average probably file one or two lawsuits a year, always along those lines, always really fundamentally about the application of science in management decisions or to challenge the misapplication of science.

JM: Now when you get into the courts on those, is that mostly in the NEPA realm of things?

C: Yes, exactly. Failure to maintain scientific accuracy or integrity of environmental analysis documents, generally by you know when an agency misrepresents the findings of a scientific study in order to justify logging, misrepresents its own data in order to justify more intensive logging than otherwise would be prescribed, various things along those lines. Failure to divulge

the hard data or the methodology used to make key conclusions. So sometimes the agency will say well we need to do this for X, Y and Z reasons but we're not going to tell you why or what the scientific basis of that is. You're just going to have to trust us. Well the law doesn't allow them just to do that, doesn't allow a kind of a black box process. So that's basically it. As far as public education with the form that takes, I get invitations to do guest lectures at universities, various interest groups. I've spoken in front of the Society of American Foresters and I've spoken to the Sierra Club a number of times. I usually go out, I was actually involved with the Sierra Club. I was on the national board of directors for a little while. I take reporters out into the woods. Sometimes I call them, sometimes they call me. And I write opinion editorial articles periodically. I used to write a lot more. I haven't written as many mostly because when I went back to graduate school I was just so focused on that and I've been kind of dealing with other things especially research and stuff but I think I'll probably do more of that in the coming year and beyond again. Let's see, just general news stories. Typically when I am involved in a news story it's not, I don't send out press releases and I'm generally not just available for a comment, the one sentence quotes. I mean I'll do that if someone recalls me but typically what I like to do and what I spend my energy on is, a reporter will call me or I'll call a reporter and they'll be interested in the larger more thoughtful story that will require several months to prepare and usually one or more sites if it's out in the field. And I require them to you know peruse lots of different technical documents and things like that. That's much more meaningful coverage. I work on things like that now and again. Again, the little sound bytes thing just doesn't work that well. But again if a reporter calls me and wants a comment on something I'm happy to do that but I don't go out of my way to do that kind of public education work.

JM: I see. So do you feel that it's the quality/quantity question that it's more important for quality?

C: Yes, absolutely, quality/quantity. And honestly it's not all about transforming of the public's misperceptions about fire in our forests and things like that. Some of it's purely selfish. It's also just a quality of life thing. It's just, I like doing it that way better. I just don't like doing reactive media work. Reporters get quotes wrong, they're on a deadline. It's just a pain in the neck most of the time and so I just don't do it.

JM: I see. Okay, well that you know that's interesting to me that you know how the media's structure kind of dictates in a way how this ecological knowledge

comes across. And they seem to be like you say much more interested in the quick headline, the quick...

C: They typically are. I think that it may even get, I hope it's not going to get worse but it may get worse because the papers are in such trouble economically. And so my fear is that the journalists who are the best and brightest and most experienced and who are the ones who are typically assigned to or given the latitude to pursue larger more proactive more thoughtful in depth pieces that those people will be reassigned to reactive media shorter pieces, the quick sound byte type of media or that they'll be, that they'll lose their jobs. I mean this is my concern. But so far you know some of the best of them are still out there. So we'll see. But there is certainly a lot of potential to get these issues into the public dialogue through shorter pieces and more reactive media as well. It's just I don't really do as much of that. Maybe I should but I don't. If at some point I find myself with extra time and energy on my hands then maybe I will but it hasn't happened so far.

JM: Okay. In your opinion I mean you're doing a few things through the group, the public education and then the research and then also the bringing of that to bear through lawsuits.

C: Right. Those, by the way, those also get some media attention. So sometimes we serve a public education purpose through that as well.

JM: So a little overlap.

C: Yes.

JM: Would you, is there one of those three that you feel is most important or most effective? Or do you think that they're all necessary?

C: All absolutely essential, all absolutely essential. I mean if I'm not out there doing the scientific research, I can't count on someone else to investigate these uninvestigated questions. And eventually that would make the public education less meaningful and in fact it would make the legal defense work less meaningful because basically you know there would be resolution one way or another about the misapplication of previous questions but if the new questions are not investigated then you're basically not advancing scientific knowledge and basically there might still be a whole host of management assumptions that

haven't been tested and have been applied in maybe in some very destructive ways.

JM: Yes, yeah definitely. Do you have enough resources to cover all three as much as you like?

C: No, never, never, but we do the best we can.

JM: Do you, what's your decision process on where to maybe focus your energy? I mean it sounds like that it might change depending on circumstances obviously but...

C: Sure, it always does. I mean certainly if there's a deadline coming up, that necessarily commands my time and attention. If I've got a paper revision that is due of a scientific manuscript a study I'm working on to a particular peer reviewed journal and they said they need the revision by X date, then that basically is going to dominate my time and energy until I get it submitted. Same thing on a lawsuit for example. You know my role in a lawsuit is basically to write an expert declaration for the scientist and also to do some on the ground field monitoring to see if what's on the ground matches the representations of the documents. If there's a deadline coming up there that would command my time and attention for that period of time until it's done. So sometimes it's basically determined for me and I'm not really making decisions about what needs to be done exactly at a given point in time. In a broader sense, if we step back a little bit and look at it over the context of a given year or a couple of years. Yeah I basically kind of read the landscape and determine what I think is going to be most effective at a particular point in time. I have to say there are larger political factors that are at issue here and they do have an influence on my decisions. For example under the Bush administration that was an extraordinarily hostile administration in terms of environmental policy, particularly forest policy, very aggressive. There was an active interest in ignoring new science particularly if it didn't advance logging interests or misrepresenting science in order to justify increased logging thought of with respect to fire in particular. And so it was certainly a context in which there was a need for a responsive public education work to respond to the administration but I think the greater need was really in a way to basically prevent the administration from just going in and cutting down a lot of the remaining old growth stands or clear cutting you know post fire areas based upon these you know really, really aggressive notions about forest management and science. And so I think a lot of people were in sort of a reactive mode, dispersive mode, almost by necessity. I think that there is a difference now.

It's not to say that the Obama administration is going to be perfect. I know it's not and will not be. But I think that there is a sense that there's a greater opportunity to actually have an honest conversation with government about science and about the application of science in management decisions. I think that we can get more traction there now than, it was just pointless in the last eight years, there was just no point because the response was, well that's what your science says. We have other notions. What are those notions based on? Well we think we know the answers and that's it.

JM: And who was saying this? I mean how, yeah, who had the power to say that? I mean did it, obviously...

C: Well, that's a larger question. I honestly, you could almost write a thesis on that question alone, how these things get translated in actual terms to down the ranks to the people on the ground so that they are actually parroting these things and implementing management in a certain way that reflects that policy of the executive branch. It's a larger conversation but in a very, very narrow sense. I mean it obviously started with the president and the vice president and the influence I think of campaign contributions. My understanding was the timber industry was second only behind the oil industry in campaign contributions to the Bush administration. Certainly I think that had a fairly profound influence. And we saw that influence in George W. Bush's pick for under secretary of agriculture, which is the person who is in charge of overseeing and managing the United States Forest Service, the person who is over the chief of the Forest Service. And that person was Mark Ray who was a veteran timber industry lobbyist, the most veteran and prominent timber industry lobbyist. And so things were fairly predictable from that point forward.

JM: Right, right. Do you know who the under secretary is now by any chance?

C: Well it's in transition. The acting under secretary is I believe her name is Ann Bartuska.

JM: Okay. And she was put in by Obama?

C: Yes. Or (unclear), whatever the case. And honestly I have to tell you, the, most of the time the influence under the Bush administration, the influence of this, there wasn't just Mark Ray obviously because there were a lot of other appointments and smaller hires that were made that sort of stepped this direction in a more structured way that allowed people like Mark Ray to sort of implement

their influence in management decisions. But most of the time it was sort of the elephant in the room. You'd try to have a conversation with agency managers with the district ranger or forest supervisor about the way in which science is being misrepresented and they would just keep stating the misrepresentation over and over and over again. And after a while it became clear that there was something else going on. And then again it was like the elephant in the room that no one wanted to talk about. Once in a while, an agency person would be candid enough to take me aside and say, "Just so you know, I don't have any choice here. Mark Ray and people are calling all the time and breathing down our necks. If any of us basically are seen as embracing some of this new science that contradicts the management's direction of the administration, our jobs are at risk." I mean I had a number of people tell me that. And it was always of course confidential and off the record but and I'm not the only one who had conversations like that with agency people. In fact, once in a while I got out into the mainstream press when someone would become a whistle blower and say hey, you know, the administration completely redacted my documents and took out the main conclusions and in some cases had changed verbiage and that kind of thing happened all the time. So there was a sense of malaise and almost despair among, particularly scientists in the administration the past eight years and also among land managers on the ground who wanted to manage in a more scientifically responsible way.

JM: Yeah I think I've read a bit about Chris Maser who worked for the BLM and had quite a bit of trouble getting some of his work published. It was put off for a number of years before it finally came out. Yeah...

C: There was a story by the way, actually two stories, written by Scott Sonner a few years back and this was right in the middle of the Bush administration. And I think this was 2005 if I recall correctly. And I could get you an exact date but the bottom line is, there was a pair of stories. They mostly ran in California papers because it dealt with the Sierra Nevada forest plan amendment, also known as the Sierra Nevada framework. And the bottom line was that one of the main justifications used to throw out the 2001 framework which was from the Clinton-Gore era, and was actually a pretty progressive regional forest plan, the main reason to throw that out was the supposed threat of wild land fire, especially high severity fire. The Bush administration really capitalized on the public's misunderstanding of mixed severity fire in these forest ecosystems. And they represented that spotted owl nest sites, territories, often called PACs, protective activity centers, are being quote "lost" to high severity fire at this massive rate and they said that this rate is accelerating dramatically and all of these owl sites

are being lost and therefore we need to throw out the old plan and do much more aggressive logging supposedly to reduce fire risk. Science doesn't support that logging big trees reduces fire either but that was their story. Well it turns out that they completely fabricated this. They actually couldn't identify any territories where the owls were actually lost due to the fire. In some cases they were salvage logged and the owls were going after the logging but they were there before the logging after the fire. And in other cases they never even bothered to go back and check if the owls were there or not. They simply assumed that if a certain portion burned at moderate or high severity that the owls couldn't use anymore. And it's another one of those assumptions that is turning out to be untrue. It turns out that the spotted owls actually benefit tremendously from and probably depend upon a certain amount of high severity patches in their territories, as long as they're not salvage logged. Because those patches create habitat conditions, its (?) favor their prey species, especially like dusky footed wood rat and other small mammal species, mountain chaparral patches, pockets of dense natural conifer regeneration, large snag cavities, large down logs, so cat face structures. You know these sorts of things are extremely important for the owl's prey species and it creates a pulse of their prey species. But it turns out in order to have enough forage the owls actually benefit from this and probably depend upon it and we've even got some radio telemetry data that's out there now and in the scientific literature that shows that they actively forage in these areas although they still nest and roost selectively in the more closed canopy unburned or low severity areas. But it turns out what they really need is a mix of this. Okay so anyway, Scott Sonner from the Associated Press wrote a couple of stories on this. Actually it was August 1st 2004. And if you look in the Contra Costa Times, it's actually called The Sunday Times but it's, The Sunday Times, which is the Sunday paper of the Contra Costa Times. It's ContraCostaTimes.com. I don't know if it's case sensitive. It's capital C for Contra, capital C for Costa and capital T for Times. But it's August 1st 2004, two stories by Scott Sonner both ran in that paper the same day. It ran in a number of other papers too but this is the one that I have a photocopy of. And basically we went out with the Forest Service and he's got quotes from them saying, "We don't know where those conclusions came from. No one ever called us because we know the owls were still there after the fire." (laughs) In fact, he even got a quote from a guy who was the head wildlife guy for the Forest Service in this region who wrote into the wildlife analysis section of the 2004 version of the framework forest plan. With the framework is the forest plan that governs the entire Sierra Nevada National Forest System. That wildlife fire is not a threat to spotted owls. And they took it out without consulting him in the final version. He's got a quote from that guy saying that. Anyway so that's just an example of that sort of thing.

JM: Yeah, excellent. When this salvage logging is done they do have some prescription for leaving snags... I'm not sure exactly what it is. I think it changes from you know under what plan the forest is operating on. Do you think that, well how do you think that compares with just straight clear cutting? I mean, is it still clear-cutting in a way or?

C: Yes it is. It's very close to clear cutting. It's not quite clear cutting but it's very, very close. And the damage caused by it is very similar to clear cutting. Now if, where the Forest Service leaves three or four large snags per acre, which is a pretty common prescription. In some places it's only one and a half or two large snags per acre. I think that's the case in most of the Pacific Northwest forests and in the Northwest Forest Plan, like the Sierra Nevada. Well right now in the 2004 framework they don't have to leave any. In the '01 framework they were required to leave at least four per acre, large snags. Under the 2004 it's more of a suggestion. (laughs) They can take it or leave it. They usually leave it.

JM: Now is that what people are operating under right now or?

C: Yes. Yeah, although it's under litigation by one of the groups here in the Sierra Nevada. We're not part of the litigation but it's working its way through the courts so we'll see what happens. But the answer to your question is basically the more large snags per acre that are left, the less the damage is. There are some species that will use these areas to some extent, even if it's salvage logged, but they won't use it nearly as much. And there is certainly no indication they'll be able to maintain viable populations in there. There is probably not enough food. Can you hold on a second? I'll be right back. Actually, can you call me back in about ten minutes?

JM: Okay, sounds good.

(End of recording 1. Start of recording 2.)

C: We have a couple of horses and one of them was trying to hassle me to get me to come out and give him a snack. He could see me through the window of the office. And he got his foot stuck in one of the panels of the round pen. He's all right.

JM: Good, good. Well I think you know we were just talking about some of the forest plans I think and that kind of brings up a point. I mean we were talking

about Mark Ray and his impacts. It seems to me that the national forest plans are supposed to be redone for the different forests every 15 years...

C: Or so, yes.

JM: And they have some leeway I guess. But the National Forest Management Act under which that comes is, I believe that they are redoing it. Do you know anything about that?

C: Well I don't know that they're redoing the act itself. I haven't heard anything about that. Certainly every couple of years one administration or another proposes new rules to implement the National Forest Management Act. There were, the first one was under the Reagan administration, the 1982 rules. And then the Clinton administration proposed new rules under 2000 and then the Bush administration proposed a series of new rules to eliminate the Clinton rules and the 1982 rules. Those are all litigation in one form or another. The latest one was the 2008 rules which basically says forest managers can do anything they want at any time and they have ultimate and absolute discretion.

JM: And now is that what they're operating under now?

C: Essentially, yeah. Yeah but one of the reasons you can still sue a forest plan is if the forest plan still exists. As long as it still exists, if the language in a forest plan is enforceable, if it's stated in a mandatory way. The Forest Service shall not cut a live tree over 30 inches in diameter in these areas, you know something like that. So I mean it's quantitative and clear and it's still enforceable under the statutes. But the attention of this Bush administration rule at the very tail end of the Bush administration, what they basically say okay when the Forest Service revised these forest plans they come up with new forest plans, not only do they not have to do environmental impact statements or any environmental analysis, but the new forest plan basically all you have to do is apply the best available science or something to that effect which you know they can interpret any way they want. And basically it's like complete discretionary management. They don't really have to you know be restricted by anything. And so though obviously NEPA would still apply, although there's been a tax on NEPA as well, but so there would still have to be some kind of environmental analysis in most cases. Although you know they've increasingly tried to use categorical exclusions to do both thinning projects and post fire salvage logging and clear cutting so that they don't have to do any environmental analysis or really involve the public in decisions or allow administrator appeals or even in some cases notify the public in

the first place. Some of these projects they do what they call internal scoping which means you know one forest service guy in his cubical yells down the hall at another forest service person, "What do you think about his project?" "Sounds good to me. Thumbs up." All right, internal scoping done. And they go ahead with the project. There's no notice there's no comment there's no appeal there's no anything. The public doesn't even know about it unless you happen to stumble across the clear cut. So it's gotten that bad in some places. But it's basically the whole planning rule thing, the regulations implementing the National Forest Management Act, it's just a legal (unclear) and you know I haven't gotten up to speed on it myself.

JM: Yeah. Well I think that that's you know obviously pretty important.

C: Well sure. It's critical.

JM: Yeah, I'm curious as to how that turns out and what not of course. Well do you have your train of thought of what you were saying earlier?

C: No. Not even slightly. But do you have any questions that we haven't gotten to so far?

JM: Let me see here. Well, kind of along following up on that, do you have any, if you could do whatever you wanted to, is there anything that you would put into law or the process that would make it easier or better for scientific ecological knowledge to get incorporated into policies?

C: Well, I mean are you asking me what basically how I would have the public lands managed if it was in my power to write policy?

JM: Yeah and specifically how a vehicle I guess, what would be the best conduit for...

C: Oh I see, I see. Well I think that well okay. I mean there's really two different questions you're asking. One is you know how do I think policy is best changed. How do I think ecological knowledge and new ecological knowledge is best incorporated into policy decisions? And the answer to that, me being who I am in the world we have, the answer to that question I think has got several tiers to it. I mean one is like I said public education, forest legal defense work. It's critically important. Otherwise you know new scientific information means nothing if it's misrepresented in management decisions without any accountability or

repercussions. So I think that's essential. I think really scientists have an obligation to be involved in things like that, writing declarations or assisting where science is misrepresented, assisting those who are challenging those misrepresentations. I think that educating policy makers is absolutely essential directly. I've done quite a bit of that in my career as well and continue to. And then all of this basically creates a context hopefully that is more conducive to actual implementation of new policies. And you know I guess my answer is, it's multifaceted. Some of it should probably occur through regulations. Some of it should occur through statutes and it can be even a multifaceted approach when you're talking about statutes or regulations as well. Some could be through the appropriations process. Here's one example of that. A lot of the appropriations line items that's the fund of the Forest Service are directly and explicitly tied to commercial timber sales. So in other words the given agency manager on the ground, the district ranger, can tap into those funds unless he or she is actually planning a timber sale that's removing you know large trees, large fire resistant trees. Large trees are important for wildlife. They can't do that obviously if they're just removing small trees. It's not a commercially viable timber sale. And if most of the money that's available to do appropriations is actually, at least in their interpretation directly tied to and extricably linked to timber commodity production and logging. So they have their hands tied by that. So that's just one thing. Even if you didn't have a substantive statute to primarily change management, there are things that can be done through appropriations that would sort of untie the hands of managers, at least the good ones who would like to implement science more faithfully. So they feel they have the flexibility to do that. So but now the other question I think you were asking is, is if I actually had the authority somehow to do that. What do I think needs to be done on public lands? Well in my view ultimately a statute is usually passed to legislation through Congress, signed by the President, that would end the commercial timber sales program on federal public lands, National Forest, Bureau of Land Management lands, National Wildlife Refuges, they even do some on National Park lands, a little bit. They're not supposed to but they do. And basically it would ban that and the reason I say that and I say this in particular as a scientist is that yeah I've been working on these issues for about 20 years now, only as a scientist in the last several. But you know science has always been really my driving consideration in these issues. And what I've come to understand over the past two decades working on these issues on national forests and forest management is that the application of ecological science in actual management decisions will always be undermined as long as there is a timber sales program, always. And this is consistently true. You know we see science misrepresented or ignored in order to justify taking more trees or bigger trees and the reason for that

is very obvious. There's a series of very strong perverse incentives that drive agency managers to cut more trees and big trees and sell them to the timber industry. I mean the Forest Service keeps most of the timber sales receipts and they actually fund much of their operations that way. So it's a system where only a portion of their money comes from congressional appropriations. The rest of it comes from timber sales receipts.

JM: And that's the KV account?

C: Well no. KV, no not as much KV. KV is actually a little bit different. I mean you know it's sort of a portion of timber sales receipts go into the KV fund. Now and then they can use that for certain things in parts of I think replanting under clear cutting and things like that. But that system is very complex too and there's also the National Forest Fund and various others. The salvage sale fund. The salvage sale fund, 100% of the timber sales receipts from most of our logging projects go into the salvage sale fund so they get to keep every dime there. So you know naturally when budgets are tight which they always are from the agency perspective, they have an incentive to design and implement projects that maximize timber production and timber commodity distraction and the generation of timber receipts or sales receipts. And of course you know in this kind of a context how does science stand a chance? It's not easy. In fact the only way that science really stands a chance is through the basic you know checks and balances that are sort of inherent in our system. And we've got the first amendment in the Constitution so we can actually go to the press and say hey, the government is lying about the dating here so they can justify doing these logging projects to pad its budget. Well that's you know a certain form of accountability and checks and balances. And we can also go to court and we can also petition government for a change in regulations or statutes. So you know we have a number of things we could do. Of course it's always swimming upstream because you know like I said we've got this sentiment campaign finance reforming that I mean since it was campaign financing you know that has largely been unreformed fundamentally and puts the public at large at a disadvantage. But still, we can always try and we've made a lot of progress. So that's what I would say. I mean ultimately the logging program on public lands simply needs to end. And that doesn't mean forest management ends. It simply means that timber sales wouldn't be part of it.

JM: Right. Well you know I know that the Sierra Club is endorsing that.

C: Yeah, and I was actually instrumental in that, the Sierra Club. I was the one who was in charge of the Orr Initiative back in 1996 that put that issue to the

voters, all the members of the Sierra Club. And the members of course passed that overwhelmingly. And after that I ran for the National Board of Directors and was elected in 1997 and I served two terms through 2003. So yeah I have my history with the Sierra Club as well.

JM: Yes, yeah. How likely, do you think that will ever come about or do you think it will be, is it something that's within reach fairly recently do you think or?

C: Well I think it's an important question and I don't think it's that simple. And I've always said this; I've said this since I started working on this issue. I mean I started, I realized that the logging program needed to be ended on national forests back in 1989 when I hiked the Pacific Crest Trail with my older brother from Mexico to Canada. And I saw the devastation of logging operations on national forests, especially in the Northern Sierra Nevada and The Cascades. So I've been talking about this for a long time. And what I've always said is this. The passage of the bill to end logging on national forests is basically going to come as an afterthought. It's going to come as the logical conclusion, an inevitable conclusion, of a multifaceted effort by activists, by scientists, by people in government to in many different ways reform and change the way that forests are managed on public lands. And I think that's already happening. I mean we've already seen a lot of change there. And if you just look for example at the logging levels on national forests, they let's see, well in the late 1980s and early 1990s before anyone really started talking about fundamentally changing the way national forests are managed and specifically ending logging on national forests. You know there was about 12 billion board feet cut annually on national forests every year. And now it's somewhere around two or three. So I don't see personally a return to 12 billion board feet or even eight or six billion board feet. And then the reason I say that is that the arguments, the justifications, the pretext used to promote a return to aggressive logging, in particular logging of larger trees. Because that's the only way you can generate that kind of timber volume is logging big trees. Those arguments have one by one been shown to be fallacious and baseless scientifically. So yeah we talked about some of that but the notion that you have to cut big trees in order to reduce fire risk you know to the extent of that is an appropriate goal in a certain location like for example next to home because you obviously want to reduce fire severity next to homes to protect the homes. It's not about ecology. It's about public health and safety. But the government for years has said well we need to cut bigger trees and more cutting is better and better fire risk reduction. Well it turns out that that's not true, that science shows it's the opposite. You know if you removed the large fire resistant trees, it tends to increase fire severity. So when it comes to thinning, less is

actually more and you can effectively reduce fire severity by only cutting trees up to eight or ten inches in diameter. And arguably that's really the only effective way to do it is only removing the small trees. So you know things like that. Post fire salvage logging, I mean we need to cut all the trees down because the fire destroyed the area and we can't replant, it's the only way to replant and the forest won't regenerate unless we do it. You know that was the argument that was used. It turns out that's completely wrong. So you know it's going to be difficult to, for the Forest Service and for the timber industry to sue policy makers to push the Forest Service to return to the logging practices of the past because people know better now and people want more from their national forests. They don't just want it to be a timber reserve. Whereas I think you know in the 60s and 70s and even into the early 1980s, you know that kind of mentality, management mentality, was unquestioned except by a small number of people. I mean the first significant forest litigation really occurred in the late 1970s, early 1980s and then things started changing a little bit after that and people started getting wise to the clear cutting and realizing we're actually losing our remaining mature and old growth forests pretty fast. And there was a lot of alarm and scientists started getting involved. But you know so it changed quite a bit by the early 1990s and they've changed even more between then and now. But you know there are still very major threats. I mean like I said the timber industry keeps pushing and the Bush administration's National Forest Management Act regulations, the 2008 rule, is still in place and the Obama administration has not rescinded it. I mean it certainly should have. It's a massive threat to all forest ecosystems on public lands, which is of course, is where most of our remaining old growth forests are. And you know it's basically, it's still out there. I mean it's being challenged in court but you know who knows what the chances are with that. It depends on basically who appointed the judge most of the time. So there are still efforts by various members of Congress and not just Republicans. Some of the Democrats are some of the biggest threats to pass legislation to massively restrict public participation to create huge exemptions from the National Environmental Policy Act, to restrict access to the courts and to basically shield the Forest Service when they are cutting you know mature trees. There are various legislative proposals, some of them dealing with thinning or logging that goes under the guise of thinning and some of them propose fire salvage logging. I mean every year there is at least one or two that come up and are a significant threat. So there is always that threat but I do think in a larger sense I do not predict that we will return to those logging levels simply because it's not what the public wants and a scientific community knows better now. And I think the press is wiser now than it was 10-15 years ago on these issues.

JM: Do you have any knowledge of civil disobedience that took place in regards to salvage logging? I guess you know I mean there doesn't seem to be as much of that going on as there was maybe when the salvage rider took effect.

C: No, not nearly. And you know I mean that was for pretty understandable reasons back then because basically all public access, basically (unclear) outdoors were shut on the public and the Forest Service could clear cut ancient forests with total impunity. And so a lot of people felt that that was their only option, the only option left to them. A lot of that, most of that took place up in the Pacific Northwest. There were some really dramatic examples of it. I wasn't involved in that but I know some of the people who could probably give you information if you wanted more information about that.

JM: That, you know, I have had some trouble finding people who were involved in that.

C: Okay. Well I would say your starting point should probably be Tim Ingalsbee and Ingalsbee is spelled Ingalsbee. And he's a former smoke jumper, firefighter turned environmental activist, forest protection guy. He basically was involved in the road blockade that stopped the Warner Creek post fire salvage logging project from occurring. The longest blockade on a federal road in US history to my knowledge it was written up in The New York Times, I think in Time Magazine also. This is back in the mid 1990s this was happening. It was definitely occurring during the salvage logging rider era. And it's really a very compelling story in my view. And Tim also knows quite a bit about fire ecology as well. And he went back after that and got his Ph.D. in environmental sociology from the University of Oregon. He's the guy to talk to, really, really nice guy, very smart. Where is Tim's number? I'm looking at my board here. I've got a million different little scraps of paper with phone numbers on it and his was handy and I think I've covered it up. Shoot. Give me a moment. I'll find it. Anyway, his current organization is called FUSEE. And that stands for Firefighters United for Science, Environment and Ethics. I forget what it is but it's sort of a play on words. FUSEE is a firefighter's tool. Anyway you could look on the web under FUSEE...

JM: And he's in Eugene isn't he?

C: Yes.

JM: Okay. You know I have heard of FUSEE before and so yeah that's good.

C: Yeah, for some reason I'm not finding his number. I know I have it on my wall here. But if you have some trouble finding his contact information on the web, you should be able to find it on his website for FUSEE. But if you have trouble just give me a call back and I'll track down his number.

JM: Okay, I appreciate that. So I guess on...

C: By the way, he wrote his doctoral dissertation if I recall correctly basically on this issue of civil disobedience.

JM: Okay, okay fantastic. Well maybe I won't ask you about civil disobedience and...

C: Yeah, he'd be a much better person to ask.

JM: Okay, all right. That sounds great. Well, we've certainly covered a lot of stuff here. Yeah I think, you know I can't really think of anything to ask at this point.

C: Right. Yeah I'll tell you what. If you have follow up questions or you don't think you do now but you realize you do later, just feel free to give me a call back. Especially with a follow up question, we don't have to schedule as much. You know it's like a five or ten minute thing and you just have a quick question just give me a call and we'll you know see if we can deal with it.

JM: Okay, all right. I sure appreciate that. And thank you very much. It's been a good talk you've given.

C: Well no problem. My pleasure and the best of luck to you.

JM: Okay, thank you.

C: Bye-bye.

JM: Bye.

Appendix G

This interview with Professor Agee took place at The Evergreen State College in Olympia Washington on May 8, 2009. It has been modified by the interviewee although its original content and meaning remain intact. Professor Agee is a Professor of Forest Ecology of the College of Forest Resources at the University of Washington. He was the Regional Forest Ecologist of the Western Region for the National Park service.

A (Agee): In an average year they probably think well some money is better spent on the east side than it is over here where...

JM (Jothan Mcgaughey): Yeah, I think that's true. You know I worked for the Forest Service for a lot of years. And so going to DNR was a big change in terms of their qualifications like for engine boss and stuff because they don't actually have to be engine boss qualified. And I really appreciated my boss. And we had quite a few discussions about it and we both felt that it was probably just a matter of time until something happened to DNR employees where that would change and what not yeah. Well thanks a lot for agreeing to do this interview with me. And what I'm trying to investigate is how ecological knowledge gets incorporated into policy and the process by which that happens. And it seems like there's a lot of different ways that happens and I know you've been involved with a lot of fire research and salvage. Like you just were coauthor on a Forest Service paper that came out real recently. And so I was wondering if you, could you generally talk about that to get started? And then maybe I could try to ask you some...

A: Yeah well because I'm not on the policy end of things, I'm kind of on the other side, it's rather opaque in a way to someone like me, how that gets incorporated because most of the, the standard arguments for salvage are economic in nature. And the policies as they've generally been in the past are that the short-term economic gain exceeds the short-term ecological cost. And that the landscape's already been insulted and a little bit more isn't going to make it any worse. But probably in the last 10-15 years, I think there's been a shift particularly by the federal people, I can't really speak too much for the state, to salvage less than they historically did. And there's a whole variety of reasons for that primarily driven by lawsuits. And so rather than taking 50% of the landscape, you know, they cut it down to 15 just as a way to hopefully move it through to make it look like it's not as big of a deal as it has been. The other thing that they've done is they've moved away from complete salvage to partial salvage. So within the units

that they do salvage they don't come out looking like a moonscape. You know so primarily for bird issues, they'll leave some areas unsalvaged and that favors certain birds and then they partially salvage other areas, which favor some other species of birds. And so it provides a little bit more of a complex mosaic. Nobody to my understanding has ever tried to stretch out and look at the longer-term consequences until very, very recently. And some of the work that's been done in I guess it was in the Blue Mountains in eastern Oregon. Have you seen that paper by Makeber (?) and Ocmar (?)? (McIver and Ottmar Forest Ecology and Mgt 238: 268-279)

JM: I think so. I think so.

A: The idea was that they had these units set up and they selected one or two of them for salvage and the other as a kind of just like a control. Then I think they did kind of like a, they did two different techniques. Maybe the intensity of the salvage was the same but the methods were different. And then they measured some of the fine fuel attributes after the salvage had occurred. And then they took those data at year two or whatever it was and then they extended them out over time I think over about a 25-year period to see what the difference would be. And it turned out that by about year 15 to 20 the fuel levels on the unsalvaged area were about equivalent to the ones on the salvaged area. And then after that the fuel levels on the unsalvaged area were higher which makes sense. I mean if you put things into a temporal context you know you would expect that if you're going to remove biomass from the site you know and eventually the biomass on the unsalvaged stuff eventually falls down. But that's going to cross somewhere. And that's probably going to depend on where you are in the landscape you know whether you are in a wetter or a colder or drier landscape. So it wasn't that you could take results like that and apply them everywhere but I think what that particular study did was it put a little bit more into context the Donato et al results down from the Biscuit Fire where they looked at salvage logging in terms of regeneration and also fuel. And what they found is not surprisingly is that on the salvaged areas because there were branch material left over from the broken tops that's left when they felled the trees that you would see more on the salvaged side than you would on the unsalvaged side. But what they didn't do is they didn't put it into any kind of a temporal context. It's kind of like okay let's go back 10 years later and let's hypothesize you know at least in the discussion you know and think about pulling in some longer term consequences. So most of the, and I haven't, I don't know if I've ever read an EIS on salvage logging. I don't know who would even have them. I think a lot of times they push them through on short term emergency environmental assessments or something like that, that its almost

always short term economic gain versus short term ecological loss. And I think in the last few years we're beginning to see literature emerging that talks about some of the longer-term consequences. So that paper that Phil Monsanto and I did, I think I sent you a...

JM: Yeah I think I have it right here.

A: It talked about some of the longer-term consequences in a dry forest where the risk of fire is much higher than in wet forests. And you know you get 20-30 years out, the new trees are big enough that you can under burn them and you probably want to begin to do a little thinning perhaps of those either by fire or by some sort of pre commercial thinning. And then send a prescribed fire through to kind of clean things up and begin to fragment you know these huge blocks of stand replacement young growth that were put into place by these large wildfires of the past. And so what we were trying to do is to say what are some of the longer-term consequences in terms of forest management of this. And in that context it looked like you know there was a significantly higher amount of the landscape that pretty much got soil torched if you will, trying to use prescribed fire in these regenerating forests compared to the areas that have been salvage logged. And in those areas again not all of the trees were taken off. It wasn't the kind of salvage logging that you see on private industrial land. And I don't know, you know, I really haven't seen too much salvage logging on DNR land primarily because a lot of the larger blocks of DNR land on the west side haven't burned. And most as far as I know most of their land on the east side is like a section here, section there, and just driving through it's kind of hard to identify you know what's theirs and what's not. And the same is true for a lot of the east side industrial properties. They're a lot more fragmented. And so you can go in and you can say well this clearly is federal land right here you know. It's obviously some private owner who tried to get maximum economic value and it doesn't leave very much behind but you can clearly pick up the federal stuff that's been salvaged because there's always a lot of snags left. Not always the biggest trees but probably a density at least in recent salvage logging operations that I've seen maybe a density of 50 trees per acre or something like that.

JM: And how do you think that came about, that increase in what was left? I mean was there any specific reports or anything that are policies about...?

A: I think the work done by Richard Hutto from University of Montana, he's a bird guy, and he's done a fair amount of work in the Rocky Mountains with birds. And what he was finding was that particularly for black backed woodpeckers;

they really require dead snag patches. And the reason that they lived in the northern Rocky Mountains is because dead snag patches were historically always there because of these high severity fires in subalpine fir forests that was kind of the historic fire regime.

JM: Was that with the bug kill would happen and then the fires come through?

A: Well it could either be a bug kill followed by fire or it could just be a fire blowing under extreme conditions, extreme weather conditions. But you'd end up with these dead snag patches and so this was and black backed woodpeckers only exist in that habitat. They don't exist in you know the mature forest or young growth forest or partially snagged forests. So I think part of the reason that they're leaving more snags was in part because of that research so don't salvage everything and what you do salvage leave some snags because there are some woodpecker species that like more open snag patches. Lewis's woodpecker in particular and western bluebirds which isn't a woodpecker but they tend to increase. You find them in higher densities in partially logged, partially salvaged forests than you do in unsalvaged. But the argument that you should have no salvage in low elevation forests because of the black backed woodpecker doesn't resonate well with me because historically it was probably never there because they didn't have those kinds of fires in the low elevation. They were confined with high elevation areas. So what we've done is we've transferred the higher elevation fire regime down to low elevation, with that one of the species that depends on the high severity fire regime. So if you completely salvage all low elevation forests you'd never get rid of black backs because they're still going to be present in the high elevation areas. And when you look at their range you know if you look at a map of North America it's just that high latitude boreal forest that you find, you know there's kind of a tongue that comes down the Rocky Mountains and a tongue that comes down The Cascades. So we've kind of created habitat for black backs. But I think more than any other thing it's probably been bird issues, wildlife issues in general but it's primarily the bird component of things. And then the erosion concerns. And the way that the Forest Service has dealt with the erosion concerns more than anything else is to do two things. They beefed up their BAER plans their burned area emergency rehab and they've tended to focus more on things like helicopter yarding rather than ground based systems. So they're not pushing new roads in where roads weren't existent before. And in many cases by the time they get done with all that their costs are so high that it kind of negates the economic argument that you're trying to make. But nevertheless you know the mills that process the wood and hire people so there's a multiplier effect but the source issue of economic value to the government tends

to be my guess is probably a wash. By the time they go through the planning and the execution with the various things that they've got in place and you know they may end up also doing additional rehab after the salvage. And then you've got the planning cost but those are going to be there whether you salvage or not. Except that I just read a paper out of the Klamath Mountains, which is fairly, a high productivity area and they found that a lot of areas that even with no planning you've still got a lot of regen (regeneration), I mean a lot. But there are areas particularly where a lot of grass seeding has been done in forested areas where you put in a lot of grass that pretty much kills most of the natural regen because it's growing so well that first year. And you know you've got that little teeny seedling that comes up about like this and maybe in May, I mean you already have grass this tall around it and it's sucking all the soil moisture out of it. So it really reduces not only the tree component but also plants like ceanothus, which are nitrogen fixer, which can put some of, the nitrogen lost by the fire back into the soil. But a lot of the emergency rehab is essentially done as a maneuver to avoid legal issues. So if somebody downstream ends up getting flooded out or gets damaged from erosion or excess water from the fire. And their argument has been on tort claims. The feds could have done something about this but they chose not to. And so they made the impacts of a natural event assuming that this wildfire was a natural event worse than it should have been. And they've lost claims on that. So most of the time they will go in and they will do some sort of rehab on large wildfires. It's rare that they'll do nothing.

JM: And I think basically what your point on that is, is that to not beget held liable for damage after wildfire for the erosion that basically a lot of what is done is putting out this grass seed, which actually slows down the regeneration of the forest. And it's far from what would you call it private pressure I guess or something? Yeah.

A: Back in the 90s when I wrote my fire ecology book, people thought that contour felling of logs on a slope was basically a waste of time. It was expensive. It was hard to do. What they tried to do is they tried to take fairly small to medium sized not big trees and fall them so that they would at least be close to one another so they could kind of be jockeyed into alignment as essentially a block. And then they'd go in and they'd fill in all the holes and terrain you know where the water could concentrate and go under the log. And the conventional wisdom at that time was that it doesn't work. More recently in 2000, Pete Robichaud who is a I guess he's a geologist or a hydrologist out of the Rocky Mountain station of the Forest Service along with some other people published a general technical report on rehabilitation and things have kind of turned around by

them. And now it looks like contour felling is the most popular technique. And grass seeding and mulching come not too far behind. Grass seeding is preferable because it's really easy and it's cheap. And mulching doesn't have the environmental impact that grass seeding does. But it's much more expensive and it's harder to distribute.

JM: Now and that would be like those brush shredders or whatever that you might...?

A: You could do that or just you know take bark chips and spread them out. Hay, you know dried hay, they'll spread that for example along fire line trails. And but the problem is that you have to have pretty good access. And if it's a fire line trail, you've got access because the trail was created and it's usually wide enough that you can get a vehicle down there to spread the mulch. But outside of those areas it's more difficult. What they can do sometimes is they'll haul in bails of hay by helicopter then drop them out of the helicopter. And then the crews hike in, grab the bails, cut them open and then spread the stuff out there. But it's a lot more expensive than grass seeding. You can do grass seeding for about well like my figures are out of date but I would say probably in the neighborhood of \$60-\$70 an acre, including seed.

JM: Right and you can use planes or helicopters for that, right.

A: Helicopters, yeah. And mulching is probably \$600-\$800 dollars an acre so about ten times as much. And contour felling is probably \$500-\$600 per acre.

JM: So that's in between the two or?

A: Yeah, it's probably a little bit in between. Mulching is very expensive. That's about the most expensive thing you can do. And then there's other stuff you know like in the BAER teams for example sometimes they'll go in and they'll kind of reengineer roads. So they'll resize the culverts or they'll take culverts out and put in dips rather than having the culvert there because they know it's going to get clogged and it's going to wash the whole road prism out. And those are kind of it's hard to say what an average is on that because it's such a linear feature and it's not done on an area basis necessarily. But those things are also typically part of the BAER process. And the advantage that the feds have there is that that money comes out of some sort of emergency pot. So they have to apply for it and but the team itself the BAER team has essentially justified the action by the reporting that they've done and they're on the fire working before it's even out.

So on the area of that first burn, they'll be in there already you know checking things out. Like that Santa Barbara fire that's going right now, there's got to be a bear team down there and they're in the areas that have already burned saying this is what we ought to do. So they produce what they call a fire severity map and they go in and they map all of the vegetation. And if it's still green it's an unburned to low. If it's totally scorched so that the trees are dead but the tops were not consumed, that's kind of a moderate. And then if it's a crown fire that's high. So it's different than what you get from satellite pictures. And so the kind of fire severity you have to find by satellite usually if you had total crown scorch that's considered high severity. And so it's a slightly different system but the reason that they're doing that is because from a soils standpoint, if you have all the canopy leaves browned, they're going to fall off and are essentially acting as a mulch. And so you don't need as much attention in one of those areas than you do when there's essentially no fine fuel left at all (for soil cover). It's all been consumed. And so then they you know they developed a whole series of techniques. They used a lot of heavy equipment surprisingly because a lot of the problems that they defined were created by heavy equipment. Things like undersized culverts but you can't have guys like picking and shoveling. When I was working for the Park Service back in the 70s, there was a big expansion at Redwood National Park down in northern California. And we had about 33 million dollars to spend and at first we thought okay we're going to bring in all these hippie crews and they're going to be running along putting in willow waddles and you know whatever. And it turned out that that was actually pretty ineffective and that what was really needed was heavy equipment. And so those heavy equipment operators went in there and they cleaned out the stream channel fills and recontoured things and then they recontoured the slopes where the roads had been but were not going to be needed now that it was on a National Park. And it was pretty expensive but it was much more effective than trying to use hand crews.

JM: Because they just can't move the earth.

A: They couldn't move it and the kinds of things that they were able to do weren't as stable as you could do with the heavier equipment. And it was impossible like to tear out big fills with hand crews. You know pick and shovel, it just wasn't working.

JM: It seems like they would be better for like planning or something.

A: Yeah. Well they did some of that. You know and for some of the seeding stuff like that. So they didn't have a component there but it ended up being a much smaller proportion of the total work effort than had been initially planned. And the heavy equipment, which essentially hadn't been scheduled at all, ended up being the biggest part of it.

JM: And that stuff's really expensive too.

A: Yeah. So you know the same bulldozers that helped build the roads and yarded the trees out were now being used to restore the landscape.

JM: Well that makes sense in a way doesn't it, yeah.

A: They use a lot of shovel loaders, you know those bucket things.

JM: Yeah the excavators?

A: Yeah. And those apparently had been applied a lot in BAER stream stabilization too because they can sit on the edge of something and get that bucket way down into a stream channel and pull stuff out if it's necessary to do so.

JM: Right, yeah. And I guess they're fairly stable too. I mean out of that equipment they're pretty versatile I understand. Or they're able to work on slopes too because of that arm to support themselves as they go down or something like that yeah. Yeah. And let's see...

A: And the BAER teams never deal with salvage. All they're doing is what are we going to do with the medial effects of the wildfire and then the salvage and any efforts to rehab after salvage come out of a different account. And so I think they come out of the stumpage value that they get for the timber. Unless they have unprogrammed funds around which hardly anybody ever does. So I think that's how they end up paying for the planting and any rehab after the salvage.

JM: Well I guess a certain amount of it from my understanding a certain amount of when they get the stumpage fees or whatever go into the KV fund and that that fund is supposed to be for reforestation although it gets used for a lot of other things too but everything's supposed to be directed towards the reforestation. And I can't remember what it is, but 30% or something like that, 25 maybe, 20.

A: There's been a lot of controversy over that stuff on how they're used because some people have said well okay we've got this 30,000 acre fire here and we're going to salvage let's say half of it. And some people interpret the use of the KV funds as only applying to the half that was salvaged and not being able to be used at all on the other half of the wildfire that wasn't salvaged. Even though the salvaged units may have been located such that they minimized the long-term effect of the unsalvaged areas in terms of future firing hazards and such. So I think over the last few years that's been clarified. If you have a salvage operation within a wildfire that the whole context of the wildfire can be used in terms of the KV funds.

JM: That's good. I mean that makes sense.

A: Yeah because we got involved in it about 15 years ago. We were evaluating a wildfire over in the Blue Mountains of Oregon and we suggested that they take some of their KV money and plant hardwoods along the riparian corridor. So we can't do that because we're not salvaging the creek areas. It's like, so what? And so they actually end up actually getting a clarification and said yeah you can do that.

JM: Interesting. What's your opinion or what do you know about the forest plans that are supposed to come out? I think they're supposed to come out every 15 years for a particular forest and then from what I understand is that not all the forests are on schedule with that, that there's some that are behind that even though they're...

A: Yeah, they just get delayed again and again. One of the reasons is that the kind of, the whole idea about the National Forest Management Act was that it was a bottom up process back in 1976 when it was passed. It was a bottom up process where there would be plans produced for each national forest independent of all the other national forests. And that it would prescribe the you know what was actually going to occur over that next planning period. Typically it would be like a 10-year period. And you know everybody was real rosy and excited about it when they began to talk about it. But the first generation of plans that came out were heavily influenced by this linear programming technique and it was called a FORPLAN for forest planning. And you threw in all the inputs and constraints that you had and you popped out this plan that says okay we're going to be producing you know a 100 million board feet per year off this forest and we'll be producing X number of recreation days, X number of grazing days. And everything was kind of specified but it was...

JM: So the computer program that they used?

A: Yeah. But it was specified in a non-spatial context. So you had all these tables but it was just incomprehensible. If you tried to say well okay if we utilize this plan, what is our forest going to look like? All it dealt with were outputs. And so there was no attention to what was left behind or how the rest was being managed other than the fact that the assumption was that this was a sustainable process. So you could have these outputs going on forever. So the public didn't buy into them very well. And then we began to get these more regional issues like goshawk protection, northern spotted owls. And so at just about the time that the first generation of plans were being revamped to go into a second generation...

JM: Would that be the 80s?

A: Late 80s, yeah. Then the, because they, the first plans came out probably about 1980 because it took about two years after the act to get the planning regulations in order. And then it took another two to three years to get the very first FORPLANS all that output out there and then actually to reproduce the plans. So it was like late 80s early 90s when the second generation came into play except by then you had these issues that obviously overlapped one forest like the northern spotted owl. And when it became endangered, not endangered, threatened, then the ball pretty much got pulled out of the Forest Service's hand in terms of planning. And it went to the Fish and Wildlife Service because they manage the Endangered Species Act. And so the Fish and Wildlife Service published a recovery plan for the owl and it largely went along with what the Forest Service and the other federal agencies had put together previous to that. There was a whole series of different plans. One was called the ISC, Interagency Scientific Committee plan. And once that one was done, all of the others were slight variants of that one. And that one was shared by Jack Thomas who later became chief of the Forest Service. And so by '93 I guess the owl issue was, its impacts were pretty well known but there was basically a lot of the timber production off of all the forests that had owls was going to be way cut back. And as it turned out it was cut back even further because of some other issues. But then the issue in Congress became, okay so if we implement this plan for owls are we done with all these Northwest forests? And somebody said well no because we've got fish issues and we've got old growth forests you know spiritual value and we have you know all of these other things. So a couple more short-term interim-planning efforts went on and eventually after Clinton came into office that's when the FEMAT process came into play which was the basis for the Northwest Forest

Plan. Some extra bells and whistles got added like for species that they didn't know very much about. They were going to be required to survey for those species and provide kind of a local management plan that they found in HIPA (?) [not sure what was meant here]. And so that became very costly and it slowed down almost everything because in order to survey for some species it ended up taking like two years because you had to do surveys in the spring and the fall and the spring and the fall to make sure that they weren't there. In other cases where they found them, let's say you might have a you know one of these survey-managed snails mid slope. Well if there had been a prescribed fire plan for that whole slope there was no way that you were going to protect this little circle in the middle of a slope. So I was like okay well we're not going to do a fire here then. So it pretty much froze everything. And outside of the northern spotted owl range you had other issues as well. You know in the northern Rockies you had grizzly bears, in the southwest you have the Mexican spotted owl, the Sierra Nevada had the California spotted owl. So and then there's these wider ranging things like fishers and wolverines. You know so each one of these things kind of became what I call a fine filter focus. So how do you adapt a plan over many national forest to make sure that this particular species' needs are taken care of. And yet you still have a sustainable outcome on the whole end of the process. So all of these plans began to get more and more linked together and I think the agencies are still under the legislation that talked about individual forest plans back in the mid 70s but that's not the way they actually do the planning. But it's all been pushed by administrative fiat and essentially has been pushed by legislation and in a lot of cases by lawsuits. So they tried to do something that was innovative perhaps but it didn't meet the kind of the sniff test in court. And so it's like well you guys aren't going to get that plan through you know. So they'd have to start from scratch again. And of course as we go further on it time we find more and more things to be worried about. And particularly in the dry forest types you know. What I worry about is by the time we finally get our act together we're not going to have much habitat left because it's going up incredibly fast.

JM: In terms of fires?

A: In terms of wildfire, yeah. I mean you look at the wildfire acreage in the west and from about 1930 up until the present it goes woosh, like that. So we're burning more than when we weren't even doing much fire suppression or at least it wasn't very as effective because we didn't have helicopters and airplanes and smoke jumpers didn't come into play until about then. And the use of a lot of heavy equipment really didn't come into play until World War II. A lot of that technology was pretty much perfected. And now even with all that sort of stuff

it's not helping us you know. We're way up here. And a lot of this is dry forest. And I think it's just going to get worse. I mean already we've got that Santa Barbara fire occurring and that's in May. And this is with; you know that brush down there is just leafing out. Usually it becomes relatively nonflammable for at least a couple of months when the new foliage comes up. Yeah the fuel moistures are going up and at least from what I saw on the TV that was having no impact on that fire behavior And you see these mansions on tops of these hills just surrounded by brush and it's like you know just last year you know 200 homes were lost like just a mile away from here and you don't seem to sense that there's a connect between your house being surrounded by brush. And a lot of these homes that I saw burning on TV were on fire before the wild land around them was on fire. So it was ember driven and so the embers were blowing across. They were hitting the brush but not setting it on fire but hitting the house and setting it on fire. So that's you know from the standpoint of salvage logging that's neither here nor there but...

JM: Well it just adds to the amount of area that could be salvaged you know for burning more. And then with the climate change I guess is kind of what you're getting at with that. You know that...

A: Yeah you know you look at particularly this period of rapidly increasing area here and there's a clear climate signal in there as well. It's not just fuel built up. Probably the big three here are number one a more conservative suppression effort because of safety concerns. I mean you get you know in the last several years there has been several people who were line commanders who had been taken into court for criminal misconduct because firefighters go trapped or killed. And that's kind of been a first and nobody wants to be the next one in that line. It's always like well let's just back off, back off. We'll give up acres but we'll do good point protection of structures and we won't worry as much. And there's this kind of a disturbing trend that I see too in that well more fire is good on the landscape. We've got to get fire back into the landscape but for the most part it's the wrong kind of fire. And I sense that that's I think this summer that's going to really be a big political issue because you're going to see a lot of acreage burning and they're burning with the wrong severity. They're not the historical low severity fires. But yeah the acres are burning but they're burning with high severity. And I think some people in the political end of things already have a feel that this is what's going on and it's not good stewardship of the land. It may be cheaper in the short run for the agencies but in the long run I don't think it's a good thing. And then you've got this climate shift and Tony Westerling and some other folks did a paper on nature or science in 2006 and they looked at the period

from 1970 to 2003 or 4 probably and what they found was that in fact we've had a period of drier weather in this time and that's been associated with earlier snow melt in the spring and the extended longevity of fire seasons. And it's a pretty good correlation with increasing fire size, increasing area burned. The one thing they didn't look at was increasing severity as well. But my sense is that some of that is occurring at least in certain areas. The place I'm most familiar with is northern California and I was there last October 500,000 acres burned there last summer. And it didn't look to me like the fires were exceptionally severe but when I talked to people in town they said oh well we've been out to point A or point B or point C. And it's just a moonscape you know. All the way along this highway you know along this river and I went down there and it's like well yeah I can see this area burned but I mean it's definitely not a moonscape. And probably by this year with most of the scorch gone most people who drive along that road won't even know there was a fire there. So areas like that I'm not so sure. But if you get in the Sierra Nevada like all of the forests on the other side of I-5, different kind of terrain, you know. Much longer stretches where wind can really blow these fires and you get these long cigar shaped stand replacement burns. And historically those fires probably did burn like that but they didn't kill nearly as many trees as they are now. And those areas also have better access than in the Trinity and the Klamath Mountains on the west side of I-5, pretty difficult to salvage without a helicopter. You haven't got roads in there. You can't, you have to build expensive roads to get into some of these spots. There's just no other way about it. Otherwise you can't get there. And so if they're going to do salvage they have to helicopter it whereas on that more gentle land to the east of I-5, you wouldn't even need a road. You just kind of take your harvester forwarder in there and pull the stuff out and you'd probably you know you wouldn't even have to grade a road for some of the trucks to get in there. It's fairly, much, much flatter and easier to manage land. So that's going to I think have a big play in terms of where salvage is going to continue to be an issue. It's like in areas where you already have pretty good access.

JM: Yeah it will continue and keep the cost down and everything. What's your opinion of like public pressure in terms of the policies or the actions that get taken? I mean how big of an affect do you think the public has on what happens?

A: Not much. I don't think so, at least in the areas that I've seen where the local public said geez you know we've got all of this federal land right next to town that just burned in a stand replacement fire. We ought to salvage it. You know we've got this industrial firm that had a square mile of land burn right next door. They got in there, they got the wood out and their chances of a re-burn are lower

than on the federal land. Do something. And the feds just can't get it together. And part of it is the legal situation that they find themselves in, that the private landowners don't have that hammer hanging over them like the feds do. And so they tend to be pretty risk adverse when it comes to salvage logging because it's just, for the most part the further up you go in the food chain up to the Washington DC level, the more that the environmental groups consolidate their power. And at that level they're pretty much dead set against salvage. And so there's really nothing that the Washington office guys gain by saying yeah we'll do a lot of salvage because it'll make these local people happy. So there's not a lot of support for the local managers as they move up the ladder for salvage operations even though you know it might make them look good at the local level. Not that everybody at the local level wants to salvage log but generally more do than don't because many of these areas are areas where the timber industry has pretty much been knocked out due to other constraints. So here we've got some wood, it's dead, not all of it is going to serve a needed ecological function on the landscape if it's a dry forest. If it's a high elevation forest, you know you could make the argument (against salvage) just for black backed woodpeckers alone that would be useful. And lynx seem to like that as well because the snowshoe hares like those young burned areas. And so the more young burned area you have the more hares and therefore the more lynx. But in the lower 48, lynx is kind of a I don't know what you'd call it, maybe a red herring because it seems like the lynx populations are very much a function of what goes on in Canada. When you have high lynx populations because the snowshoe hare cycles in the North Country. It doesn't cycle pretty much in the lower 48 but it does in Canada on up. And so it's about a 10-year cycle. And what you see is the lynx populations follow that with a lag of about two years. And so the lynx populations go up. Well if you look at lynx hunting and trapping records in the US, they pretty much follow that snowshoe hare cycle with a lag. And so lynx populations go up when the hare population in Canada goes up and then they start to emigrate down to the US. And then things turn around, the snowshoe hare populations crash and the lynx population moves back up into Canada because it's, the snowshoe hare populations down here are generally equivalent to about the population lows in Canada. They never have this huge cycle out. And so it's pretty marginal habitat for them. But you know lynx is again one of those species of concern and regardless of whether it's dependent upon immigration from Canada or not, the federal agencies pretty much are constrained to deal with it as if it's a native species that has always done well here. And so trying to do more for probably high elevation is I would say no real ecological need for salvage and the lower down the slope you go I think the better the case can be made that at least partial salvage can be justified in part on ecological grounds like these you know long

term coarse woody debris issues. Because when you look at the historic forest and you try and model snag dynamics in the historic forest, you probably had a fairly constant, when they deal with snags they usually do it per 100 acres so that you know it's a much more of an average thing because not every acre has the same number of snags. But for most of the bird species that rely on coarse woody debris, standing coarse woody debris, because you have 200 to 250 snags per 100 acres. You pretty much maxed out at 100% of capacity. So that's only two per acre, two to two and a half per acre. Well all of a sudden you have a wildfire and you've got like hundreds per acre. And per 100 acres you've got tens of thousands of them. There's many more than are required for ecological function. And so taking some of them out down there you know I think that you could make an ecological argument for that. To my knowledge no one has yet done that, has tried to do that. And I think that that you know most of the federal land managers, maybe I'm wrong about this but you know my sense is that that they think in very unimaginative terms about their forests. They don't recognize that the forest functions differently depending upon what forest type it is. And the role of fire is different depending upon forest type. And so I think when they see a fire let's say that burned from low to high elevation and includes all the forest types, they don't see that as a segmented problem that maybe what you do at point A should be different than at point B. It's just like now we're going to do 15% of this. There will be 15% on each forest type all the way to the top or you know something silly like that. And you know many of the forest managers don't have degrees in natural resources anymore. You know it used to be all foresters, which was not necessarily a good thing because they had a lot of their own biases. For example we know what's best and we're the professionals, blah blah blah and public be damned. But you know when you get somebody who's an archaeologist or a social scientist, they need to have good information and at least from the staff that work for them. And they need to know how to answer the right questions. And a lot of them are pretty timid and they're pretty risk adverse. Nobody's willing to go out on a limb because they know that most of those limbs are pretty rotten (laughs). They're going to get broken off and that's going to affect their career advancement. It's not a good thing. You know I think the federal agencies and the Forest Service is not alone in this. The Park Service is the same way. And I used to work for, I worked for the Park Service for 17 years and I have recently kind of gone back to work for them as kind of a contracting employee. And back when I worked for them they were about product, about getting things done and now it's almost all about process, making it look like you're busy and going to meetings and going to training. But whether you get your plans done and get them operable is much less important. And so I think that's to some extent true with the Forest Service as well.

JM: What would you say the cause of that is? Why do you think it's changing that way?

A: The typical ranger who moved up to superintendent and regional director and went to director of the Park Service. Historically it had been people who have avoided putting their foot in doo-doo. And the way you avoid putting your foot in doo-doo is just don't do anything. And particularly in the higher levels of the agency they would move a lot. So you'd see a superintendent. He'd be in a spot three years. And so you could just see him. They were saying okay nine more months and I'm probably going to be moving on. So if I don't make a decision about this, I'm going to leave it for the next guy to deal with. And the next guy would come in with the same attitude. You know, three more years and I'll be onto something else. Maybe we ought to start a new planning effort here and revisit the assumptions that we had about this thing and we know that we won't get through that in three years. So I'll be someplace else. And almost all the high level managers who have made it were of that ilk. There were a few that weren't but I would say three quarters of them were. And that was really at that time it was really in contrast with the Forest Service. And with the Forest Service the guys who went out on a limb and did things and got things done and produced outputs were the ones who moved up the ladder. But they have adopted much more of a Park Service like attitude in the last you know 20 years and now it's more of a group grope kind of thing. You know everybody'd get together and talk. And it's also been very frustrating for you know a lot of people who were movers and shakers left the agency because they couldn't stand not getting things done. It's like we're not moving here. And you know I'm wasting my time, we're wasting taxpayer money. I'm just out of here. And I'm sure the same is true for BLM. So it's unfortunate you know. I don't think it's really a good thing for the land. I mean for 17-18 almost 20 years I've been arguing that in these dry forest types that we ought to take a large landscape, one large landscape and do what we think is necessary to make it a resilient forest to wildfire and have the wildlife guys out there monitoring spotted owls the whole time and see what happens. Everybody says, "Well if you do this, you open up that forest all the spotted owls are going to disappear." Well, I've never seen an instance where anybody has proved that to me. And yet what we do see going on is we see you know like I said while the Northwest Forest Plan was being put together, you know I said what's going to happen with these dry forests? I said you're going to start losing large chunks of the landscape at the same time. I mean fires are like 100,000 acres or more if we continue on with this strategy. And at that time, no one had seen a fire that big anywhere in Oregon and Washington. And they said, well, where's it

going to start? And I said, well you look at the lightening frequency. I said probably the areas with the highest lightening frequency are where you are going to see it first. And so I pointed to a spot on the map, which was the Entiat River drainage in eastern Washington here. Three weeks later a fire started there and burned 120,000 acres. It was the biggest fire that they actually had recorded acres on in Washington state history. The Yacolt burn was probably bigger but it burned at the turn of the century and they weren't really sure exactly where it went. You know then we had the Biscuit fire. We've had these multiple 100,000 acre fires in California. Eastern Washington and eastern Oregon where people used to laugh at me when I'd go down and talk to them because they would say well we just don't have that big fire history. It's not part, it hasn't happened here so we're not going to do anything about it. Well now it's on top of them. You know they're 20 years out from making a dent in the backlog of the stuff that they would have to do. So it's just unfortunate and I you know I don't see it getting much better in the short term.

JM: You say they're 20 years out from being able to get started on it? Or to be able to make a...?

A: To make a dent. Yeah. Some simulations of landscapes looking at fire risk issues have suggested that if you could manage about 20% of your landscape per decade, it doesn't mean that the first decade you do 20% and the second decade you do a second different 20%. It could be the same 20% both times not necessarily. But if you look at strategically where the worst problems are, and those change over time, probably there's going to be a little overlap but it's mostly going to be different acres. So what that would mean is that after about 20 years you might have about 30% of your landscape fire safe. But it's every year it's kind of...

JM: And that's prescribed fire thinning or some combination thereof.

A: Right. So at that point you begin to really fragment the ability of wildfires to move across the landscape because they keep hitting these treated areas. They don't go out but their intensity declines to the point where they're capable of control and treating higher proportions of the landscape than that don't seem to be all that much more effective. So to me, that's a real, if I were a manager I would say wow you know I think I could go out and sell this to the public. And they may not like any kind of equipment in the woods. You know it blows up dust and it's noisy and they may not know much about prescribed fire but 2% of this forest area per year is not a tremendous amount. And it's going to be divvied up over the

landscape so it's not all going to occur in one area. I think you ought to be able to sell something like that, particularly because the kinds of treatments that are being done are pretty economically marginal because you're leaving a lot of the big trees. But most people when they look at these dry forest areas, back in the 80s they did a lot of studies on visual resource management in the Forest Service because that was part of the National Forest Management Act. And so the question was, well what do people like to see? Well in these pine forests, what they like to see, they like to see big trees in a non-uniform spacing. They like to see green grass on the forest floor. They don't like to see downed material.

JM: So it's like a park like setting that...

A: Yeah, and they don't like all of these little understory trees. That's exactly the results of what one of these manipulations should do and it's going to create a fire resilient forest. So the pieces are there. They just, and there's been a lot of what do you call it, synthesis of this kind of material that's available for forest managers but it might just be, there's so many issues it might just be too overwhelming for them. But I haven't seen kind of a consistent movement by any of these forests in the area of the Northwest Forest Plan for example that has really began to move in that direction at the scale that is needed.

JM: And so you were saying that maybe it's a function of the managers having too much on their plate? Or do you think it's kind of like the public wouldn't agree with it? Or what do you...?

A: It's some of both, some of both. I think the people who are against plans like that are obviously the most vocal. And they have support; a lot of monetary support from further up the line. So you know a lot of these like local Sierra Club you know. I mean the National Sierra Club policy for national forests is no commercial harvest. So I mean a forest manager, forest supervisor cannot cut a tree and sell it without getting the Sierra Club on their back.

JM: Well it almost seems like...

A: I had an editorial once in the Portland Oregonian and I said, you know, I said, "Things like the Sierra Club's policy against commercial tree cutting," I said, "is just crazy." I said, "If it's done right it can really be a big help." And so I got all these calls from the Sierra Club people and they say, "Well we're not against tree cutting." You know and I said, "Well what do you mean you're not against tree cutting?" I said, "That's the policy, you know. No commercial..." And they says,

“Well, we’re only upset if they sell it. They can cut all they want. They just can’t sell it.” And I said, “Well once its cut,” I said, “from the standpoint of ecological you know status of the forest, the deed is done. What happens to the log once it’s moved out of the woods whether it’s sold or not sold is immaterial.” I said, “You guys, you know, that’s just ethically dishonest.”

JM: Yeah. And you know it does seem like that those groups that if they understood that it was for you know for to so that the burns wouldn’t be out of the ordinary, because those are out of the ordinary for the most part and stand replacement where the history of those east side drier forests is more of coming through and making this park like setting, that it seems like that they would be supportive of that kind of treatment of cutting and prescribed fire...

A: Some of the environmental groups are defenders of wildlife, at least in the Northwest here. They’ve been very supportive of restoration of tree cutting, restoration of forestry. Let me just call it that, okay, rather than getting involved in thinning and burning every time. The nature conservancy is actually a hands on partner with the Forest Service both in terms of managing its adjacent lands directly and providing staff people to help the Forest Service plan and implement these things. So and you know they’re a big well-funded outfit. But you still have other national groups, the Sierra Club, Natural Resources Defense Council, Center for Biological Diversity, that’s out of Arizona. They’re pretty much just you know against everything. They don’t say they are but in fact when push comes to shove they’re in there harassing the Forest Service like well okay if you do this you’re going to end up with all these you know alien species coming in. So therefore you can’t do it. But we really think that you ought to be doing it but you can’t do it because of this. And some groups have actually changed their stance over time. There’s a group up in Bellingham that used to be called Northwest Ecosystems something or other. They changed their name. But they’ve become much more of a partner than an adversary because they’d been saying the Forest Service in limited ways has been doing things right. And so they say that there’s a good faith effort to try and do the right thing. But it took you know ten years for that to turn around. That’s a pretty long time. And the industry is so fragmented and you know they’ve essentially lost a lot of their political clout. It used to be you had like a lot of big forest industry in this state, Crown Zellerbach, Scott Paper Company, Georgia Pacific, Weyerhaeuser of course. And now most of those lands are gone and managed like for insurance companies like John Hancock. John Hancock bought almost all of Crown Zellerbach’s land. So rather than being local forest managers you know they’re managed out of Massachusetts or something and they hire these timber management consulting groups like

Campbell Scientific Consulting I think it's called. And they do all of the forest management and they do all of the planning and operations but they're not involved in the political process in Olympia like these other guys used to be. And the bottom's out of the market right now. So there's you know they're not really clamoring for a lot of logs because they can't even cut them. So all of the political pressure just comes from one side when it comes. So you don't get, the local communities, they're pretty confused. There's a guy who several years ago wrote this book called, his name is Richard Louv, it was called Nature Deficit Disorder (actually called "Last Child in the Woods"). And he was saying that young kids now you know they don't get out as much as they used to for a whole variety of reasons. They're losing their touch to begin to understand what nature is about. And I would say that's probably true for most people under the age of 50 that it's not just confined to children. So when you try and deal with these complex issues of even the fact that there's different forest types and that fire historically interacted differently among them. You know you just get this blank look because they don't even know the difference between a pine tree and a fir tree. And logging to them is what the Sierra Club shows on all its brochures you know. It's just this huge clear-cut moonscape and it could be nothing other than that. So you know it's kind of surprising. I've been on a couple of trips where people who were very adamant against any kind of active management you know came away at the end of the day with their mouths kind of hanging open saying wow I didn't realize it could be like this. So but to get it on a broad scale like that I mean there's got to be a hook to get people in and nobody has discovered what that hook is.

JM: Yeah well I guess it sounds like you know part of it might be education or some kind of you know these like you mentioned a tour or something where these people were impressed with what was going on, that it almost seems like maybe the agencies should try to interact more with either the public or these organizations and then actually invite them into treatment programs or something like that.

A: They do at times you know when they have places that are fairly easy to access. But the problem goes clear back to the school. Most of the biology that's taught now is cellular and below, scale and below (?). And ecology as a discipline is not taught because it's not tested. So when you look at the way you go through the various qualifying exams for college, organism and up stuff just isn't there. And one of the main reasons is, is that it's because ecology is really a science of place. It's very difficult to put a curriculum together that just talks about ecology so generally. Like you can talk about a cell for example or a molecule.

JM: You said science of place.

A: The science of place. Yeah and that's what makes it so difficult to bring across because it has to be adapted depending upon where you are. You know on the east coast it would be different on the west coast. So there have been some curricula put together particularly for the role of fire in landscapes but it hasn't been, as far as I can see, it hasn't been well adopted. There's not a lot of interest even by high school teachers. When I was working at the university I would get a hold of high school teachers and volunteer to come out and talk to kids. Not interested.

JM: Wow that's really too bad.

A: Yeah.

JM: Well so if you take this idea of ecology as science of a place and that you know that obviously comes over into the management of these different areas, that it needs to take into account this ecology that is separate for different places.

A: And salvage.

JM: And salvage. That that would obviously, or you think that that would have a lot to do with the policies that get put into place for those different places. Do you think that that is standing in the way? That because it's not a uniform easy thing to put everywhere that it's slowing down the process of this science of place getting into policy or?

A: Well to some extent yes because you know if you look at the Northwest Forest Plan for example, it had exactly the same management prescription for the northern end of the range down to San Francisco. And the same policy was applied to the western Olympics which are very, very wet and the area around Wenatchee which is very, very dry. And in the last year, the management plan for spotted owls has been up for amendment again. And the Bush administration put out a plan probably about gosh I want to say three or four years ago. I was going to say two years but I think it's been longer than that. And I didn't think it was such a bad plan but the environmental groups just went nuts over it.

JM: Is that the healthy forest initiative or?

A: No. It was specifically an amendment to the recovery plan for spotted owls that's put out by Fish and Wildlife. And so they came down and you know obviously in an environmental sense it wasn't a friendly administration. But they came down and said no this isn't working you know we've got fire losses blah blah blah. So we're going to do this. But it made it look and it probably was that the scientist kind of got shut out and the policy guy said no this is good science. This is what you're going to do. So it ended up kind of getting held up. And so they said okay we're going to have a science review of this thing. And so they contracted out this review to a group called The Sustainable Ecosystems Institute that's out of Idaho but the office that did it was in Portland. And they are a very good group. So they got a whole bunch of people together and they had people like me come in and talk to them. And eventually they developed a new plan. It was still in the Bush administration. A new plan that took into consideration the fire issues on the east side. So rather than just having these large blocks around a nest where you couldn't do any manipulation at all, they said okay we'll have a smaller area where nothing is done and then we can do some of this forest restoration work so that when fires come in we have a better chance of stopping them before it blows right through the owl nest area. And so they said for the western Cascades, this approach isn't needed. For the eastern Cascades, we think that this approach is definitely needed. And for the Klamath and you know that region there wasn't enough consensus by the group that they could change what was existing. So they said well we understand their concerns down there but as a science group we don't have enough consensus that we can move ahead and recommend anything very specifically. So that was a very good recognition of the fire issue being an ecology of place. And so the science community gets it by getting it to the point where you can apply it on a management scale because of very a political issue. Because the environmental groups do not want to have the east side strategy, then if it's successful then say well okay then we're going to do it on the west side. Because you know science says it's not needed as much on the west side. But their concern is well if we allow them to start cutting around these owl nests, then you know the industry is going to get all excited and on these higher productivity west side sites, then they're going to be pushing for that. It makes our life more difficult. And there's other reasons. I mean there's just a hatred between forest industry and some of the environmental community that is just ingrained. And so to do something that's right but would make the other guy look good or help the other guy, is just not within some of their ways that they think.

JM: Yeah that's too bad. What was the name of that group again?

A: Sustainable Ecosystems Institute. And if you just Google that it'll get you to their website. And then they have a series of reports and so you can go to their report key button and the spotted owl one will be on there. Now they actually have two spotted owl reports that they've done. They did one about 2004 and this most recent one is, it would be 2008 or 2009. And I haven't seen that one. But they may be holding it up because it too was somewhat controversial.

JM: And now this, these reports are being used to figure out policies?

A: They go to Fish and Wildlife Service and the Fish and Wildlife Service uses those as a template to produce a new recovery plan. And then once that recovery plan goes through, then that provides guidance to the national forests to alter their forest plan. So it's a convoluted thing and that's one of the reasons that the Forest Service is much better served keeping species off of the endangered species list, threatened or endangered, because they lose control of the planning.

JM: I see. It switches over to...

A: It switches over. And as long as Fish and Wildlife Service is diddling around with something they can't move forward. And so the existing plan, the 1994 plan, everybody agreed to. And so until they come up with something new that's in place, the '94 plan is the operable plan. So none of these forests within the Northwest Forest Plan area can finish a forest plan until they know what's going on with the spotted owl.

JM: I get it. Okay, okay.

A: And so what the new deal is on spotted owls. And you know in the meantime other things have come in. Fishers are not yet listed but they go from the Sierra Nevada all the way up into the Olympics so and on the east side too. So if they go on the threatened list then that's a whole new set of issues. Lynx is already there. So but it affects very few forests. I think the Okanogan, Wenatchee and the Colville in Washington are the only ones that are affected, maybe the Gifford-Pinchot. But it's essentially a north, central and eastern Washington issue and it doesn't occur on the west side. Grizzlies are an issue for the Colville. Not yet a big issue in the North Cascades because the recovery plan said we're just going to let a sleeping dog lie here. You know if they get here fine and if they don't that's okay too. So it doesn't affect the planning process. Wolves are an issue but so far I guess the Fish and Wildlife Service hasn't, they've taken them off of the endangered list in the Yellowstone, Northern Rockies areas but they haven't made

it an issue in Washington and Oregon yet. So we don't know what's going to happen with wolves yet.

JM: Yeah what's your opinion of the Northwest Forest Plan as...? Well I guess it kind of marks a time from being worried about timber production to marking a time where it was more about biodiversity specifically the owl that it was pretty clear that they were more concerned with ecosystems at that point. And then also as you said it was you know it was a plan from the Olympics down to northern California, kind of putting everything under an umbrella which is in my mind sounds really good but it's the first time they're going to manage this amount of land you know in terms of the owl or not. But you pointed out a good point about how the landscape is different in there. What do you feel about that and do you think that parts of the other country will start adopting these larger scale land... I guess it's beyond landscape, eco...?

A: There's already some in place. In fact there was a book put out about 2000 something like that edited by Norm Johnson out of Oregon State University. The title was something like Bioregional Planning. And so they talked about the Northwest Forest Plan, they talked about the interior Columbia Basin plan, which has a lot of the same issues but also had a lot of big fish issues. And they ended up spending a lot of money on that one. And there's some that have been done on the southwestern plateau region. I'm trying to think of what the, I can get to the title of that. But you know that's nine years old now. And it was probably I think the conference was held in about '98 so...

JM: Biodiversity Planning?

A: It was called Bioregional, yeah Bioregional Planning. And the idea was well okay then how do you do this? It doesn't necessarily all have to be a formal planning process but it can, by recognizing the links between place A and place B, that then gets the local people who are doing the planning or context on what they ought to be doing and how they ought to be kind of sharing things. So the concept I think is pretty good because you do have a lot of things that are crawling across the borders of these various areas and they don't necessarily operate totally independently of one another. But I think another aspect of this that has become very much important is that we're not just looking at what comes out of the forest anymore but we're looking at the state of the forest that we leave behind. And I think that's a real key difference from when the National Forest Management Act and the first forest plans came into play until now. Because back then it was non-spatial planning and we have the ability to do spatial planning now. And we've

got the computing power, that we can actually visually simulate landscapes over time. And if you're going to sell the public on a plan to say okay here's what we want to do on this forest for the next 25 years, I think people would be really interested to see what the forest looks like 25 years from now. And you have the capability now that you could just take a computer, an airplane and have yourself in the cockpit looking out and you could fly over any part of the forest and you could look and see what's going on. And there'd be a little bit of randomness associated with it but if you said okay you know we're going to for example we're going to do this restoration of forestry on 2% a year, you could take your 2%, randomly put it in there and simulate what the canopy cover is going to look like and how it changes over time. I mean it's being done already. So it's possible to do it. But I don't think it's been implemented anywhere yet. But the whole idea of treating the land so that you sustain this biodiversity and the way you do that is not by what's coming off but by what you leave behind. If that's your main objective, you still have outputs but the outputs aren't driving the forest. The forest is driving the outputs. And that's the big difference between the way that they're looking at it now and the way they did 25 or 30 years ago. And to me it's much more sustainable that way. But you still have these big surprises you know like big fires that come in and with global warming it looks, there's a new paper just coming out in Ecological Applications by Littell et al. He's from UW and he's estimating that I think by 2050 we'll have like two and a half as much wildfire acreage per year in Washington state than we do now. You know the...

JM: What publication was that?

A: It's called Ecological Applications. It's a journal of the Ecological Society of America. And if you're in the library here you can get online access and probably get it without charge. So it would be, it may not even be out yet but it would be you know some 2009, definitely not 2008. So if it's out it's in the very most recent journal.

JM: Okay. Yeah I know with global warming you know and it's not just you know that the temperature is rising and that there's more fire danger from that but you know the bark beetle is you know not going to sleep in the winters especially up in British Columbia and this. That's almost an exponential problem the way it's growing.

A: I've seen some color maps of the spread of that thing and it's really frightening. You know it just goes, it's like one of these things that kind of you know every five seconds it refreshes itself with a new year. So it goes you know

1996 there's not much, '97 not much, '98 a little bit more, '99 a little bit more, 2000 more and then all of a sudden 2001 different spots start to link together and in 2002 and 2003 and it's just it's going everywhere.

JM: It's like a cancer. And the other thing too is that there's you know the windstorms and stuff like that are getting more intense and more frequent. So there's more blow down. Washington DNR actually they had a big salvage deal last year of you know the process of getting salvage out from blow down that they went and did. So its kind of it's on a few different fronts or whatever.

A: Yeah, yeah. Well that big, I guess it was a January 2007 storm was the one. And it probably took them about a year to get through the planning process to pull that stuff out. But we get one of those about every 30 years. So I'm not sold on the fact that's a global warming issue. A lot of people have suggested that hurricane frequencies will increase with global warming. But there, it makes a little more sense because those are warm season phenomena down in the Caribbean. You know these kind of cyclonic kind of storms that hit us in the wintertime. It would seem to me like with global warming that that frequency might even decline. So again that might be kind of an issue of place. Tornado frequencies in theory would go up. But it's not as clear to me what's going on with those things but I think we've clearly seen a warming, not only this century but particularly out here in the west in the last 30 years, no doubt about it. And we've had some droughts that seemed to be longer than normal but we also had droughts at the beginning of the 20th century and then the 1930s era as well. But it's a big unknown out there. And but I think you know if you take all of these things into account, to me expanding the scope of restoration forestry can only be a good thing. And not every species is going to be a winner in that. If you look at the kinds of bird species that live in the denser forest on the east side, things like mountain bluebirds, not mountain bluebirds, mount chickadees, red breasted nuthatches. When you open up forests they tend to decline. Maybe spotted owls will. We don't know. But I think spotted owls have got a bigger problem not only just fires but it's got the barred owl which is across its whole range. Fires are only a big issue maybe across half or two thirds of its range. But the barred owl is just kicking its ass everywhere it goes. And one of the possible solutions that came out of this SEI thing was that they go in and shoot barred owls. They hired government hunters to go in and blast them.

JM: Do you, if you were able to do any sort of overhaul on the system here of getting policy done, is there anything that you would do? I mean I guess one thing I'm thinking about is that you know the national policy, the forest plan I guess the

National Forest Plan of 1976, do you think that the period of time that it takes for a new forest plan to come about, should that be streamlined? Or are there any recommendations you would make for incorporating science into policy in a better way or?

A: We put together a report. And it turns out that the act of 1976 required what they called a committee of scientists to advise the Forest Service on planning regulations. And the first committee of scientists that was appointed in 1978 took several years. I think it was 1982 before they came out with a reg... But they actually wrote the planning regulations themselves. And one of the things that they put into the regulations, which came back to kind of bite the Forest Service, was one of their wildlife recommendations. And what they said was that the Forest Service shall provide viable populations of every vertebrate across the entire region their range. And that's a more stringent criterion than in the Endangered Species Act, which simply says that the species has to survive. They don't say everywhere. They just say in critical habitat (unclear) to survive. So that's actually what got the Forest Service in hot water with the spotted owl. It wasn't the Endangered Species Act that got them. It was the regulations under the National Forest Management Act. So not because of that but towards the end of the Clinton administration they decided that they needed an updated view of how the National Forest Management Act planning regulations should be done. And so among other people I was put on the new committee of scientists. And so we worked on it about two years and we submitted our final draft in oh it must have been like the summer of 2000 I guess, right at the end of the Clinton administration. And they took it and they fiddled with it a little bit and by about Thanksgiving they had it published in the Federal Register. And then it went through 30 days of review and before Clinton went out of office he signed it into regulation as the official new planning regulations. And then the first day of the Bush administration they cancelled it. So 30 days later it was dead in the water. So all that work went fornaught. But we talked about things like the idea about you know what's left behind is as important as what is taken out. So it changed the focus from output to the state of the ecosystem. It talked about rather than trying to monitor every vertebrate species what we call focal species ones that we knew would be telling us more than perhaps some other species were and monitor those. Take into account the fact that ecological disturbances are part of these systems and you can't do the plan without thinking about incorporating those. Otherwise you get thrown off you know. That in these ecosystems really the only constant is change and whether you're doing active management or not ecosystems change. And it just depends on how many change agents that you have going at any one time. So you have to take all of these into account. And but

as it turned out because of the politics of the situation when the conservatives came in they just they tossed all that out. And they thought no we're not going to do that. And they left the planning regs pretty much I guess as they were because I don't think anything happened during the Bush administration other than the fact that they zapped on our regulations. I actually got invited back to Bush's second inauguration. I got this letter in the mail. I don't know why or how I got it. And at first I thought well this is a joke you know. And but it was a real invitation. Now why he picked me I don't know because I've never done anything for him. So I trashed it and said no I'm not going to do that. Another time I got this letter inviting me to do a fire history workshop on the isle of Crete and at that time I was going through some job changes and I pulled a couple of really good jokes on some of my friends. And so I thought this has got to be a joke. And so and it was I mean I was listed in the brochures as you know this is the guy who's going to do the fire history stuff. I thought well they never even contacted me, or asked me if I was interested. So it's got to be a joke. So I there was a fax number on there. So I faxed you know my letter over to Crete and said you know is this a joke or is this for real? And they said no we're going to put you up in the original letter it said we're going to put you up for ten days on the isle of Crete and we're paying you like \$1000 dollar honorarium and all your expenses are paid over and back. And so I you now I could have gone on and toured Europe and you know my wife and I could have run around. But I was sure it was a joke. And it wasn't until about a week before the workshop. At that time I was convinced it was a joke. I finally get this fax back from the guy. And this had been like two months later I guess saying no this was a real offer. But you know I'd been out traveling and blah blah blah so you know I didn't get around to responding. And I thought you know what a...

JM: Was it too late for you to go...?

A: It was too late at that point yeah.

JM: Oh that's too bad.

A: Yeah so I didn't go. So I can send you, let me send you, we published a little article that some of the ecologists on the committee of scientists. You know we had like forest consultants kind of like forest manager guys. We have wildlife biologist, forest ecologists, social scientists, mostly university related. There were a few feds in there but none of them, there were no Forest Service people per se on that committee. And we talked about some of the principles of ecological

sustainability that ought to come into play here that you know. When you look at sustainability you've got kind of ecological, social and economic, but the social and economic are essentially dependent upon ecological sustainability. If you can't sustain ecologically you're not going to get the social economic benefits. So I can send you that as well. Do I have your email?

JM: You should. I mean we've exchanged a few emails...

A: Oh that's right, that's right, sure. Yeah, yeah okay.

JM: Yeah if you'd like I could send you an email just to make sure it's not...

A: No I've got it, I've got it.

JM: Okay.

A: It was kind of a green committee. You know it was during the Clinton administration. So they set it up as a greener committee than occurred, the 1978 group which I think probably wasn't as politically oriented as ours was. The political framework around establishing the committee and who was on it was not as politically visible back in that period of time. Because everybody thought oh this National Forest Management Act is really great. It's going to work in you know some eggheads from academia who were going to do the planning regs and they didn't think too much about it. But by the 1990s it was like oh man you know it's like if it's a republican group or a democratically appointed group you know they're going to go very green or very brown. And there was a brief newspaper article I saw in the it was either The Seattle PI or The Times and they listed most of the people who were part of the committee. And I knew most of them. I didn't know much about who had actually been appointed until I saw the newspaper article. And they said something about me and it's like I was the most industry friendly guy on the whole committee. And I thought, if that's me, the rest of these guys must be you know incredibly green because I don't know where they got that. But I've worked for industry as a consultant and I've worked for environmental groups as a consultant. So but I don't think that I've pigeon holed myself as a guy who's just green or just brown. But it's the way that people perceive the role of fire and active management. So if they're kind of against active management then they perceive me as a brown guy. And if the industry looks at me they think I'm too green because I like to leave big trees and unless they know what the value is. We can't do this without the values. So that's almost

every time I talk to them that's kind of what I get back from those guys. You're too brown, you're too brown. So...

JM: What's your opinion about under the Northwest Forest Plan they have the adaptive management areas....

A: Yeah that was a big failure. I wasn't terribly excited by the idea when I first saw it but it kind of grew on me. And then it turned out that there were two things that happened that caused it to kind of fall apart. The first was that because these were areas where innovative things could be tried, the manager said well this is really research related and the research arm of the Forest Service ought to be paying for this. And the research people said no we're here to help you and we'll do these things in these adaptive management areas but this is your game. It's not our game. This is national forest administration arm stuff and so you have to fund it. Well as it turned out neither one of them ended up funding it at the level that it needed to be done. So that was the first thing that happened with adaptive management areas. The second thing was that the enviros took them to court and said no all of these adaptive management areas are within the Northwest Forest Plan. Therefore all of the constraints of the Northwest Forest Plan have to be applied in the AMAs just like in any other place on the landscape. Even though I think in the AMAs there wasn't any late successional reserve. But in terms of like surveying for unknown critters and all that sort of stuff and I think all of the normal environmental review EIS kinds of things had to be in place. So the planning and implementation became very much more complicated than it was intended to become by the group that proposed it. And so within let's see within about five years they were dead I think. It was just you couldn't do anything innovative. So...

JM: And but they're still designated right, but it's just that they haven't been utilized I guess?

A: Yeah. At one point they all had a single Forest Service coordinator that was assigned to each of the AMAs. But that is no longer. So they're just sitting out there and they're just like any other piece of the matrix that's essentially undesignated for other values. You know it's not a (unclear) zone; it's not a late successional reserve. It's not wilderness. And it doesn't have any other special qualifications associated with it. So it was a good idea I think but the practical difficulties of it weren't thought out enough. And things like who's supposed to take the lead in terms of funding probably should have been in the Northwest Forest Plan itself rather than left to be negotiated between the scientists and the

managers. And it was a last minute thing. It was put in at the very end of process by I think it was a negotiated thing between Jack Thomas and Jerry Franklin and they said yeah it would be good to do this. And so I mean where would we do it? So I think they had about ten of these AMAs I'm not exactly sure.

JM: That sounds about right I think something like that.

A: And the biggest one was down in California. It was the Hayfork adaptive management area. And you know most of it's burned up by now. It had two or three cycles of really big fires. They lost 200,000 acres last year just in Trinity County alone. And a lot of that was in the Hayfork area. So plus you know because of that topography down there they have a lot of inversions and the fires tend to be much spottier than the terrain east of I-5. So a lot of it was mixed severity burning.

JM: Because of the inversions it kind of lowers the fire activity I guess in that...?

A: Yeah. It keeps the wind speeds down. Smoke keeps the solar radiation from preheating the fuels as much and so they just kind of sputter around until late in the afternoon. And then they typically the inversion lifts and there's enough heat from the fire that they can pierce through whatever's left of the inversion and then they burn pretty well for a few hours and then they drop down and by the next morning everything's all sogged in again. So an interesting phenomenon. I haven't seen fire act like that anyplace else. And it doesn't always act like that in the Klamath's but under those conditions where inversions are likely it will. Then you have other situations that are really wind driven, typically you know behind fronts and stuff like that where you get much more severe burning. But those fires you know for the most part, people said well you know we've got spots on the landscape where you can look as far as you can in any direction and not see a live tree. And I said well show me. Well you know it was, they couldn't get anywhere. But I sure didn't see anything like that.

JM: Yeah. For like the Biscuit burned area or?

A: Yeah you know that there was a lot of pretty intense and severe burning of the Biscuit on the southern end. But a lot of that terrain that burned pretty hot was serpentine country and so it's got a pretty sparse tree canopy already and it was mostly brush that burned. And then the scorch from the brush or the heat from the brush scorched the crowns of the conifers. So it was pretty well stand replacement across a lot of that. But in a lot of areas where you had pretty dense canopy cover

of mature trees that are under burned. And so I started to review this paper that was matter of fact and they said that only 10% of the area was stand replacement in terms having most of the you know the 90 to 100% of the canopy scorched. And about a third of it was 25% or less and the other 40% or 50% was somewhere in between the low and the high. So interesting mosaic there, kind of similar to what Carl Skinner and Alan Taylor have shown in the past. The main difference was that in the Biscuit it didn't seem like it was as topographically driven as what Taylor and Skinner have seen further down into the California Klamath's. So it 's an interesting phenomenon.

JM: The Biscuit became a big deal in terms of salvage logging. There was Bush's healthy forest kind of came right at that time or he used that as an example or he used that as a stage to sort of set that off.

A: I was invited down to show him around. I said I can't make it. I wasn't going to get caught in that one.

JM: Right. And then well you know what's your opinion of like the Sessions report that got used to legitimize the amount of salvage they tried to do down there but it later got cut back...

A: Well the problem was that most of the areas that were severely burned were you would say okay maybe here salvage is maybe more justified than other areas were the areas of lowest productivity. And a lot of the serpentine stuff. And it was also the areas where there was the least volume. So it was a like a lot of stuff that John does. I've worked with him on projects before. It was not well thought out and it didn't have a very good sense of place. (note: potentially slanderous, needs to be excised). I'm sure that in order to get that timber out that you would have had to cover a tremendous amount of landscape because in many areas you'd have to be taken out of trees that for example were in areas that only burned for maybe zero to 25% severity. And you had to get in there and snake out that one big dead tree or something like that rather than areas that were really stand replacement burning. But most of the stand replacement burning were in the lowest productivity sites. There wasn't that much timber out there. There's a study that was done in 2004 by the Forest Service by a guy named David Azuma and he didn't make the case as eloquently but if you read the report you can see where the volume is and it's all in these very low productivity areas. So it's an interesting offset. But you know there was so much kind of bullshit emotion between the people at Oregon State that were working on this. You know Sessions group on the one side and the Donato's group on the other side. And I

just decided early on to stay out the middle of that one because I didn't have any money toward down there. Dave Peterson who's a Forest Service scientist staged at the university, he was able to get a little bit of money to work down there. So he did but I didn't and I just you know I thought well if I was involved in research I'd love to do that down there. But I don't want to be sitting there as a policy advocate one-way or the other. So both sides wanted me to jump in and be on their side you know relative to the other. And I told them that I wouldn't do it. I said I'll sit here on the phone and I'll give you guys advice but I'm not going to you know end up kind of throwing my weight behind one side or the other.

JM: Yeah well I know that the you know the amount of timber they were originally going to take got cut back just tremendously right? To about half of... ? Or was it even more than that?

A: Yeah I think it was cut back more from at least from Sessions because Sessions had you know basically hey everywhere we can take it we're going to take it because he did that as a consulting report for the local counties who rely on BLM and Forest Service monies in order to, and I'm not exactly sure how that works because all of that was within the Northwest Forest Plan and I thought that they had changed the formula after Northwest Forest Plan and they I think what they are getting now they're getting an average of the top three years of timber output between 1980 and 1994 and you take those top three years and average those and you get 25% of that amount. That's on the Forest Service. The BLM you get 35%. So anyway the counties were hot to trot on that. But now that I'm thinking about it, they should have been able to use that rationale because no matter whether nothing was cut or every stick of timber on the Biscuit fire was cut it shouldn't make any difference because they were under a different funding formula. But maybe you know maybe they were just dealing with the issue of if we get this timber off of here it'll provide dollars to mills and it will provide you know working dollars for people both in the woods and in the mill industry. So my guess is it was probably more about that than getting the proportion of the revenues, the proportion of the stumpage. Because they were off that formula by then. But yeah I you know I read the Sessions report not very carefully because it was a big report. Yeah but it was basically you know let's get everything we can out of this and it's not going to they kind of poo-pooed you know any environmental concerns without I mean to me it was just a little bit on the shoddy side. But...

JM: Because a lot of that area was roadless, right? They were wanting to cut those and late successional reserves. I mean it was kind of older growth back in there.

A: Yeah and I'm not sure if they confined their cutting just to dead trees either. But...

JM: I looked at some of the timber sales that they kind of rowed up after that and part of them were contained as hazard tree removals along roadways getting there. And in fact I think that that was actually a large portion of what actually got taken in the end.

A: I wouldn't be surprised because that's the stuff with the easiest access.

JM: Right, yeah.

A: Fall the tree, it's right there at the road, stick it on the truck and you're out of there.

JM: And then there was civil disobedience going on too up there wasn't here wasn't there with like Earth First! people stopping timber sales?

A: There was a little bit but I think it wasn't as much as it's been elsewhere. And I think one of the issues was that it was you know kind of out in the middle of nowhere. So it was hard to get people back in there. And they were taken to court on almost all of them but I think they won every time. I don't think they had a single sale that got axed in the end. But it did slow things down. And I think it took time and energy to fight those lawsuits and so probably without the lawsuits there would have been more logging. And so the environmental groups thought well okay we're losing these but on the other hand we're slowing these guys down. And...

JM: Right, because of the decline of economic value on those logs is pretty quick right?

A: They need to get them out within about three years. And so by 2005 that was pretty much the last year that they were going to be able to harvest anything. You know they couldn't do it then but I mean they could still use the stuff but it really gets degraded in value. The heartwood is still good but the sapwood generally is useless by then. And so if they get it within the first two years other than the fact that it is burned which takes down its value automatically because when it's burned like that it tells the log buyer that this was a dead tree. But it doesn't tell the log buyer when it died. Now if it's a fresh tree, green tree, the log buyer can

see yeah this was a green tree a few days ago or a month ago and it doesn't have any char on it. So it's a full value tree. So it gets scaled down in value if it's got char on it at all. And if it's got a lot of sap wood rot then essentially in cutting it they've got all this waste that they've got to cut off before they can get to the heartwood and unless the log is a pretty good sized log, the proportion of sapwood to hardwood is high enough that it's almost not worth doing. And you know there's very few mills in Washington or Oregon that can take a log bigger than about three feet now because there's been so few of them available. And so the mills that can take those big old logs were the most inefficient because they were the oldest mills. And over the last 30 years most of the mills that have been built are these smaller log mills. So if all they can take is small logs, and small logs have a higher proportion of sapwood then this issue of delaying harvest becomes a you know really important because they can't clean everything up in the first three years, they might as well just leave it. But I know down in the in California some of the, there was a big wind throw wind storm event down there in the mid 90s and they wanted to the Forest Service wanted to get in and say you know we need to clean some of this stuff up because it's going to be a big fire hazard for the remaining trees. And they got a little bit of stuff done but not nearly as much as they wanted to. And then in 1999, wildfire came into this area and pretty much blew through it you know it just wasted the rest of the trees. So now they had this big salvage problem. And so then the environmental community took them to court on salvage issues. And they were successful enough that the forest supervisor, I don't know if it was a he or a her, finally whoever it was threw up their arms and just said no you know we're giving up that it's been too long and it's not worth the emotional and financial effort to continue to move this thing through the courts. So we're just not going to salvage it. And it had the same problem. A lot of it was in wilderness which they wouldn't salvage anyway but a lot of the rest of it was it wasn't necessarily in a recognized roadless area but it was in areas where you didn't have easy access by conventional yarding to do anything unless you built more roads, unless you helicoptered it which again becomes a pretty expensive...

JM: Yeah real quick yeah. Well that's you know it's kind of amazing that these environmental groups are able to delay these things so effectively in court. I mean I guess I'm naïve. They must have a lot of money to be able to do that or a lot of support somehow to be able to file all of this I mean especially if it's for the Forest Service. It becomes such a drain in their government agency that they're going to...

A: Yeah and you know I've never followed one of those lawsuits very carefully but my guess is that probably moves through kind of the same story every time. So once one of these environmental law firms has done four or five of them my guess is it probably becomes cheaper because they already know okay we're going to hit them on fisher habitat and we're going to hit them on black backed woodpecker and we're going to hit them on erosion concerns and they've got the same set of witnesses that will come in and alter their previous report to make it fit the current situation. So it becomes kind of I mean it's a definitely it's a burgeoning business and some people must make a pretty good living at it. But I don't think they have to start from scratch every time.

JM: Right, yeah, I bet you're right.

A: They have to adapt it to the place. But there's you know there's always a lot of the kind of similar concerns in each one of these. You know erosion and wildlife issues and they know just how long it takes to put these things together. You see it takes probably about six months for the Forest Service because they have to start from scratch, the Forest Service to put the assessment together or the EIS or whatever it is. And then once they've got that together then they have to send it out for review for a month. And then if the local environmental not the law people but the let's say the local Sierra Club says gee you know we need a little bit more time here maybe you know if we could stretch this out another month, they often times do stretch that out. And then they you know finally produce their record of decision. Well then the local Sierra Club says well you know we disagree with this and we appeal it. Well see that goes through a whole appeal process. Meanwhile the stuff is out there beginning to decay on the landscape and that continues on and then if they can't come to an agreement a stipulated agreement of some sort and very often they do. So they say okay we're going to take 20% of this unit here of this big fire of salvage and how about if we knock it to 15. Sometimes the local environmental group will say okay if you know if your 15 is there, there and there. The Forest Service says okay that's better than nothing. And so a lot of those end up not getting taken to court but sometimes they do and by the time they are in court the stuff has been sitting out there probably a year or a year and a half and so if they can just stretch it out with appeals and stuff like that. And then the Forest Service has to go through a bidding process. One they've approved it all, then they have to send it out for a bid and they have to get somebody to bid on it. Well that takes time. So you know it's a long and, even if nobody's upset about it, it's a long process. And so if the environmental law guys can put enough road blocks in there, it doesn't take too many of them before it

finally get s to the point where it's not worth salvaging anymore. So it's an interesting process and there's a real art to it.

JM: Well you know I know there's...

A: And the guys who do this are very smart. I know a couple of them and they're very smart and they know what they're doing because they've been doing it for a long time. Not just salvage but a lot of like regular timber sales or endangered species issues like you know plans for a recovery plan for something like this for you know the lynx or fisher or something like that. So they focus primarily on forest conservation issues. And so they're pretty skookum, they're really smart people. And you know their hearts kind of in the right place. But and they think they're doing well but I don't think all the time that they are.

JM: Well I know that you know there's they started using the categorical exclusions for 250 acres and less where you know so the Forest Service was able to do timber sales less than that without going through the court process I guess is one way they're getting around it. And there was just recently a Supreme Court decision that upheld that. It was a case down in California where an environmental group was contesting that again I guess and it you know it's been going on for some amount of time. I'm not exactly sure how long. But for just anything less than 250 acres I think and it finally bumped up to the Supreme Court this year and the Supreme Court upheld the Forest Service side of it.

A: So if you had a let's say a 10,000 acre fire could you put one 250 acre salvage in there or could you put in a whole bunch...?

JM: I think that you can put a whole bunch and I think that's why the environmental groups are upset about that decision.

A: I wonder if you still have to do an environmental assessment though.

JM: You don't because it's a categorical exclusion. At least I'm almost positive about that.

A: Yeah there's something like that. I know on the Fisher Fire over by Wenatchee in 2004 that was one of the study units that we had around soil heating study. They didn't salvage a lot of it but the term categorical exclusion came in. But they still had a plan. They just didn't have to go through environmental documentation on it but they had to say okay here's what we're going to do and we're going to

take you know they were, they did the functional equivalent of an assessment. They brought their wildlife bios you know. We're going to leave this many trees and we're going to open up the snags here and leave them there. And so it wasn't totally without environmental input but it avoided the legal end of that. And so they were in there the next spring cutting. And so that was pretty rampant, yeah and that's how they did that was to go through that exclusion.

JM: Yeah I think it had something to do with you know I think Bush, I'm going to need to get this all straight but I think that Bush you know enacted something that allowed this to happen and that it's been going for a while and it finally made it up through the...

A: Yeah well categorical exclusions have been around for a while. They weren't new but as applied to wildfire salvage it probably was new.

JM: Yeah, because they had, it had to go through a few steps to say that it was okay to be a CE or whatever you know. I mean it had to somehow document and fit these criteria and stuff. And I think that Bush opened that up and said, made it a size issue. Anything under 250 without worrying about these other considerations. I think...

A: Oh okay. So it would probably apply then to anywhere?

JM: I think so, yeah.

A: Yeah that's probably how they did that. Okay well that does make sense. And the way they did it is they probably published it in the Federal Register and the environmental groups challenged the decision that was proposed in the Federal Register because they would have had to go through a public comment. And they said okay we're going to put this into place and then the environmental groups sued. And it probably wasn't a specific case. It was probably the general case in the Federal Register. That would be my guess.

JM: Yeah well the court case it was a specific timber sale. I believe it was on the Sequoia forest.

A: Yeah it was probably the McNally Fire. Because that would have occurred in roughly about that time. It was a big one down there. And I know that there was a lot of angst on both sides about that because there were Forest Service people in

there doing research studies and some guy is pretty much at the forefront of all of these. (potentially slanderous).

JM: I see. All one sided yeah.

A: So he says you know I've seen a tree that was 100% scorched and the next year it came back green. Therefore 100% scorch on all trees means that they'll all come back green, that kind of stuff. And so not very objective.

JM: Right. I guess that happens with redwoods where they'll come back.

A: Yeah redwoods sprout like crazy.

JM: Doug firs don't right?

A: No, no. The, sometimes ponderosa pines will. It depends on the tree species and the size of the bud and how much heat actually goes through. So you can have the heat go through let's say a really late season fire. It can go through and could scorch all the needles on a ponderosa but the bud on a ponderosa is about that big. And so it takes a lot more heat to scorch it. Well if there's just enough to scorch the needles but not enough to scorch the bud, next year, even if it's 100% scorched it will green out. Now it's got to be stressed because it doesn't have a lot of leaves to photosynthesize with. So it's going to be put on a narrow ring, probably a higher risk for insect attack but insects won't necessarily get it. But usually over about 80% scorch and they're history. And for a Doug fir, its bud isn't much bigger than the needle. And so if you've got a scorched crown usually all the buds are killed as well. And of course you know on those both ponderosa pine and Doug fir they're exposed but with redwood it has dormant buds under the bark. And so you can have the crown scorched and then as soon as those branches stop producing hormones that are running down the branch then the bud says well okay it's time for me to go. And so the next year it will look like this huge green telephone pole and then you know 5-10 years later you've got a whole new crown. Pretty amazing. They can put in a new root system if it gets flooded and buried which is also real unusual for conifers. And yeah it's an amazing tree, thick bark; it's got a good surface fire protection.

JM: Do the Sequoia redwoods are they the same as coast redwoods in that respect? Do they...?

A: They've got thick bark but they normally do not re sprout. So, and you can kill a coast redwood if you burn it hot enough or at least kill it down to the ground

because then it will root sprout. But and I've seen some trees like that. They're you know I don't know when they got killed but if you drive along 101 you can see some old charred redwood stems that have been as far as, as long as I've been through that country they've been standing there. And so you know they can survive a lot time as snags. But yeah that's one of the few species that will do that. And for most trees you know you get up to 50% and above in scorch and you begin to at least increase mortality. And I reviewed a paper about three months ago for a journal, can't remember where it was and they showed that there was actually two different kinds of regressional lines that you could put together on one... We look at mortality on this axis and scorch on this axis and for I can't remember whether it was for a variety of species or just different stance but essentially they showed that up to about 80% mortality here that you had one kind of a relationship between scorch and mortality and then past that point it really shot up to 100%, that there was something going on here that this nick point has some special regression technique that I'd never heard of before but it was kind of interesting. It was showing that in fact this wasn't a nice linear process. But you know you also probably could have modeled it as a curvilinear thing as well and done it that way. Normally these things are often times a model as a just a logistic regression. You know it kind of looks like that. But for the scorch thing I imagine that you wouldn't get a very good fit because most of these things went pretty much linear for a while and then linear in a different direction. And of course that's another one of the issues in salvage is like how do you know that this tree that's been 90% scorched is going to die? You know you've gone in and you've gotten your plan approved. You sent your timber markers out there and then the local environmental group comes in and says hey this isn't a dead tree. This tree is alive, at least at the time that it was marked. How do you know it was going to die? And so one of the things that this Hansen guy and some other guy down there at UC Davis he works with was doing more work on percentage of crown scorch and whether the trees died or not. And I can't, I don't, at the time that this other guy whose name I can't remember was talking to us about it, he didn't have an awful lot of data. But basically he was saying okay just because it looks pretty well totally scorched doesn't mean it's dead. And I wouldn't disagree with that. But the question is well if 95 times out of 100 it's going to die then as a candidate for removal I wouldn't be all that upset about it as long as they met the standards for residual snags. What I would say is that that would be a really good one to use even if it wasn't dead as a residual snag because if it didn't die then you've got another live tree there. And if it did die then you know it serves as one of those residual snags. But I don't think I've ever been approached to deal with the salvage issue. I've been asked a lot of questions about it but nobody's ever gotten in touch with me on a lawsuit or some sort of an administrative thing. Most of the

time I'm asked for advice is for the restoration things, you know the stands that haven't already burned.

JM: Well that's really interesting that thing you brought up earlier about the 20% of the landscape you know that if you do that within how many number of years that it really helps with the large fires. I mean that's very interesting to me and that landscape of looking at things and what I think would be a really cool thing to do would be to go out and figure out where those areas should be, you know where the fire's going to travel in the river valley or that sort of thing.

A: I'll send you another paper that Mark Finney of the Missoula lab did. And I helped him with it but I wasn't involved in the modeling aspect of it. But there's a paper that came up with the 2%...

JM: The 2% per year, yeah.

A: Yeah, and so he shows the difference between like doing nothing 1% per year, 2%, 3%, 4%, 5% per year. So essentially you know in one decade at 5% you'd be at 50% of your landscape. And what the model showed was that above about 20% in terms of reduction of wildfire size, you don't gain all that much. And to me if I were a manager that's something I would run with as a policy consideration. I'd say okay we don't have all the facts in here but based on what we do know it looks as if we can fragment that landscape at least in part. You know to me any reasonable environmentalist would say well 20-30% of this dry forest landscape is really not all that much. And we know that it's probably the more of that we do if a wildfire does burn through the restored area, it's probably going to leave a lot of residual trees. And we know that in the areas where we're not doing this, we're losing essentially all the habitat that we're interested in keeping. So you know back in the it must have been about 1990 because the spotted owl wars were going big time and they were all on the west side at that time. Nobody was talking about the east side. And I thought you know eventually this conversation is going to move over to the east side. And I'm like on the west side here where it's so heated and everybody's so upset. You know on the east side it's going to be a big win-win situation because by doing all of this restoration of forestry the enviros are going to be happy because we're going to restore the more natural fire regime and we'll keep the big trees and the industry will be happy. They're not going to get all the big trees they want but there's going to be stuff coming off the landscape. It's a win-win situation and it turned out to be just the opposite. It was just the same as on the west side. It wasn't any better. Now it's a little bit better now. But it depends on where you are. In the Sierra forests, it really hasn't

changed a bit. In eastern Oregon there are some people who are willing to come around and they kind of hang out with people who are a little bit less flexible but I think are slowly coming around. And in the eastern Washington Cascades, the Forest Service people over there have done a lot of outreach and they're pretty likable guys, the local guys over there. And I think they brought a lot of the local environmental community along with them. (potentially slanderous)

JM: And that's the John Muir...

(Jothan, the stuff directly below here is OK by me)

A: John Muir Institute, yeah. And so I know he was involved in that Sequoia National Forest fire. I don't know if he was one of the people involved in the lawsuit but I wouldn't be surprised. And so he's been essentially pushing against a lot of things that the Forest Service wants to do there. It's been, I don't know whether it's him or whether it's other people but they've been pretty effective I think at just kind of keeping much from happening. But you know that's always the way it's been in California. When I was a federal employee down there, the federal agencies really didn't talk to one another at all. It's like you walk into the Forest Service office and it's like oh you're a Park Service guy? You know, get your life together dude. You know it'd be something like that. And I worked; I was the primary ecologist that worked on the expansion of Redwood National Park. So I did a lot of commuting between San Francisco and the Redwoods of San Francisco and Washington DC. And people at the Forest Service people in Washington DC would almost spit on you as you walked down the hall. I mean it was just really bad. The local guys in Region 5 weren't as friendly as they were up in Region 6, Oregon and Washington, but they were okay guys to work with. And the closer you got to the national forest level the better it was. But as you moved up to the regional office and back to DC... I remember once I was going over, I went all the way back to get some data to use for the Secretary of the Interior. At that point I was working directly with Cecil Anders (?) on a day-by-day basis. And so I talked with the guys in San Francisco and they said yeah this guy in DC has it. Give him a call when you get back there and he'll have it for you. So I called him up and he says well I've got it but I'm not going to give it to you. And I said well I said you know I hate to tell you buddy but I said I'm working directly here for Cecil Andrus and I said you might know that he's the Secretary of the Interior. So I said if I have to hang up the phone here and make a call, I said you're going to get a call in about ten minutes and then you'll be calling me back at this number. Let me give it to you. And you'll invite me over to pick it up. And he says you're so full of shit your hair stinks. And so he hangs up the phone. And so I make my call and sit there by the phone. About five

minutes later the phone rings he says, "I've got your data." But I mean it was just that kind of uncooperativeness. And so when I left California and moved up to Washington I became more of a fire guy again. And I started getting calls from Forest Service people. Come on down and talk to us, you know. We're in the regional office here in Portland. We'd love to talk to you. We've got this little workshop going on. Would you come down and give us a talk? And stuff like this and I'm going, the first couple of times it's like okay, so they're out here to sandbag me somehow. You know I was really untrusting. And it just wasn't that way at all. And that's the way it's always been. I mean anybody who has worked in Washington and Oregon in the federal agencies and then has gone down to California has found that California is just a much more difficult political animal to work with not only within the federal agencies but the environmental groups are more rampant, the industry is more rampant whereas I had a very difficult time ever talking with industrial people down there where up in Oregon and Washington they were like real people you know. And I didn't always agree with them on things but there was just there was more of a conversation going on between the sides. You know when the industry and the enviros got into it over spotted owls up in Oregon and Washington that wasn't very pretty to watch but I wasn't involved directly in any of that but I know it was pretty painful.

JM: Yeah sure. Well geez that's very interesting. You know I don't think I really have, I don't think I have any other questions.

A: Well you can get in touch with me over email if you do.

JM: Yeah that would be great. I was just going to ask you that.

A: Or if you need any refs you know that you said oh I heard about this but I'm not exactly sure what it is, I might be able to think about what it is.

JM: Well I really appreciate that. That's great and I really appreciate you spending this time with me and answering...

A: Yeah well it wasn't really much out of my way so because I had just made arrangements to come down here on this Friday and then I got your email saying geez you know could we meet sometime in May. And I thought perfect you know. And then it almost cancelled out and came back again so I'm glad it did because I'm taking off for California in another week or so. I'm going to be down there until through Memorial Day goofing off.

JM: Nice. Good for you. Yeah I'm actually, I have to head down to California...
(rustling). These things are great I just got one and...

(End of recording.)

Appendix H

This interview of Rich Fairbank was conducted in Medford Oregon on May 16, 2009. It has been modified by the interviewee although its original content and meaning remain intact. Mr. Fairbanks was employed by the Forest service for 32 years and was the ID. Team leader for the Biscuit Fire Recovery Project. He is currently employed by the Wilderness Society to advocate for science-based fire management.

JM (Jothan Mcgaughey): Anything that you say I'll ask your permission by name or whatever. Then otherwise I may use what you say but not put a name to it.

RF (Rich Fairbanks): That's fine. Either way is fine. Glad to hear that you're going to, yeah, especially if it's something particularly caustic because now I work for a nice moderate environmental group. And when the Republicans are in they keep cranking out wilderness bills and they do that by being real polite. So and then we need more wilderness. I mean you worked in the woods. You know what a mess they've been making out there and so...

JM: Yeah, yeah. Okay well, Rich Fairbanks, my topic for this thesis is how ecological or scientific knowledge gets incorporated into policies and I'm looking at it through salvage logging specifically. And so I guess I know that you've had some experience with the Biscuit Fire and that I think that I may actually have a section of my paper on the Biscuit Fire. I'm looking forward to talking to Dan Donato and I would like to talk to Sessions as well. That's to get you know to get a balance...

RF:

JM: I won't use that either.

RF: Yeah, have you looked at Warner Creek at all?

JM: I've come across it in the literature. I mean I've read everything from newspaper accounts. A woman in Eugene wrote a whole book. I can't remember her name but it just went through the whole timber wars.

RF: Yeah, I know that book. Yeah, yeah.

JM: And I've come across Warner Creek in other places but I think they even made a movie about it that I've looked at too.

(JM and RF ordering food at a restaurant. Both are talking to the waitress.)

RF: Anyway, just a thought. Tim Ingalsbee, who is now the director of Firefighters United for Safety, Ecology and Ethics was the whole spearhead of that. And they had a whole alternative proposal to the salvage that we were doing. I was in the Forest Service still obviously. In fact I was a division supervisor on the fire itself and after they mopped it up they said, "Do you want to be on the ID team?" And sure, okay. But it was a real turning point because the environmentalists (?) were arguing that there was really no science that said salvage was a good idea. And everybody in the Forest Service and in the industry said, "What? We always salvage. Are you crazy?" "The forest cannot recover without salvage." "White people got here just in time." You know, there was a whole mindset there you know. I mean these are forests that have been regenerating after high severity fires for, 20-30 million years. But these guys were saying, "No it won't come back unless we help it," you know. It's a very interesting situation. Anyway, anyway go ahead. Okay so...

JM: Well yeah. I definitely plan to get a hold of that person too. He's in Eugene. I might try to get a hold of him tomorrow but Eugene is...

RF: Do you want his phone number?

JM: Um, sure, yeah.

RF: Oh no, don't call him... I'm still getting the hang of modern technology (chuckles).

JM: Well that's the way to go.

RF: I don't want to call him. I just want his number. Let's see, it should be, here we go. Yeah it's, sorry, area code 541-338-7671.

JM: Okay and like is this his personal telephone or something like that?

RF: It's FUSEE, Firefighters United for Safety and Ecology. He teaches at the University of Oregon. Or, maybe he's now at LCC. But anyway he teaches. He's got a Ph.D. in Sociology but he was a firefighter for many years and he started

this group because a lot of firefighters are looking at the policies and saying this is horse shit, time for a change. Anyway, okay. So you're exploring that, how science gets incorporated into things through the lens of salvage. Okay.

JM: Well, (eating food) excuse me, maybe we could start off with the giving a little history of yourself and working for the Forest Service and then the group that needs started I take it or that you're involved with.

RF: You mean FSEE, Forest Service Employees for Environmental Ethics? No, no. I was around near the beginning of that. There was another guy, Jeff Debonis (?) who started it. And frankly I was on the board for several years, so was my wife, but we're not really involved with them anymore. They got into kind of a libertarian bag. And I'm more of a commie, frankly, yeah. Well, social democrat anyway. You know I just, that business about all government is bad, I don't think so.

JM: Well I mean we all enjoy the roads of you know...

RF: Exactly, yeah.

JM: Yeah so maybe if you could give a little history of yourself and if that organization pertains to this discussion maybe a little bit about that.

RF: You got it. Okay. I worked 32 years for the Forest Service. The first 20 I worked in fire. I worked 12 years on BD crews and hotshot crews, basically fire crews and another eight years as a division supervisor and other kinds of miscellaneous overhead on fires. And after 20 years of doing that I started branching out into planning. I got certified as a silviculturist and did more planning but by the late 80s there were so many fires that I was just getting sucked back into fire as a fire planner, either pre fire, fire management plans that kind of thing, or post fire, either salvage or post-burn typing, going out and assessing how many of the trees were dead and how many were alive and how many were you know likely to die and so forth. And in the early 90s, late 80s, we kind of came into open revolt in the Forest Service and I was one of the founding uncles of FSEE, Forest Service Employees for Environmental Ethics just briefly involved with that for two or three years. And my last job for the Forest Service, I was ID team leader for the Biscuit Fire recovery project, which was a half a million-acre fire here in Southern Oregon that was very controversial. The EIS was prepared in an election year. There was a great deal of disagreement about how much volume there was that could be salvaged. The ID team recommended

100 million board feet. A college professor named John Sessions said there was 2.5 billion board feet out there.

JM: It went from a million to a billion.

RF: No, from 100 million to 2.5 billion. It has too many zeros. So it was an assertion by the industry lead by John Sessions who of course was paid by Douglas County, which was basically getting paid by the mills to come down here. He was not invited. He came down and said that there was this much salvage out there available. Of course when you look at the tables in the back of his report you found out he was counting dead tan oak. There's very little market for live tan oak, none for dead tan oak. What was he talking about? Dead tan oak was part of the his 2.5 billion board feet. It was nonsense. But anyway, I don't want to get off on a tangent there. So it was really a very bogus process. At one point the, I said to the forest supervisor, who is the deciding authority, I said, "Scott, you don't really believe there's 2.5 billion out there do you?" He said, "Yeah but you're going to act like there is." So that was the attitude. It was that Republican idea of creating your own reality. Anyway, I had taken the job because the Forest Service promised me that the day it went to the printer, the EIS that I was the leader preparing, the day it went to the printer they would surplus me and since I would be over 50 at that time and have 32 years in, I would get a pension. So okay I'll do it under those conditions and those conditions only because I don't want to work for you people anymore. And they said, "Yeah we don't want you working here." Anyway, so I left the Forest Service, started a contracting business, a consulting business, Fairbanks Forest Management, actually I started it before I left. Got that all set up. Had a great time for about a year and a half. I did a fire plan for a tribal government in the southwest for one of the drainages on their beautiful reservation. And I did a bunch of plots around here for Jackson and Josephine Counties they're called firemon plots. They assess, it's a way of measuring the flammability of the vegetation. I had a good time. It was fun. But anyway then this conservation group offered me a job. They said all we want you to do is advocate for science based fire management. Well I can't think of anything more interesting and I've been doing that ever since. So there's my biography.

JM: Nice. Well maybe if I can ask you about you're leading the EIS team for that Biscuit Fire. And so your group had originally said that there's a 100 million board feet that could be salvaged and then...

RF: Right, with a minimum of pain and a minimum of disruption of natural ecosystems and watershed values and so forth. You can get about 100 million.

JM: And was that like along, because I know a large part of that area was most of what you were saying in roaded (?) areas? All of it, I see.

RF: Yes because we said look, number one you're kicking a bee's nest in terms of politics. Of course they wanted to kick a bee's nest. It's an election year and that's how the Republicans have been winning elections lately, getting everybody stirred up about the gays are going to steal your property rights or whatever. You know what I mean. I mean they've got these crazy tropes that they're running. And one of them is that not salvage logging is wasting jobs, wasting wood and the environmentalists are locking everything up and so forth. So where were we...

JM: On the assessment at 100 million board feet...

RF: Oh yeah, well anyway, okay. So we're saying number one you're kicking a bee's nest politically. Number two, salvage wood in a place like that you've got to use helicopters. You don't have time to build roads. You have a helicopter log it; it's often not going to pay. The rule of thumb when I was doing the planning for helicopter logging was if it's more than a mile and a half distance and it isn't downhill, you're probably not going to make money. Or you should really double-check your numbers because you're probably not going to make money. And this was like way out there where they were going to fly these logs. It was totally bogus.

(Talking to the waitress.)

RF: So basically it was this insanely optimistic prediction that Sessions was making and the Forest Service went along with it. The forest supervisor, his final decision was to cut 380 million board feet or something like that. And then of course you could then say he was being real moderate because Sessions had set him up by saying there was 2.5 billion out there, right? So it was supposed to make him look moderate. Of course they never found that much wood, the first time presale came to a meeting that's the people who actually go out and look for the wood. They were like laughing the project leader out of the office. They were saying, where do you think all this wood is? It wasn't there. Okay what they wound up getting was about 90 million board feet that they actually cut which was very close to what the ID team tried to tell them in the first place. So it was a very interesting exercise in magical realism.

JM: Now did they, did the actual areas that got logged, did that change from what the original...?

RF: Yes. They logged a sale in Fiddler's Gulch, which is in a Roadless Area. The reason they did that was to again, it was an election year, a poke in the eye to the environmental community because the Republicans felt they could turn out the base. And there was all this sort of semi-crooked... John Sessions was in the forest engineering department of OSU. The helicopter logging was the main way they yarded this wood out. The widow of the founder of the helicopter company down here gave the OSU's forestry engineering department a 1 million dollar gift to endow a chair in forest engineering. Oh you knew all of this...

JM: I've heard that but it's good to hear it from you.

RF: It's true, yep. It's true. And I was...

JM: And that was right after his report came out.

RF: So in addition to the money he got from Douglas County, taxpayers' money, Douglas County, because Douglas County and the two, the main mills in Douglas County are indistinguishable. You can't tell the county commissioners from the executives of the timber company there. They're one and the same. They gave him money.

JM: Well so that's really kind of the case of the scientific knowledge basically got logged or disregarded.

RF: Right because it's very interesting that Shatford and Hibbs I think had just been published. Very important paper. You need to get a hold of Shatford and Hibbs.

JM: How do you spell that?

RF: Shatford and Hibbs, Northern California study on forest regeneration after fire. And they studied this dry mixed conifer and mixed evergreen, same type as we've got on this side of the line, 16 fires over 30 years, something like that, a mass of data. And what they found was, wait for it, after a forest fire, trees grow back. And they do it all by themselves, without any help from people. Fascinating. Who knew, you know? I mean it just blows me away. And then of

course the Donato paper said the same thing. Myself and Rich Nawa (?) of the Siskiyou Project, when they criticize Donato's paper because they said he used a lot of involved complicated statistics. Rich Nawa who's a fish biologist for the Siskiyou Project and I went down and did what's called a survival exam which is a standard Forest Service way of counting seedlings on a clear cut or a burn or whatever. It just means counting the seedlings that have survived the first growing season, you know that kind of thing, and it's incredibly simple descriptive statistics that nobody can refute and say yeah we did transects every so many feet, we took a 100 acre plot, we counted you know the following way. It's like nobody could refute it on the basis that it was too complicated. And also it's a standard Forest Service way of doing things. But we found thousands of tree seedlings out there and they were doug fir and sugar pine, all the commercial species. So it was just like you guys totally made this up. Well there's a quote in the Sessions report that says it will be decades if not centuries before conifers return to the Biscuit burn which is total nonsense but it was accepted conventional wisdom that this was a scientific truth. So it was interesting.

JM: I've heard recently that there's some controversy over when places are going to get salvaged that you know they're usually supposed to take dead trees but some live trees get taken. But there seems to be controversy over what they're calling dead because in some cases they're saying well these trees will die. And so they end up taking them.

RF: There's a number of units in the Warner Creek (?) burn where they used a method developed on the Shady Beach fire to assess whether a tree was going to die or not. And according to that scheme we marked a bunch of trees that were going to die. In fact the silviculturists said they're dead they just don't know it. Because of litigation none of those trees was ever cut. Most of them are still alive and throwing out seed that's well adapted to that microclimate and so forth. And it was nonsense. I worked with another one in the late 90s over in the Malheur country. It was a scheme for predicting mortality. And I would say that one was not much better than a coin flip. Nobody has figured this out yet. You can use crown (?) scorch (?), depth of char on the bole and blah blah and yakity yak and species and height and diameter but nobody has made that work. Some of them die and some of them don't. Maybe they're depressed and they die. I don't know but still... Yeah, anyway, so yeah there is some controversy about that because really what they ought to do is take the ones that are dead. All the needles are red. Okay, take it. Or the needles are burnt off you know.

JM: Pretty clear. Well let's see. You talked about the Fiddler sale on that one and that that was on the Biscuit burn (?) area, must have been old growth or at least late succession. A lot of this area has not been logged, correct? Because it's so inaccessible...

RF: Right. Huge trees back there. And still a lot of them lived too. It's a wonderful place if you get a chance to go. It's awesome. Some of the under burns out there are just beautiful. They under burned in the silver fire and then when Biscuit come through they under burned again. And now they're like cathedrals, you know, with hardly any underbrush and stuff. Well anyway, go ahead.

JM: Yeah, now did the Fiddler, did it get logged eventually?

RF: Yes.

JM: Okay. And was that, so I think I've heard about this one too. Was it a spotted owl habitat out there?

RF: Oh yes. Yeah, a lot of it was. I don't know how many owls there were at Fiddler's Gulch or anything but yeah it was great big trees in parts of it. Parts of it were just scattered old growth but I'm pretty sure there's at least one pair in there.

JM: And now did it get salvaged though a categorical exclusion clause or?

RF: The first 20 million board feet, almost as soon as we formed the team, we did categorical exclusion (?) for all the roadside salvage and that amounted to 20 million board feet. That was good wood in a sense that it was right near the road so you don't have to drag the stuff or make the taxpayer pay for a helicopter ride. It was cut right away so it was still fresh. It wasn't rotten. And in that roadside area there's already kind of a compromised ecosystem. So I mean if you're going to salvage there's worse things you could do. So in the pantheon of dumb moves I would say that one wasn't too dumb. Personally I'd just as soon they left it all alone but you know that's not an option a lot of times. So yeah.

(Talking to the waitress.)

JM: So I guess I'm curious as to how there is an okay to salvage, I mean, how it got okayed and I guess a lot of it had to do with the Sessions report, that there were, got into that business of that reserved land from the spotted owl but there's a couple pairs right there.

RF: Well (unclear) (chewing food) a hot fire like that and it pretty much toast in much of the Fiddler's Gulch. The punch of the (unclear) long was because the owls are gone. They don't seem to like a hot fire. Just look around. If it's an under burn, the trees are still alive. The owls will hunt in the snag patch.. They can forage but they don't seem to nest in completely burned timber.

JM: So that was the argument that they were gone.

RF: When I left the team There were 38 pairs of owls unaccounted for on that fire. That fire killed a lot of critters.

JM: So it actually it killed them or...

RF: Last I heard they think most of them flew away to the second growth on the west side but then they may have died because they dont do well in second growth. Great horned owl predation, various things happened to them but they don't do well in second growth. But remember I'm not a biologist. (long pause)

JM: We had a really amazing thunderstorm. I just came up from visiting my mom in Fresno, California. It was a really hot day yesterday and then as it cooled that allowed the clouds to get the height to them. And they put out a storm warning and there was quarter inch to half inch hail coming down and strong 60 mile an hour winds and everything. It was really quite something, quite a lightening show.

RF: They're awesome yeah. Yeah I've been on a fire when those thunderhead winds hit it. Pretty impressive. Aint nature grand? Anyway yeah so they got 90 million board feet of salvage. They got to enter one of the smaller roadless (?) areas of the ones that are in play. Partial victory for them I guess.

JM: I feel like I should give you a chance to eat instead of keep asking you questions.

RF: I'll take a bite and ask a question. I'll take a bite and answer a question. But no, anyway, we're cool.

JM: Okay. Well you know I've heard different, timber amounts of how much old growth is left in I guess the Pacific Northwest.

RF: Yep.

JM: What's your opinion on that? What are the historical standards I guess...

RF: I don't know in terms of purely in terms of acres but I can tell you that when I was a kid there was a hell of a lot more, number one. Number two, just because I travel around the west coast a lot, I think the two biggest things that humans have done to these forests is we dramatically reduced the average diameter of the trees by converting so much land to plantations and high grading in the south where you can't really clear cut you know in California and places like that, east of Fresno, places like that in the Sierra by high grading out all the big trees and leaving the busted up mistletoe, dog hair small trees or whatever. Really very destructive practices. And then the second thing is we put out all the fires. So not only do we take the big trees but we put out all the fires that might thin out the little trees. So now we've got massive quantities of little skinny trees in a whole lot of places. And in some places that's perfectly natural but in a hell of a lot of places it's a big problem. So once again timber, the big business gets subsidy and taxpayers get left holding the mine tailings or the overgrazed land or the cut over flammable plantations.

JM: I was talking to somebody recently and they were putting out the figure of 5% and but I think what I heard more people say is about like 10% is left, yeah.

RF: ...Is left. Yeah it's an interesting set of discussions and I hope someday they do quantify it.

JM: Well I know that people have been trying to but you know that it's that whole thing with knowing really what the actual historic conditions were and there is just no way to really know that. And but...

RF: A couple of the local papers, local scientific papers of local, somebody did one for the coast range for example. They kind of figured out how much they think old growth there was of old growth in the coast range before European settlement. They did a pretty good job. I don't remember his name right now. I'm sorry. They had to make some assumptions but they were good assumptions.

JM: Well yeah I think they figure they come in with a certain amount of error on either side or whatever. I was wondering if we could talk about advocacy a little bit of what it means to you and important aspects of it. I was talking to a guy the other day with John Muir Institute I think it's called? And he kind of broke it down into three subjects of what's his goals I guess. He was saying education,

research and then litigation. You know, bringing up lawsuits. Would you mind talking a little bit about the advocacy, what you know about it?

RF: Well the conservation group I work for, they basically have said what we want is science based fire management. And they'd be willing to go along with what I propose as long as it's solid science based fire management. And so I think that's probably the first order of business for me as an advocate is that I have the facts on my side. And so that's kind of how I perceive it.

JM: So does that mean if you don't have all the facts then you do research to get those facts?

RF: And I will often hold off on recommending, if there's uncertainty about the science I will a lot of times say look I don't think we should appeal this project or whatever. It seems like we are so stretched in terms of capacity, even a big quote-unquote "wealthy" organization like the Sierra Club, you'd be amazed how thin we are spread when it comes to you know it's usually me versus like 20 or 30 silviculturists and fire people and stuff like that you know what I mean. They're preparing these plans and then it's just me trying to knock holes in their plan or get them to change it or whatever. I'm not saying poor pitiful us. I'm just saying, we've got to be really careful of how to pick our battles.

JM: So does that, this is kind of I think what you're saying but a lot depends on the importance of you not bringing frivolous lawsuits but having an outstanding reputation and not (unclear) that as...

RF: Yes. It is very important to the organization I work for that I never lose my temper or make outrageous claims or even make claims that are not you know footnoted, literally you know.

JM: So you can't be calling people Fascists and...

JM: Are there any circumstances under which salvage can be done where it will do some ecological good maybe on eastside forest where there's a build up of...?

RF: I think the post fire salvage on private land is very reasonable. Those people have had economic disasters. You know it wouldn't matter how fast they cut it. It's lost probably 40% of its value. Start with the private individual. They can

salvage enough to plant, which is usually all they're going to get. More power to them.

JM: Is there any benefit to planting when you get natural regeneration?

RF: Okay, there are a few situations where, I'll give you an example. Sugar pine, there's these big sugar pines in the Biscuit, most of which now are dead because of the fire. A lot of it died before the fire from white pine blister rust. White pine blister rust was brought in by Europeans. We know exactly when it was brought to the west coast, 1918, Port of Vancouver, British Columbia, on nursery stock (?). It's killed millions of white pines. So do we as a society have an obligation to go into a drainage where we know there's a bunch of rust-killed white pine before the fire and therefore there weren't very many seed trees that survived the fire as there normally would. You know, some of them would always make it through the fire. Do we have a moral obligation to go out there and plant some blister rust resistant sugar pines? Because we now have rust resistant sugar pines. We've bred them. One in about 10,000 were naturally resistant. We got seed from that, pollen from this other one that was naturally resistant got them together, grew out the you know, et cetera. So I guess I'm saying why not use that science to try to restore what we know was a drainage with a lot of sugar pine in it.

Port Orford cedar disease, yeah. (unclear) There's a lot of that in the Biscuit. And I think we should replant it. Then again I think if we have resistant stock and they're just developing resistant stock, we'd plant it because we sure logged the snot out of that species. Even before the disease came in it was really good for boat making and pencils or arrow shafts and stuff like that. So it commanded a high price. Port Orford cedar got logged a lot, yeah.. So anyway I guess I'm just saying, yeah. Yeah, I think there's times when you could plant... And sometimes there will be a place like, a lot of these fires now are burning much hotter than they ever would before White people got here and did all this damage that we've been talking about. Well, so if the whole drainage blows out and there's not one live tree in the whole drainage, should we go in there and stick in a few trees? Now, planting the whole drainage, 12 by 12 doug fir to an identical genetic seedling, that is not such a good idea. Even on private land I think that's a mistake.

JM: In light of climate change and things like that. So to kind of get back to that question about if there's a good time to salvage logs anywhere, it seemed like that that was, the salvage part of it would be for the economic gain. Does it help to salvage to be able to re-plant I guess? You know...

RF: (unclear) (eating food) I'll tell you a good story. I took microclimatology when I was in grad school and when I was out in this clear cut on the Warner (?) burn after we pretty much mopped it up. We were just walking around trying to figure out what the hell are we going to do with this now. Me and this silviculturist, were walking through this clear cut. It's like 85 degrees even though it's like late October. Yeah, it was a warm fall. And we come into a stand of dead old growth, four foot, five foot diameter, not gigantic but big old growth fir. Within about 100 feet, Bailey says to me, "It's like 10 degrees cooler." It hit me like a stack of bricks. Those dead black douglas firs were absorbing short wave radiation all day, short waves that would have hit the ground, turned to sensible heat and made us as hot as we were in the clear cut, 85 degrees. And probably 120 at the soil surface where the seedlings are or where they would be in the following years. So they absorb that short wave all day but because they're black they would absorb a lot of it. But because they're huge pieces of wood, they have this huge thermal capacity. That's why they put wooden handles on frying pans right? It never heats up, right. So they'd absorb this all day and then at night they'd re-radiate long wave radiation. So not only, so I'm talking to the silviculturist. He plants trees for a living or he tells other people which trees to plant and where. He says, "Well wait a minute. If it's making it cooler for a seedling, at night it's making it warmer and spring time frost kill, which is very common, won't be as much of a problem." And I'm saying, and we're standing there on the hillside going, do we even need to replant this? I mean is this, are these conditions like sort of ideal nursery conditions for these seedlings that are going to come in? And you've got to remember this was a late fall fire, so a lot of these trees that aren't black and dead, their cones still opened up and the seeds, because that's a little mechanical mechanism that opens the cone. It doesn't matter if the tree's alive or dead. And so there were seeds all over the place. And indeed you go up there now, go up to Warner Creek and it's so thick you can't walk through it with doug fir. So anyway, so, what the hell was the point of that story? Oh yeah, planting. Just leave it alone. It'll come back in most, 99% of the cases it will come back. And if we can trust the Forest Service to go out and identify the 1% where it was just it burned too hot, too big of an area with no seed trees, then I'd say yeah, well let's do it, but we can't trust that. So the sort of the default answer is no, don't salvage. And then let them prove that there's, that's my approach.

JM: I see. In your opinion, why do you think that they can't be trusted? Does it have to do with like the KV funds? And I understand there's another sort of account where from the timber sales that the money doesn't go to the general fund, it goes straight into the forest so....

RF: Right, right. There's perverse incentives for the Forest Service to salvage. And you're absolutely right. KV and SSF, Salvage Sale Fund, are funds they don't have to give to the general treasury. And there's another one called the BD fund, which is for brush disposal (unclear), flash (?) clean up.

JM: So there's three all together?

RF: Yes, but I think an even stronger thing is the culture, the culture of both the Forest Service and the land grant colleges that support forestry schools. (Eating food) But that culture has become captured in the sense that political scientists use the term cap track (?). You've heard of the captured thesis, right?

JM: Remind me.

RF: Any of the regulatory agencies over time tend to get captured by the people they are supposed to regulate. And the more money involved, the faster it usually happens. So something like timber where it's old growth federal timber is worth a lot of money. And you can get it cheap under certain circumstances. So the regulators got captured very, very quickly.

JM: Now would, what's that guy's name, is it Mike Rey who was appointed by Bush as the under secretary of (unclear)?

RF: Mark Rey.

JM: Mark Rey. He was a timber lobbyist. So that's kind of what you're talking about?

RF: Right. The fact that they put him in as under secretary sent a loud message to everybody who was still, I was still working for the Forest Service. I was like, okay, you know, if you don't like timber sales, shut up (unclear). But the fact that, I don't know. Have you seen the emails between the dean of the school of forestry and John Sessions?

JM: No I haven't. Is that public record somewhere?

RF: Oh yeah. And they embarrassed the hell out of the dean of the forestry school. Hal Salwasser, email, the state senator's name was Charlie Ringo who requested the emails because Salwasser didn't realize they were public record because he'd been a Forest Service employee and he was not familiar with

Oregon's open records law. So you'll see some embarrassing, some juicy material in those emails. Yeah they thought they were at war with the environmentalists and that it was okay to lie to the public basically.

JM: Well that's very interesting. So would you, now, I guess those funds, that pertains to both salvage and regular timber sales? Or I guess the salvage fund is...?

RF: The salvage bill fund, I think you could collect, on a burn you can collect money for a salvage sale point. I can't remember if you can also use KV in meeting (?) (unclear). I can't remember. You'll have to look that up, sorry.

JM: Okay, that's fine. Do you know what, if like you know, what the percentages of money that out of you know \$100, how much that goes to those funds out of that? Is it different depending on what forest it might be in?

RF: I'm pretty sure.

JM: And then how much they save?

RF: Yes, (unclear). You're going to have to, at scootle (?) KV, start digging, yeah. Or you may find somebody who can tell you. If I think of it I'll... If I think of a name, I'll let you know.

JM: Well I think the KV fund itself is 25% of the sales I think. Does that sound too (unclear)...?

RF: I'm sorry.

JM: I was reading about that recently and I thought that number sticks in my...

RF: No. Sorry, that's information I no longer have. That brain cell has died.

JM: Okay, well good. That's probably a good thing.

RF: Yeah it is, it is.

JM: So now you're talking about the culture of the Forest Service and how the people that they're supposed to be regulating and getting the positions of power through appointment and the public thing. Would you say...?

RF: Very powerful mechanism. Very powerful cultural mechanism. You will not get promoted unless you have a certain level of loyalty to the organization regardless of how hard you work or how intelligent you are or how many problems you solve. Loyalty is incredibly important to the agency.

JM: I see. And that's based mostly on silviculture, culture? I mean that's...

RF: Timber and engineering is kind of the dominant paradigm here, yeah.

JM: Even though, isn't it about 50% of the Forest Service budget going towards fire at this point? So is fire becoming dominant too or is it just people in silviculture work for fire and sellers?

RF: It'll be interesting to see what happens with that because that's fairly recent for fire to be such a preponderant part of the thing. And the fire shop is really; they're not interdisciplinary at all. The mentality is, our main job is to fight fire. If there's time and money in the off-season we treat fuels, but that's what we do. And we don't like NEPA, we don't like to do any of that stuff and we really wish the hydrologist would go away, you know that kind of approach. A lot of the fire shop is like that. Now there's some very progressive people in fire and fuels. Some people are really trying to turn the corner and keep the basic... The basic fact is at its most primitive breakdown, the most reductionist you can get, of an ecosystem, it's composed of structure and function. And out on the west coast, function is fire, you know? Different kinds of fire, different intensities, different periodicities, but its fire. And there's a little bit of fluvial, you know a little bit of flood action, some weather related things, bugs, blah blah. The basic disturbance agent is fire. So if you want the structure, ultimately you ought to have the function. And a lot of fire people realize that and they realize that trying to put every one of them out is incredibly stupid. But it benefits the timber industry in many ways so we're probably going to keep doing it for a while. Any benefits to developers and a host of other malefactors of great wealth, as Roosevelt used to say.

JM: No, no. That's great, that's great. Would you say that all of what we've just been talking about points to saying that salvage is an institutionalized practice?

RF: Oh yes, yes it is.

(Talking to the waitress.)

RF: Oh yes, institutionalized, yes, definitely. And it's really interesting to me that in a very short space of time, Shatford and Hibbs, Donato and two or three other papers have just undercut the scientific rationale for salvage. It is no longer there. So if you hear about salvage, you say all right, if it's private land, hey it's your land, go ahead, you know. If it's public land, if it's near a road, whatever, they say oh yeah it'll make money. Okay, well maybe. But as far as, oh you have to do it for the little baby trees or oh, it's going to re-burn... It's bunk.

JM: So you said not only for the re-planting but also for the re-burn...?

RF: Yes, yeah. We saw that on the Biscuit Fire burned through the footprint of the Silver Fire. The Silver Fire was about 90,000 acres, something like that, 13 years prior to the Biscuit. You're familiar, okay. The amount of difficulty, resistance to control and the rate of spread was the same in the salvage and the unsalvaged. You know, they salvaged Silver, right, because they didn't salvage the little skinny ones. They didn't salvage hardwoods. So there was enough snag still, snags are always a pain in the ass for firefighters, so that pain in the ass was still there. The stuff grew back real thick and dense like it always does whether it's salvage or not salvage. It doesn't matter if it's doug fir sapling or a Manzanita bush, its still going to burn you know when the re-burn comes. And it's just nonsense, it's just nonsense that you can demonstrate, in some situation you can demonstrate a slight increase in severity. If you got a lot of rotten logs like if it's 30 years later when it burns and everything's really rotten and funky, fine. It can cook around the roots of the trees and maybe kill a few more of them but it's like nyeh... It's just...its pseudo-science chasing profit you know. If we justify the profit, figure out some pseudo-science, hire some bastard (?) who is willing to rent out his Ph.D. I'm sorry, I'm a little cynical about this but I've watched this go on for too long. Anyway, go ahead.

JM: Well I was just going to say some of what I've been reading is they're starting to really look at the logs, the legacies, after the snags fall down, is like these water reservoirs. They're really sucking up the water. And then so in terms of like changing climate or whatever that they may you know become even more important as time goes on...

RF: Oh yeah. Well listen, I used to, because I was on hand crews for so many years, I cut up a lot of rotten logs. You know, when you go to the fire line you've got to get down to mineral soil, right? And the networks of roots in those big rotten logs, especially toward the bottom It's like in August when everything else

is dry as a bone, that root can still suck a little bit of water out of that big log... You know, we call them 1000 hour fuels okay because it takes 1000 hours for that thing to dry to two thirds of the way to balance moisture content with the atmosphere. So they're very slow sponges, very slow to dry out in the spring, very slow to get all saturated in the fall. They're kind of; they're like a break in those changes. So any little salamander that needs a little more water than some other critter, he's going to hang out under that log. So yeah, they're vital, of course, yeah.

JM: And I mean that just kind of goes along with what you were talking about when you were walking through the Warner Burn I think you said where when they provide shade and they soak up the heat and let it out. So it's almost like I guess a lot of well at least in arid areas I know that it's considered a full functioning ecosystem when it has that blanket effect of the canopy that will keep the heat out during the day but will hold the heat in when it's there at night.

RF: Right, right. Yeah, yeah, that's the thing about forests, even dead forests, is they act as this damping, they dampen extremes. And any critter that you know and habitat by definition almost, if you can find a place that doesn't have a lot of extremes, you don't have to expend a lot of calories if you're an elk staying cool or keeping warm or whatever, you know. Yeah, it's, I don't know, it's like forests, I've been fascinated with forests most of my life. When I see people coming at it with this very reductionist mechanistic view, you know oh we'll control the inputs and we'll control the outputs thereby. You know, we'll cut it, we'll plant it with our trees, our genetics and our fertilizer, and everything will be cool. Well it hasn't worked. In Western Washington and Western Oregon where it's really, really mild, low elevation, lots of rainfall, yeah. That European kind of style of forestry does kind of work if you like plantations. But it doesn't work in Southern Oregon. You know we've got big square brush fields and a lot of these clear cuts are big square brush fields. It hasn't been all that effective.

JM: Could you talk about the economics of it at all? I mean it seems that, well I know with the Biscuit Fire that EcoNorthwest put out a report that talked about the Forest Service that really underestimating its overhead cost and also overestimating the price they were getting. I mean there's a glut on the market when there's that much wood. And plus they were talking about prices that were I think green wood prices as opposed to burnt prices.

RF: What's fascinating is Eco Northwest is sort of you know I mean they're kind of a hired gun for the environment. But you know they're perceived that way,

perhaps unfairly, I don't know. But I called a guy at the experiment station, the Forest Service experiment station in Atlanta, Georgia, happened to know the guy, had read his stuff, liked it. And I said hey I've got a really interesting problem for you, you know. Listen to this. I'm on the ID team for Biscuit and I want to know, you know, if we dump this much wood on the market... Remember they were talking 2 billion board feet. They had us prepare an alternative that had a billion board feet feeding (?). It was ridiculous. But the point is, this guy did an analysis and it said the more you cut the more the taxpayer is going to lose. And our own economist on the team at the well in the back of the, go look into the deep bowels of the appendices, you'll see what he said, basically, the more you cut the more the taxpayer loses. This is a bad sale from the economic standpoint. He hastened to point out that there were other values to consider like planting trees back you know. Where was I? Yeah, the economics of Biscuit were ridiculous. The whole thing was ridiculous. They probably only got George Bush a few thousand votes and that was the whole, all the pain and suffering, all the division and bitterness in the community, all the threats to people's.

JM: Who's Scott Conroy?

RF: The forest supervisor. And I was his team leader. We shouldn't have had to go through that. We should have had a cordial you know, relationship ... So it was just a lot of bitterness and divisiveness for a few thousand extra Republican votes. I'm pretty sure that's why they went through all that.

JM: Right. Maybe from a Pinko perspective, could you talk about what, how the powers of be are making money from it? Because obviously there's some sort of cause that it gets done. I mean maybe it's just all cultural and misguidedness but...

RF: Right, okay. Obviously, John Sessions gets money, right? He gets a chair endowed at the university. He gets \$25,000 grand or whatever it was for a paper that he probably whipped out in about four days. I mean this was not a scholarly work. The Sessions Report, you read it and you tell me what you think.

JM: Yeah, I have looked at it, yeah.

RF: It's just not well footnoted or anything. And the helicopter company, which does the yarding, gets the wood from the woods to the truck. They make money because they bid you know they bid a certain amount and the mill that wants the wood knows that helicopter logging's the most expensive way to get a log to the

truck. So the helicopter company makes money. The timber company makes money because they bid so low and what they'll a lot of times, well several of the sales on Biscuit didn't sell the first time. They had to re-advertise them at a lower rate. And they got the rate so low that the companies who would bid on it, at which point you can feel the hand reaching into your wallet because the taxpayers paid for most of the planting and to re-habit the roads and a lot of stuff because it was deficit sales, yeah. But the first 20 million of that roadside stuff, that made money. That was a profitable venture that 20 million. The rest of it, the other 80 million, 70 million, whatever it was, I doubt if it made money. I doubt if it made money. I can't prove it though because of the way they do their accounting is byzantine. But overall I think even most partisans will admit that most of the Forest Service's timber sale program loses money and salvage is the place where it almost always loses money. Just, stuff's lost so much of its value the day of the fire and it loses so much of its value.

JM: Do you have anything that you think would make this process better for incorporating the ecological knowledge into policy? I mean it seems like with NEPA and everything it's a fairly, it sounds like a good system you know but obviously somehow it gets shorted out.

RF: I'll tell you, I really do think that we already kind of have a mechanism in place to keep the Forest Service honest. And it's the courts, and it's the non-profits. I'll tell you a joke. Everywhere I went in the forests was when I was in fire. There's some variation on this joke. The employees tell each other this joke. What's the difference between the Forest Service and the Boy Scouts? The Boy Scouts have adult supervision. The non-profits and the courts provide adult supervision to the Forest Service. When they get too insane, we step in. And we weren't able to stop with Biscuit because of the momentum of that 2004 election and because of a variety of factors. Just the horror of a half a million acres. I mean there was, a lot of people used to go out there. A lot of the, it threatened a couple of towns, you know. Everybody was kind of ewww, freaked out, you know? So we were unable to stop that one but we've stopped a hell of a lot of others man. In fact, we stopped people from automatically salvaging. That in itself is I think a huge step forward. Even on private land there's people going, gee, you know, maybe I should just take a few of these and leave the rest. You know, maybe it's good for the land. My little 20 acres, I think if I had a fire on it I'd think twice about salvaging. I do. And I'm not opposed I mean, my land's been cut over twice. You know, it's not virgin old growth.

JM: Do you know much about that National Forest Management Act?

RF: A little bit.

JM: And like what's, I mean I think that right now they're trying to revise it a certain way. Do you know anything about what's happening with it?

RF: Yes, okay. Briefly, the 1982 regulations for the National Forest Management... you got it?

JM: Yep, still I just wanted to check. It's still going.

RF: Oh now recording, okay. The National Forest Management Act, all the forest plans in the western United States were built under the 1982 regulations stamp at the end of if it may (?) (unclear). Those regulations basically dictated allocation and scheduling. They said you're going to allocate every acre of land. You're going to zone the National Forest. This over here is a special interest area. This over here is the timber emphasis (unclear). This over here is a wild and scenic river. All that has to be zoned once and for all and then you revise it from time to time. Well all the revisions are coming out now. And in 2008, the Bush administration came out with the 2008 regs that are vague, that are aspirational. The "strive to endeavor" language as we used to call it when I was a union rep. And that's exactly what the language of the 2008 regs is. It is aspirational. It makes no promises, which means you could drive a log truck through the plans. So that's basically what's going on in a nutshell. Now everybody and their brother is litigating that. And so the 2008 regs may get overturned, in which case they'd go back to the '82 regs, which is not necessarily great because they're 30 years old and I'd like to see new ones that are halfway progressive and that recognize global warming and all this wonderful science that's come out. I mean that's one thing man. Forest biology has come a long way; fire ecology has come light years in my career. They really started throwing money at some of these problems, partly because we've got so many subdivisions out in the woods but they really did. And we're starting to really solve some problems. We're starting to answer some questions. But the '08 regs are Bush administration nonsense. That's what they are.

JM: Yeah. And he had tried in 2004 but those were struck down.

RF: I don't know the case law. I'm only now just now engaging on the new regs. I just went to a meeting on Friday at the regional forester's office in Sacramento about this. So I'm just getting up to speed. Because I worked on the old

generation of forest plans and they had their problems but they did they zoned the forests and they told everybody that you can't log here. Maybe you can log over here.

JM: Yeah. But the new ones are doing away with that zoning...

RF: They're trying.

JM: ...and also the EIS's and...

RF: Well yeah, they said, right, right. They've decided not to, that you don't need an Environmental Impact Statement to go along with the forest plan because it's aspirational. And at the time to do EIS's and EA's is at the project level of individual timber sales, and individual hills project, whatever.

JM: What's the problem with that as opposed to...?

RF: Well for one thing, the capacity of the environmental groups, we can't fight 300 projects a year in Region 5 rather than 11 forest plans. It's just way more heavy lifting than we can do, number one. Number two, the National Forest Management Act was a response to a bunch of abuses, major clear cutting right above Missoula, Montana, cut into some really bad stuff (unclear). If you let them off their leash, they'll find some new way to screw up. They or the (unclear) and those forest plans are adult supervision. This is, you know, this is a renegade agency we're talking about here. Forest Service does not play by the rules. They really don't. They've got their own constituency. When they decide something's going to hurt their constituency they're willing to get pulled into court and yelled at by a judge and stuff. You know...

JM: Well you know I read the old law of the Northwest, not the Northwest, the management act and within there, there is just specific language that excludes salvage from a lot of those rules that you know were put in place.

RF: Oh yeah, yeah, because it was assumed that salvage was always a good thing, right? Yeah, yeah it's amazing how long... But you know it's myths, myths persist.

JM: How long do you think they will persist for? I mean I guess that's a hard question that has to do with the forest stuff.

RF: They, even with the market totally in the toilet now, you can't sell a two by four to save your life, they still were thinking about these Northern California fires. They did notices of intent and so forth. Now we've talked them out of most of them but there's still some that they're planning to do. So yeah salvage is alive and sort of well. Sort of well, I mean, you can't, when you look at Shatford and Hibbs you'll see what I mean. There's like the hey we've got to replant excuse is gone. It really is. And there's places where yeah you're right, you know. You killed out all the seed stocks with your dumbass management practices. So yeah we've got a plan. Again, I don't know why we should reward them but that's another (unclear). Anyway, but essentially between Shatford and Hibbs and Donato, that excuse is gone. I think eventually we're going to prove that most of the time salvage doesn't do shit to subsequent fire behavior. It does not help that much. Unless you've got everything you can take it (?), which is really bad for the residual health of the forest soils and everything else, so...

JM: Right. Well didn't you have an aid (?) stamp as well?

RF: Right, and there's an old firefighter's saying, surface fires beget surface fires, crown fires beget crown fires. So if you have a crown fire and it comes back to all this really uniform doug fir, you're really likely to get a crown fire the next time there's a fire. If you have a surface fire and it just poofing around and kills some trees but leaves some big trees growing shade and all that, the next fire's going to poof around and kill a few trees and leave some. Yeah, yeah, just rule of thumb. It doesn't always work that way but it's a good rule of thumb.

JM: On the, you know there's this new Supreme Court judge being put up there by Obama...

RF: Yeah, Sotomayor.

JM: Yeah, and old Rush Limbaugh right away is playing that clip of her saying that policy is made in the appeal courts. And it doesn't play the whole thing where she says she doesn't think that's right or whatever. I think that's what she said. But the point is, is that she as a supreme court justice is going there and she's saying this to a law school, that that's what actually happens. Do you agree with that?

RF: To some extent, and I don't see anything wrong with it. I think policy is interpreted by the courts and I think that the, very often Congress writes a law, NEPA certainly is an example, that does too good of a job of whatever they

thought they were doing. And then somebody's ox get gored, some congressional cronies ox gets gored and they say, oh, we need to streamline NEPA or we need to suspend NEPA for this one situation. And it's horseshit, NEPA works fine and the courts are interpreting it as it was written. I've read it and I've been thoroughly familiar with that law and the regs that implement it and it's a good logical law. That's what's pissing me off about NEPA is you got to look at what you're doing and let everybody else look at what you're doing and if what you're doing is stupid, the courts are going to say, hey, we think you're stupid. Where's the problem here, you know? I mean that's the thing. It's a solution looking for a problem. This whole idea that the courts shouldn't interpret the law, Alito and Scalia mean these guys are total stone hypocrites. Scalia has been an activist judge, follow his career and these guys, well all these judges are bad. Well then get them out of there. Most of them are right-wingers. I'm sorry, I... Yeah, yeah.

JM: That's fine. Have you got to get going?

RF: No, I'll tell you what. Let me just, I'm going to just listen to a recording while we're talking here.

JM: I think we're getting pretty close though.

RF: It may not have rained (?). In which case I can sit here and drink beer all night if you want. (long pause – noisy restaurant background). Go ahead.

JM: The next thing I guess I wanted to ask you about is what's your opinion of public education and within that kind of a perception that people have of the issues and also the third thing is the importance of images in getting messages across? Like, with the spotted owl, you know, there's this cute and fuzzy creature. Would it, you know, would it have been the same if it was a slug or something?

RF: Yeah, I agree with the idea that a lot of the environmental stuff is marketing. You know, the polar bear was a stroke of genius. You know what I mean, to put that up as the icon for global warming.

JM: That got shot down though.

RF: Yeah, but whoever thought of it, it was brilliant from the point of view of getting the public to think about, you know. Your SUV is killing this cute little bear cub. He'll drown and his mommy too. It was brilliant. I've got no problem

with that. You know, I mean that's marketing. Everybody does that. You know, look at Limbaugh and those guys.

JM: Well it almost seems like that if that wasn't a strategy then the environmentalists would just be beaten back with, we'd have nothing to stand on.

RF: Yeah, and when, okay. When it comes down to an actual project or an actual policy, if it's not science then I'm not interested. So that whole marketing thing at some point you've got to say wait a minute, you know. Don't be telling the public a bunch of lies. It's okay to market, it's okay to say look at this cute polar bear but only if he's really going to drown. You can't cross that line. In fact, the organizations that do have died, you know what I mean. The ones that just started making it up, they don't last. That's my opinion.

JM: Well now I think I already asked you about the CE's categorical exclusions. And then I just wanted to get your opinion of civil disobedience as a mechanism and then I am going to try to talk to Tim...

RF: Yeah he's really a good one to talk to about it, if he's willing to talk because he really got burned. But I think it's a totally legitimate tool. I think it's mostly useful when they've slammed the door to the courts. One of the reasons why whenever they say you know let's suspend NEPA for this one situation or condition or something like that I say, all you're going to do is cause civil disobedience. You know you may have a bunch of young people getting locked up. It's a stupid waste of everybody's time and money. Let them take you to court. You know, the judge will throw all that out as stupid. But I mean those are the two choices, right?

JM: We talked a little bit about Ken Van B over the phone and he was telling me this story of when, and I'm not sure where it was, you may know, but he had got this assignment to watch a gate at an area where there was some civil disobedience going on. And there were some people, like they were all right on this side of the gate. He was at the gate. They're not supposed to go past it. So he's out there and I think you could probably picture this. Ken Van B sitting there at a fire, right, staying warm because they were cold. Well these people come up and he starts talking to them. Ken's a good story teller and is able to talk with anybody. Yeah so he gets them going and they're sitting there hedging and getting warm and stuff. And then (laughing) he goes, well this old growth wood sure burns good (laughing).

RF: (Laughing).

JM: Oh I love Ken Van B. He was something else.

RF: Oh yeah, yeah. I guess I've got to tell you one quick story.

JM: I'd love any stories on Van B.

JM: Yeah he was the type three I.C. on the Bear Gulch 2 second fire that was...

RF: Bear Gulch burned again?

JM: It did, yeah. Just two years ago.

RF: (laughing) That's funny. He was on the first one.

JM: Yes he was and he remembers that rock coming down.

RF: Oh yeah, the big as a garbage can (?) (unclear), yeah, yeah. Well it probably now is as big as a house, right? Retelling it.

JM: Yeah. So yeah, he was, I was liking up to be able to sort of tail him around for a few days. And that fire burned quite a bit from them.

RF: Yeah, Bear Gulch is pretty steep ground.

JM: Well, I kind of lost my train of thought in regards to this but I think you've covered everything I want to...

RF: You can call me. You can call me.

JM: Okay.

RF: It's quit raining.

JM: All right sounds good. Thank you very much.

RF: No problem. I wish you luck. It's an interesting subject.

JM: I think so... (End of recording.)

Appendix I

This interview was conducted in Olympia Washington on May 6, 2011. The interviewee will remain anonymous. The interviewee took part in direct action to stop the Warner Creek salvage sales.

D. A: I may repeat stuff that I wrote, you know.

JM (Jothan McGaughey): Okay, yeah that's fine. So just as a quick introduction. This is for Jothan McGaughey's thesis, which is looking at how ecological knowledge gets incorporated into policies and specifically looking at under the lens of salvage logging. And I'm interviewing R. B., how do you say your last name?

R. B: Just R. B.

JM: Just R. B., okay, who is involved with Earth First and will remain anonymous I think for the thesis. And it's, we're conducting the interview at the Evergreen Library on the May 6, 2011. Well thanks for doing this, R. B.

R. B: Absolutely.

JM: I guess if we could start off with how you got involved with civil disobedience and kind of what brought you to decide that this was an acceptable course of action and probably you know a little introduction about what group you joined and what issues you guys were using civil disobedience for.

R. B: I was, I grew up overseas and came back for high school in the states and kind of saw, I was kind of affronted by just the system in the United States and going you know starting off in high school learning about civics and government and kind of opened my eyes to how corporations really do control a lot of the policies you know and resource extraction in the country. When I first, throughout high school I just I got involved in letter writing campaigns, petitions, some little peaceful protests. I lived near Washington DC.

JM: And this was mostly concerning forestry issues? Or was it kind of broader than that?

R. B: It was broad. I was in Washington DC so there was everything involved. I mean I went to everything from anti-Ku Klux Klan rallies to Green Peace you know assemblies to human rights actions.

JM: Well it sounds like you had a good high school education you know. Was your, let me ask you this real quick, was your family an influence in your activism? Did you come from...?

R. B: They were very I guess socially responsible. They were both, my father was an anthropologist and my mom was an archaeologist. So we, I was born in the Middle East and lived in Africa for about seven years. And in the Middle East in particular my father worked with the Palestinians and I remember I was a small kid just being told about the importance of equal rights, respect for all ethnic groups and how you know some are you know at a loss of their rights. So I guess that was kind of imprinted in me. So I was pretty involved with Amnesty International and Green Peace as my environmental interest groups. Fast-forward to college and moving out to the west coast here, I saw firsthand like environmental issues like in the clear cuts, the dams and the salmon issue. And I think my first action out here was with the longshoreman's union and Earth First! It was a kind of combined action against Alcoa aluminum company and we shut down the Port of Tacoma for a couple of weeks, had some people living in the cranes you know in kind of hammocks, bringing up food to them, taking down waste, bringing up food. And I was very impressed by the organization and the effectiveness that that had in opening up the public's eyes to the issues. I then got more interested in forest issues here and there was a suspicious timber sale that went through after a suspicious fire in the auspices of salvage logging. And...

JM: And that was Warner Creek or...?

R. B: That was Warner Creek, yeah. God it was a while ago. I was involved with several forest actions. It was down in Oregon so that was the main one. Although I went down there several other times to kind of smaller issues but Warner Creek was the main thing. And yeah I've, back to your question, I guess in the course of my activism I've worked in several states and been arrested in all of them. Other than here in the Northwest, it was an issue on the Navaho Nation in northeast Arizona where Peabody Coal Company has been in the process of relocating Navahos to get to the coal through the Bureau of Indian Affairs. And I worked on that in the late 90s, '97 to 2000. While I was there our group was well organized and well outfitted. So we got called to other actions in the southwest, one of them being in San Luis, Colorado, where these wealthy brothers who had a logging

company bought up all the timber surrounding this fertile valley that has been, I believe it was one of the oldest, where the oldest continuously farmed areas in the United States. Ancestral Mexicans or Central American Indians had farmed it all this time and they had a very complex network of canals and irrigation. The brothers started the logging and clearly went against basic regulations of not logging timber that's above a certain grade, you know.

JM: These are NEPA considerations.

R. B: Yeah. So silt just washed down immediately and clogged up irrigation canals. Somehow that community contacted us and...

JM: Was that Earth First?

R. B: No that was through RAN, Rainforest Action Network. So we got called there and it was very well organized whereby the Ruckus Society specializes in training activists or peaceful civil disobedience, put us through a three day workshop forming affinity groups working on different skills like media, documentation during the events, jail supporter...

JM: Was that training for the Ruckus Society, was that sort of necessary for that group before they would let people partake? Was it kind of like training?

R. B: It was because we were all coming from different areas. I mean the nature of these groups is that if you know the individual well is very well represented. So I guess if somebody didn't want to they didn't have to but then they wouldn't be in an affinity group and they probably wouldn't be given you know some of the expensive lockdown gear and so forth. No one's forced into doing anything. I guess they're more encouraged to. So that event went off very well. I did media support with a video camera that I had logged hundreds of hours on in Arizona and actually my footage of being arrested wrongfully was seen by the DA and we were all let out of jail but while we were in this really old school jail where you could you know hang your arms outside of the bars and talk to people on the street, the locals were very supportive and brought us levos (?) francheras (?) in the morning, enchiladas...

JM: Handed them through the bars huh.

R. B: The jailers were very supportive and thankful we were there so...

JM: Let me ask you something about an issue you just brought up, the video camera and you know its use as evidence I guess. And one of the things I'm interested in is like the power of images, like it's one thing to write a letter and describe something. What's your feeling about images as their weight as opposed to just words and what not?

R. B: Huge, huge. And it's on two fronts, images of the issue that you're focusing on presented to the public say of clear cuts and the damage from that or the activists you know locked you know locked down to the logging gate with kryptonite locks around their necks. On the other hand, the power of images also comes in our defense, as activists in protecting you know our rights because where well-organized civil disobedient action is legal or it's peaceful. And all too often you're charged with erroneous charges so that's also the power of the image is to protect...

JM: Yeah I've heard stories of you know people down in Oregon out of Eugene doing civil disobedience and like getting pepper sprayed you know directly sprayed in their eyes and what not. And when it comes to court issues you know the authorities, their word is weighted more because they're official agents you know of the law or whatever as opposed to public citizens. So their word has a greater weight if it comes down to word against word that it's usually the officials that will win that battle in court. But I can definitely see that images and documenting it in that way would provide solid proof.

R. B: In what is known by us as the anti-insurgency authority being police forces that are geared to putting down protests, direct action, have noted that. And the media documentation person is often the first one to be arrested and the camera confiscated as well as all too often the medics that are designated to care for pepper spray incidences and so forth. So they recognize the power of image too. Twice my footage actually has let me go, absolved me in this.

JM: Is there any, are these groups would you say, since the authorities are kind of changing their tactics and going for that documentation first off before other action is taken as it sounds like what you're saying, are the groups trying to you know have multiple cameras there? Or you know so that in case the main one goes that there's still able to, yeah...

R. B: Exactly. We have remote, you want a remote one from the window of a bathroom, an office building above or something that can catch the whole scene and you want that to be still and constant and catching everything. And then

divide up who is you know who's covering which main action component. Like in Arizona we had, there were three women locked down to the axles of the logging trucks in town you know and with and big cardboard signs were put on the truck windows saying you have a human locked to your axle and this is why they're there. We will not disrupt your equipment. This is a protest. So you have people covering different elements in the action.

JM: Right. Yeah I you know I know that somebody has died in logging operations because a tree went ahead and was cut even though they were aware that somebody was there or whatever.

R. B: Yep, and on the same note though, some you know innocent workers in the lumber industry have died too through the early stages of forest actions such as spiking trees to screw up log mills you know and that's just as wrong.

JM: Sure. And that stopped fairly quickly I think.

R. B: It did.

JM: After there was a big uproar.

R. B: Yeah, as soon as they realized the consequences of that, they thought they were just going to screw up you know the saw blades, the band saws both.

JM: Well, maybe you covered this a little bit but just to make sure let me ask you again. What brought you personally to decide that civil disobedience is an acceptable course of action? I mean I guess you talked about your education.

R. B: Yeah, but then as I started, as I moved out here and started taking courses in environmental policy...

JM: And that was [Redacted]?

T: [Redacted], I learned of the real institutionalized obstacles for like true democracy in resource use and so forth whereas the power of the dollar is you know is king. So it transformed from kind of a naïve thinking that just writing a letter would do it to realizing that sometimes you need to bring the issue to the public's greater attention. And then let the public voice really what they feel because in a way it's mainly doing that it's letting the public simply know about issues that are otherwise hidden and let them express how they feel.

JM: To the elected representatives.

R. B: Yeah. So I saw how that, how effective it is. You know you see one, do one action, which took part in closing down a Shell gas station, and that night it was on the you know 6 o'clock news on NBC. And that really made it clear to me how effective it is.

JM: How powerful that is. Let me ask you, you just mentioned the institutionalized structure like that writing letters weren't effective within that structure that's been erected around economics I believe is what you're getting at.

R. B: It does have a really important part. You know I mean that's what I think makes, drives a lot of change. But the masses need to be aware of the issue before they write the letter you know. They're not going to express their opinions as a constituent to their representative unless they know about the issue. So it's more so initiating that legal means.

JM: I got you. In terms of like timeframes, if we're talking about climate change and maybe the institutionalized structure of the oil and gas industry and like you know there's been this cutoff of 350 parts per billion of carbon in the atmosphere and we're over that at the moment I believe and so that's why they're wanting big reductions. But there's a real time issue involved right, like the longer, if the change is gradual like if the writing of letters happens and people understand that it has to happen but yet you know it's like turning a big boat around or whatever.

R. B: That's a leading question but I totally agree (laughs).

JM: Yeah it is a leading question.

R. B: I totally agree. That's a good point that you should mention though because we're running out of time.

JM: Yeah and so does that how should I say, raise the necessity of civil disobedience to bring, it does...

R. B: Oh incredibly. Because I mean the reason why activists put themselves out there, their safety, their security, their time and their resources is because they feel that oftentimes they feel the pain of the injury, of the larger injury that's being

done. And it's also for a matter of self-preservation, of survival for their family. You know and yeah, we're at the 11th hour, 59th minute.

JM: Do you think that that sort of same issue about time and stuff was a part of the Earth First civil disobedience that you were a part of down in Oregon I guess at Warner Creek and maybe others? Could you speak about that? Was there a feeling about you know the old growth? There's only so much left and the time is now to stop that.

R. B: That's it. I mean once you take down a tree you can't replant it. And majestic old growth were being taken down very rapidly at that time. There were political incentives and lax regulations to allow them to do so. And in terms of the suspicious salvage operation, the damage had already been done but unless people were made aware of that in that it may happen again you know it would happen again so...

JM: And you're speaking about that it was arson...

R. B: Yes, yeah. I don't recall if that was Warner Creek?

JM: I believe it was. I think I was just looking at that the other day and I'm almost positive that it was Warner Creek. In the research I've been doing for this paper, you know it turns out you said that the damage was already done by the fire. A lot of what I've learned is that you know the remaining trees that are there after a fire are extremely important ecologically.

R. B: For regeneration, yeah.

JM: For regeneration, hydrological issues, nesting, animals, there are certain species that rely on that, mostly woodpeckers...

R. B: I'm studying fungus a lot nowadays you know and you need that biomass to kind of reestablish the biota.

JM: So one of the things, the reason why I chose this paper was because the subject ecological evidence is so clear and yet salvage logging is still continuing to be practiced on national forests. I'm not talking about state lands or whatever. And the reasons have changed you know from fire protection, fire hazard reduction type stuff and then to economics and stuff. And each one of those kind of in order has been disproved. So it's very interesting to me especially when you

talk about the institutionalized structure because I make a case in my paper that it's an institutionalized practice, salvage logging, and a fairly strong case I believe. But kind of a related question for me is when you guys are, when the group was doing civil disobedience in terms of the Warner Creek fire or anyone and you said the majestic old growth and also the damage had already been done. Was the, I'm trying to get at whether the point of the civil disobedience was like a you know an emotional thing, a love for the old forest and the trees and what not, or if there was a like a conscious effort or knowledge by the group that it was scientifically ecologically harmful and if that was the reason or if it was more of a romantic type reason or if it was some combination thereof?

R. B: I think that action of trying to illuminate the practice of arson for a you know for a salvage logging operation is pretty unique. Because generally actions are done, you can see the beauty of what you're protecting. In this case, we had to kind of more abstractly realize in retrospect that these trees had been burnt and most likely to order for a cash cow to come out of them. So without having that visual of what you're protecting, we did think science did come into play, the whole policy thing and we kind of put pieces together. Because we had, well I shouldn't say I was involved in the early talks because Warner Creek started out of primarily EF!'s headquarters in Eugene before I even got there. I just, I got there later on. But they came together and spoke about, okay, this has happened and this is likely the cause of it and they're going to be benefiting from it and if we don't do something it'll happen again. And then there, this was well discussed in the Earth First journal, which is a main communication mode for EF, or it was.

JM: Is it not published anymore?

R. B: It's kind of on and off now. They're moving the print machines again so they stay on the move. But there was discussion about you know for every action you do, if you're putting yourself out there you want to know that it's worth it, that there's a chance for, that when the public hears about it and digs deeper that you still have truth on your side. So there's a discussion about the ecological effects of removing burned timber you know and the benefits of keeping it there. And even early back then in the 90s it was realized that you know it should stay you know.

JM: Yeah so that, you know that makes a lot of sense that there's a lot of thought that goes into the issues picked because there's such a, the input of resources and effort and personal time. You guys aren't getting paid for this obviously.

R. B: No. And more so nowadays, science comes into play. You know activists go to quite extremes to gather information. The work I did in Arizona, part of that was on the uranium tailings and I did a lot of research on the effects of the uranium mines on the reservation. Because it's hard enough to get the public's attention and concern so you need to have all of your i's dotted and t's crossed and take you seriously.

JM: In those groups are there education workshops about the issues involved? Like you said that like you know for that one group that there's a training and non-violence. Is there training in terms of the ecological issues?

R. B: No. I mean there may be in other issues I'm not involved in now and activism has really matured since you know for various reasons I focus more on education now as my form of activism and not in the trenches or in the camps but EF! has like their big gathering every summer at a state park and there are workshops there about the issues. And they try to glean scientific data to support them and you know give an overview of the atmosphere of this and the temperament of the DA in this county where an action is planned and everything. I think it's still a little informal but so is organized activism. It's just because of the legalities of it.

JM: Yeah it seems like that there would be you know if not formal sort of trainings that it would be a very informal you know as you're in a place doing an action that obviously there's going to be conversation and it seems like that would be kind of a main topic.

R. B: From one of the issues I've jumped into or waded into carefully, I have considered all of those issues before I put myself on the line because I don't want to you know, what if the burnt timber was just a fire hazard and had no ecological benefit and more trees would sprout from the space they're taking up? You know, what if that was the case? You know to hell if I want to spend a couple of weeks in jail pushed around for the wrong reason. So I think most people will look into that and make their own decision. It could be better dissemination of scientific data to support those issues. But I mean with the damn printing machines having to relocate every year or two, you know it's hard enough to just get the word out.

JM: You know I'm interested in that, that print machines are on the move or whatever. Is that, what's the reason for that? I mean are the authorities looking for those? Would they be confiscated if they were found or?

R. B: Yeah I don't know what legal grounds they would have to confiscate it because I mean freedom of the press is in the constitution, the Bill of Rights, but maybe you know there's many other ways that authorities could hinder those efforts of organizing if they knew where that was disseminating from. Our office in Flagstaff with the reservation issue got raided and drugs were planted there which was totally not ours. So they'll do what they need to just to slow down the organizing.

JM: I also find it kind of interesting, I mean I like you know to read a book as opposed to look at something on the computer for sure and it's nice having something real. But you know in this day and age it seems like Earth First! or other groups and they must but it seems like they would really benefit from the use of the internet and having a website you know that they can put that stuff in there because you don't, you're not tied down to a printing press I guess is what I'm saying. Computers are everywhere. You can have access and put things up.

R. B: Have you seen if they have a website now?

JM: No I have not and it's been a while but I believe that about a year ago that there was a website.

R. B: Okay. Yeah I'm not surprised. Yeah I think some people are just afraid to login and get their URL recorded on a site. But others aren't. You know, with Earth rendezvous this summer you really can't you can't just logon and find where. You need to know somebody who is going and they will tell you, you know, ear to mouth. It's interesting you know I haven't logged in to see if there's a site or not.

JM: Yeah I'll probably do that just out of curiosity. So you know that kind of, the next question here was how did you join the group? Was it easily accessible? And it sounds like that it's very much a word of mouth thing of knowing somebody to be able to gain access.

R. B: There was, it depends on the urgency of the situation and how many people are already involved. But when the longshoreman's union wanted us to join them against Alcoa there was actually an informational meeting here in Olympia with posters around town for it. There were a couple of obvious you know agents, undercover cops who were there which was just pretty obvious to all of us. So we, somebody got people's phone numbers, first name or whatever and called up select people from the meeting. It's a lot by intuition and then we had another

meeting and then kind of got to know each other and then had another meeting of more select people from that. So it's not just everybody and anybody. You know as an organizer you have to be really cognizant of the threats out there. I mean undercover cops aren't going to knock you off in the parking lot but they will disrupt it to make it less efficient, effective. It wasn't, I wasn't really accepted into the Warner Creek campaign until I actually drove down to Eugene, picked up a lot of supplies, bought some other supplies and drove it up the mountain to their road blockade you know. And so you kind of have to prove you know your interests, yeah.

JM: Yeah, you know I've seen over the years different things where undercover people have joined these different organizations and it seems like what they really try to do is well I guess they're gathering information for one thing but the other thing is they seem like the big thing is to try to push the organization into either violent acts or things that will get people into trouble, that they try to steer it or whatever.

R. B: Exactly. And people you know you've got to keep aware of that you know for like somebody's just way (unclear) you're like no that's not cool.

JM: And they're probably not at the next meeting or whatever.

R. B: Right, yeah. I mean you can't blame them. That's they're job, they're getting paid to do it, that's what they're trained to do. I mean you know we try to infiltrate you know the other side. My sister lived in Atlanta and had a boyfriend who worked for NBC and she got me the apparel which I donned and walked into, had a meeting with a BIA agent and got quite a bit of truth in my hidden camera and recorder you know. I mean we all do it for our own purposes.

JM: Very interesting. So that kind of leads into another question here. What sort of structure did it have? How was it organized? I mean it almost, well are there cells to it? Is there somebody at the top? I mean is Tim Englesby, he founded Earth First! is that correct or?

R. B: Yeah but he made it clear that he wasn't the leader and he wasn't setting the agenda, that this was an autonomous group. Everybody spoke for themselves, made their own decisions but there was a unity for the cause in defense of the earth I believe is pretty much the slogan. But there is a lot of organizing that has to go into it and decisions are often made by the elders in the group and there are meetings amongst them to entertain new campaign ideas that generally younger

people have brought to the floor with a lot of passion and they will look into them, consider the pros and cons and that's sometimes how decisions are made. Other times it's just a group that's passionate and gets their shit together in time to do a direct action and throw together a campaign.

JM: So it almost sounds like there's a at least at some of the times there's like a governing council or...

R. B: Yeah, I'd say that there's a lot of respect for you know for traditional knowledge that people who have lived longer have. You know, they're given understanding and intuition that they have. There's a lot of also a great deal of respect just for underprivileged segments of society underrepresented and a great desire to bring in more women and people of color into the movement. But I think it still remains the majority white male and activist campaigns...

JM: Younger white males?

R. B: Younger white males, mostly, although it's very, very welcoming to everybody. I just think that's how you can probably analyze that in a whole another paper.

JM: Could you give like just a ballpark percentage that's made up of white males under 30, 20 to 30?

R. B: 60%. And then 35, say 30% women and other we have what 10% left, people of color. And I mean I think it has to do with privilege and the ability for people to put the time needed into organized activism because when you're in the throws of it you don't have time to work much. I would work day labor when I needed gas money for the truck and otherwise live in my storage unit in Flagstaff or on the reservation or in my truck.

JM: That doesn't sound too privileged though.

R. B: Yeah but you know okay, maybe that instance isn't because I did, I worked my tail off to do what I was doing but okay the majority of activists who show up at a campaign are college students who are not working to put bread on the table. So it's a mix. I mean yeah you know I would say the majority of the people who show up for a protest are you know college students yet the majority of people who are organizing, they're not privileged. I would say they're you know really well below the poverty line in order to do what they're doing.

JM: And it seems to me that they probably have a different lifestyle than the mainstream American needing to go to work you know at some job 40 hours a week and what not, like that they've maybe carved out some alternative lifestyle way to make a living or you know I don't know not a commune or whatever but you know...

R. B: Lived with less you know, not worried about you know retirement, building towards that and so forth. That is an interesting issue though. You could do a whole paper on that you know.

JM: Yeah well it does, yeah you know it has big implications.

R. B: Because you're not, you know, well I'll just speak for myself, particularly with a few years in Arizona then working against the logging operation in Colorado and then for Buffalo Nations in Montana for the remaining wild buffalo. Of those were, it took a lot of hard work just to keep doing that because you needed to eat and you needed gas money. You know you certainly didn't have health insurance, you know, you didn't have many comforts but when it comes down to what's important to you, there's really no choice. When you see an injustice, you know that you've got some basic skills to do something effective about it. It may not stop it but you know how to bring public attention to the matter.

JM: Let's see, could you talk about some of your direct experiences in participating in civil disobedience? You have a little bit so far but specifically about salvage logging, any of the salvage logging that you took part in?

R. B: Well you know we tried; you've got to make a clear differentiation between who you're battling in your issue. It's not necessarily the workers in the field or the truck drivers. They're just doing what they know how to do and making a buck. So your actions, but they are generally the ones you know that you can...

JM: Come into contact with...

R. B: Yeah, contact and I mean we've tried to get into corporate headquarters to no avail and even when you do a pretty remarkable action, they seem to have enough pull to keep it off the news. If you're an (unclear) in the field and you know you can submit your own video as we have to networks, they may run it as an interest piece or they may or you can coordinate with them in advance for them

to actually be there to film it themselves. Sometimes you do that and if you don't have a real trusted contact there you also invite you know the police there too. But yeah you have to really be considerate about your action and make it clear to those you come in contact with that it's not about them but it's about this larger issue and sometimes with a good action will educate you know those working for the company for instance about the issue and they'll be like what the fuck I had no idea, you know. Alcoa's doing this around the world or you know doing that to the unions, and doing this to you know the environment.

JM: On that Warner Creek thing the action that was taken was to block the access road right, the forest service road. So you just set up a blockade and manned it for as long, a long time huh.

R. B: Lived there. People lived there for months and it was a pretty remarkable blockade, a fortress made out of boulders and some of the downed timber. You know there were watchtowers (laughs) and tripods. Tripods were I think that was right in the front, which is, do you know what those...?

JM: No I don't think so.

R. B: You take like three lodge poles or whatever as long as you can and make a tripod in the road. It's a special lashing you do up top, get it good and secure, and then where the three sticks poles come out at the top you can create a nest up there in which you could pretty comfortably stay for quite a while and there's no safe way to get you down. They will, they've tried to just you know cut a couple of feet off each leg at a time and drop it down gradually but there's no safe way to do it so and it's an easy way to close down a road. And then there's kryptonite bike locks, the U locks, fit right around your neck but don't come up over your head. So those also work well for gates. Or we did go to a forest serviced office and we all just kind of walked in milling around like we were trying to get some Forest Service maps and we all had them under our jackets and kind of quickly formed a circle in the middle facing out, pulled the locks out and locked them to each other and then sat down and then laid down. So we effectively made like a big octopus with our necks locked together.

JM: And that was for salvage logging?

R. B: Yes, it was for salvage logging. Another for salvage logging was when you get these; weld these lock boxes which are like big V's. They're solid metal cuffs that go over your arms and you can throw it over the axle of the truck and then put

your two arms in it with the Carabineer bracelets on each arm and then clip your hands together at the top. And you know they will either use pressure points to get you to unlock which you can do voluntarily or you know take a saw and cut the tip off to unlock the Carabineer and clip it but that obviously has the potential of cutting your hands. I was actually filming that in San Luis in Colorado when they arrested me because they were afraid that if they cut one of the girl's hands I would have it on video. And there are other techniques. I took more prior preparation like sleeping dragons, big 50 gallon barrels set in the ground to ground level and again kind of like a cuff that as long as your forearm that goes down in the middle to ground level with a pin through the bottom and the bottom capped. Anyways that's in the middle of the barrel halfway down and then the rest is filled up with concrete and rebar so the actual barrel can't be moved but you can as needed just flip off whatever coffee lid you put to cover the top of that tube and put your arm in there and with another Carabineer bracelet clip onto the pin at the bottom.

JM: So you're in the middle of the...

R. B: Yeah so your arm is effectively buried. Actually we do that full arm length all the way up to your armpit. So without that they can only get you undone with pain pressure points. You really have to voluntarily unlock in that case.

JM: Well so in your experience can you talk about, do you believe that it was successful these tactics that you used and how was it successful if it was successful?

R. B: It's pretty easy to know when an action wasn't successful. That's when you know your affinity partner's been arrested, you've lost gear and nobody else knows about it except for the DA or the jury. You know if your actions didn't broaden the public's knowledge then you've failed. So unless it is something more direct say a sabotage of equipment...

JM: Where you're in and out or something.

R. B: Where you're in and out. But or even if you get caught. You know the lasting effect was you destroyed that piece of destructive machinery from Kudimar (?) or such you know. I'm not advocating that of course but in cases, but generally if it's well planned it is effective.

JM: It sounds like that there's a real need to connect with so that other people know where you are so that if you come up missing or whatever that there's some recourse that can be taken or...

R. B: Oh that's a huge part of it is the legal support you know you set up. Your affinity partner will be you know somebody you stick with through the action to protect each other and also to make sure neither of you gets too heated up and does something stupid. But then the legal support for after the action you know to make sure you know you get make sure the authorities know that somebody's keeping as an interest of their well being and you know make sure that they're not just being abused or disappear for you know for a period of time and to help them through the legal procedure.

JM: And then along with that's one part of it and then the other part of it sounds like it would be the publicity so that the action is known about and has an impact. So I guess a question that arises is, is that actual public education involvement more important than the individual action itself?

R. B: Generally, yes. Generally the goal is to bring this to the larger stage. Sometimes you have well meaning politicians and corporate stakeholders and so forth don't even know of what's going on and the effects of say their mining operation or logging operation. They didn't know that arson was likely the cause of this timber sale that they're profiting from. You know I think people are generally good and won't stand for it if they know the truth. Money speaks volumes though you know and that's most often used to just squelch that knowledge you know. But back to your question I would say most actions I have been involved in have been successful because they've been well planned. They've adhered to non-violence and we've done a lot of organization before to make sure that what we do gets you know shared with the public.

JM: Can you talk about the repercussions from participating in civil disobedience for you and the group possibly or other group members?

R. B: There's quite a litany of repercussions. I would say you're giving up a lot to partake in civil disobedience, not only say a career and money if you're in this in the organizing stages. But if you just show up for that day you're also you know giving up a clean record you know and possibly hurting your job prospects in the future.

JM: Yeah you said that you weren't, suffered some of that like didn't get hired for a job...

R. B: Yeah, yeah it showed up on the record. So after that I actually requested my FBI file, which I always thought was, oh you can't get your FBI file and I probably don't have one. I'm not like some crazy maniac but sure enough I got one that was five and a half pages with a lot blacked out. So I saw just about everywhere I had been that they had recorded my presence, some places which were very surprising.

JM: So somehow they're definitely monitoring the actions.

R. B: Yeah and I think...

JM: Do you think that was from somebody undercover inside the group or do you think they're satellite pictures or...?

R. B: You know, I think they do a lot at actions to; just they take pictures like we do. I don't know if they had face recognition back in the late 90s but throughout the 90s but probably you know if we can get it now on a keypad system then probably it was available to government you know decades before. So and then also I've been pretty just been pretty outspoken about my beliefs.

JM: Did that help, did those experiences help you to become more outspoken in general about things?

R. B: They did. You know you've got to give props for Evergreen. They've got a social contract that's part of being a student here that as an undergrad really made me kind of value standing behind your word and your convictions.

JM: So you think it made you a better citizen overall?

R. B: I do. I think being a good citizen is and I guess you could call it a patriot is making the hard decisions for what's needed. You know it's certainly not sitting on your ass watching TV. Somebody saw a cartoon recently of a guy telling his wife he's watching Meet the Press or something and he's like, well I'm just enduring a show of these guys arguing makes me feel like I'm doing something about it. (Laughs.) It's kind of, unfortunately that's the extent that some people go. You know it's like oh well at least I know the issues. If that's all, if you just sit on that knowledge and civil disobedience and what activists have gone through

to bring it to you have been for nothing. So it's kind of where the public has to take it or run with it.

JM: Were there physical, I mean were you ever beat or know anybody who was beat by the authorities?

R. B: I wasn't beat. I was put in pain holds, pressure points. There's a terrible one under your jawbone and they'll stick their finger in a couple of inches and just tickle this nerve and you're first response is you throw up and it just hurts so much. It takes a lot of kind of you know mental fortitude to stay locked on in those cases. I was you know I've been shackled and pushed around in the booking office you know a few times. They don't much care for activists. And just really drawn out through the process to kind of taking more of my money in the legal process. Not never, as I said physically beat but I my affinity partner that was with me, she had a nose ring and she had a pretty big bull ring in it that day in Ohio and she was actually pulled around the police station with that ring. I mean that's really nothing compared to what does happen to activists in China you know trying to stop the dams and indigenous Indians in Brazil doing the same you know they're being slaughtered in the road.

JM: Yeah people end up dead. Were there any outstanding philosophies espoused by the group besides the ones that we've talked about so far?

R. B: Non-violence is number one. Standing up for that which doesn't have a voice is another, be it the earth, the trees in particular or you know human rights issues. What number is that?

JM: That's 8.

R. B: Yeah I guess another tenant is self-autonomy. And that's why I think these people are willing to do these actions also have real strong will or real strong character too and they wouldn't fit into perhaps the Green Peace rally you know. They want to do something dramatic, courageous and are willing to do it.

JM: Well Green Peace does some pretty hectic type things on the high seas.

R. B: Yeah they sure do. I take that back. They're badass.

JM: I think I know what you mean though as opposed to just getting together in a big group and walking down where the parade route has been approved by the authorities

R. B: Right, right. It's a frustration that builds up and a sense of urgency that you've got to do something. You know and it really is a sense of satisfaction when you have pulled it off and you're locked down to the axle of that logging truck and it's not moving and the news vans are showing up you're like, okay, you know, the trucker can drag me over a mountain now but it's worth it. The word is out you know.

JM: How about lessons learned for you? And I guess this might be like life lessons or maybe it doesn't have to go that big but anything you can say that you've learned from your experience?

R. B: That sometimes it's okay to break the law for the greater good. I think there's I mean there's a legal defense about that but something for the common good you know. Because I was brought up you know to abide by the law and but also that you know you can't stand by to injustices. I think if I look back the first time I was like to hell with that. I can't believe that happened. If I was there I wouldn't have let that happen. I would give my life to stop that from happening. I was like 8 or so, and I learned about the Holocaust and saw a movie that I probably shouldn't have at that age but I was just trembling that humans did that but that was the past. And then I remember hearing how many millions were killed and then I asked like my brother and sister how much was a million and they couldn't tell me. And I asked a teacher and she actually broke it down. She was like ten dots, and she was like times ten times ten times ten times ten you know. So oh my God that many people murdered because of you know some Fascists you know some ideology. So I remember promising to myself if I could ever do something to stop an injustice, if I was able to contribute I would and I just happened to you know be here in the Northwest and the Southwest and I guess Ohio for that matter when things were happening that needed some manpower behind it you know and I guess other lessons is that you know truth speaks louder than anything. If you don't have that behind you and if you're not communicating it well then you really have nothing else to bank on but and when you have truth on your side you know you should have the courage to do what you need to.

JM: That sounded very Gandhi in there.

R. B: And then you need to articulate your message you know well and be peaceful and organized in your action you know or you'll be discredited. And you know education is I guess education and truth go along you know you're educating people about the truth and it's not like some holy truth. It's just like facts, you know (laughs), what's happening. And such as salvage logging, you need to get out those ecological understandings now about the value of you know downed timber in the woods. If you can't articulate that there's really no sense in putting yourself in harm's way to do any action because the public well they're going to be skeptical anyways and some dirty hippie or crazy activist now known as a terrorist.

JM: And just to let people know you don't look like a crazy hippie at all. I mean you've got a beard but it's well trimmed and you've got a nice shirt on and whatever so just as an image.

R. B: As a visual huh?

JM: As a visual, yeah.

R. B: I do have my dog at my feet though. I am sort of hippie-ish.

JM: That's all right.

R. B: I know one of your questions is what do you think of society today? And I think that...

JM: What does it say about society I guess?

R. B: Yeah. Well first of all I mean you can look at the complacency in the country overall as really discouraging about the future of the United States and you know totally contradicts what America was founded on you know of from the Native Americans to the immigrants you know and to couch potatoes. But it's still the roots of concern and compassion are still here. I'm afraid the media and the conveniences of modern life have really dulled people's feelings but if you can kind of bring to light what is happening in the importance of making right decisions with a mixture of science and your brain and your heart you know such as salvage logging, really just know what the facts are, and then you can ignite this passion that I think has made this country what it is you know. And it's happening you know. It's not just in the future. It's happening. It needs as many

people on the frontline as possible though because you know we get tired, drained, depleted, and/or confined.

JM: Yeah I imagine that it does take its toll. Before I forget on this subject about what it says about our society, I guess an important question for me again is the timeline sort of thing. So again I guess I asked this earlier but to reiterate it you know it kind of seems like the civil disobedience is necessary because of the time constraints, that there's not time to allow for this evolutionary path to get to where you know either you know we decide that salvage logging is not the right thing to do and should it be done for ecological reasons or fire reduction or whatever, that if you're going to do it, it's because it's next to a road and it's economically viable and it's a safety concern, something like that. Or going back to the issue of climate change, that you know there really is no time left you know for a slow, gradual process like really you know the crux of it is now and that in a way the necessity of civil disobedience is saying that our society is not capable of making those type of decisions in a timely fashion if left to its own structural decision making process.

R. B: Yeah. Wording the issue makes all the difference I've found such as with the climate change issue. You can't say you know the planet's warming up and we're all going to boil you know within 50 years or be under a rising ocean you know because people are skeptical enough about that and it gets people really heated when you just interject climate change, global warming. But the way that I word that even to friends you know back in the Midwest you know, hunting buddies for instance you know, we're talking about environmental issues. I won't use those words. I'll say you know basically is it right that we are releasing mercury into the water and air and all these poisonous contaminants and denuding the forests and you know just trashing the rivers and what not you know. Talk about like the particular actions that are happening not the supposed consequences.

JM: So it kind of seems to me like you're saying you're focusing in on the human level a one to one or a group of people that you're connecting with on a smaller level as opposed to talking about it in a grander sort of sense like that that seems to be more efficient or effective?

R. B: No I don't think it's necessarily more on an individual level. Well it's how I talk individually to people yes. But I think that the urgency of these campaigns and the ability of direct action to play a part you know rests on our communication about the issues and how you know we need the public to be

receptive in order for them to listen. And just wording the issues is important. Having science behind it and it doesn't hurt to understate the issue a little bit. You know it gets, you throw in a bunch of adjectives and passionate you know words and people are going to be like okay crazy. They'll be like did you know we put in a you know four billion tons of this or that you know has gone into the oceans already and increasing by this and the effect on the animals and you know instead of saying talking about the loss of ecosystem services. You talk about dude; did you know this waterway used to provide the filtration capacity of half a dozen water treatment plants? Which is millions of dollars. What are we going to do now when we can't drink the water, maybe restoring the natural functions or whatever. You know but you need the science behind it and you need to allow people to connect with the issue and see why it's important to them and not make it political, not make it, not let it be politically charged to drive people away at first.

JM: I get what you're saying for sure. I think a lot more effective that way then, yeah. Well, this has been really good for me. I guess the last question that we haven't really gotten to, is the climate today different than when you participated in civil disobedience? And I guess what I'm trying to get at is, we had talked last week or something about how certain, they're calling it environmental terrorism and the consequences of participating in civil disobedience under if you're found to be a terrorist, I think the consequences are much more extreme than they were back in the Warner Creek time.

R. B: Yeah, a lot of it since 9-11 you know and the Patriot Act. You can easily be labeled as a terrorist. But again you know your, the way you frame your argument makes a big difference, you know. Just proving how patriotic your act is in defending our country's forests. Hence, ecosystems services you know our lifeline and sustainable jobs, sustainable resources, you know. It depends on how you frame it you know. It doesn't matter so much to the DA in that case sometimes but just generally reframing the activist movement. And we have so many resources on hand now to really jumpstart you know activism from the Internet for networking, seeing the role of social media and the revolution in Egypt was just amazing. At the same time seeing the censorship in China against environmental activists there is just as mind blowing. But we just have a lot more networks. We also have a lot of tools we can use. We kind of put together a very ad hoc remote or live video recording device on the reservation. It involved you know one of these old like eight pound laptop computers with a battery that lasted like 40 minutes, a cell phone bag, what we call bag phones. They're a precursor to today's cell phones. They actually had like a battery in a bag and it was a car

phone. And that didn't work so well so we got one of the newer cell phones. Anyway, we had a little digital camera, a digital video camera that we would slow down the frames and send them through the cell phone and the laptop.

JM: So it was a live...?

R. B: It was a very choppy live feed but it was enough to scare the BIA agents who came out to impound livestock and horses from the Navaho elders who were resisting relocation you know imposed by Peabody Coal Company in Arizona. It was enough to stop them not to unload the bulldozer from their trailer intended to knock down the ceremonial Hogan, another way to just weaken the resistance of the Dineh elders. Needless did they say it was kind of unlikely that much of an image would get out but you know we were trying and we could get some things out. But nowadays I mean you've got all of that in your palm and many people do. You know they can be recorded from all angles and you know just the knowledge of your rights and access to scientific information about your issue and salvage logging you know. I think the greatest need there you know I'm not involved in that now but is to share with the public that it's a hoax that we need to remove those trees. It's just a financial gain and sure people will make their decision on that. Maybe it's worth it. Maybe we want to go ahead and it's easy pickings. But you've got to spread the truth about that and let them decide.

JM: I guess a real quick question. I was looking and you were talking about the Alcoa Tacoma port shutdown, and then I was wondering if you know comparing that to maybe the Warner Creek roadblock, was the, do you think the Tacoma port thing was more successful because of its economic importance? I mean shutting down a port for two weeks or however long you said, that's a huge economic like wakeup call for some people. Do you think that that made that a more successful type operation than the Warner's Creek or?

R. B: Yeah, for many reasons, not just the economic impact on the port and on Alcoa but the alliance between environmentalists and the unions.

JM: Yeah that struck me too, that they actually asked Earth First to join them in that. That seems like a bold move for a union to do.

R. B: You know the trendy brotherhood bar downtown here in Olympia? It used to be a you know proper union bar and we'd go there for organizational meetings and you should have seen our rag tag crew with the longshoremen you know and

their yellow slickers just like hashing out what we were going to do. It was a pretty neat alliance.

JM: I bet. Yeah that sounds pretty cool. Well listen, Tim, is there anything that you want to add to this?

R. B: Just if you could loosen up these handcuffs a little bit I'd be more comfortable. (Laughs.)

JM: Okay, yeah sure.

R. B: No this is good revisiting this and recognizing how it has turned me to where I am in graduate school now and I'm focusing on collaborative conservation and conflict resolution with environmental and social issues. So it's kind of neat once in a while to stop and think about what brought you here.

JM: Yeah well it's a real piece of history I think you know.

R. B: Yeah. Good luck with the paper. I look forward to reading it.

JM: Yeah thanks. It's coming along.

R. B: All right.

JM: I'll shut this thing down.

