

“A man who has
lost his sense of
wonder is a man
dead.”

—William of Saint
Thierry

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By Scott Hollis
MES Student

It should be quite obvious to anyone who's gazed upwards into the moss-draped canopy of a temperate or tropical rain forest that such an ecosystem is much more than the sum of its individual trees. A thriving community of mosses, lichens, vascular plants, mammals, insects and birds inhabits the three-dimensional realm of the forest canopy—some living their entire lives without ever touching the forest floor. In order to truly understand forest ecology and the responses of forests to environmental threats, we must understand how the entire forest works—from root tip to tree top. Canopy ecologists now use rock-climbing techniques to ascend trees taller than 30-story

buildings to identify the plants, animals, and microorganisms living in the treetops.

Canopy ecology is a relatively new branch of forest research often conducted in remote, rugged tropical environments around the world, but it is alive and well here on Evergreen's campus at the International Canopy Network (ICAN), where I work and conduct research for my thesis. ICAN is a nonprofit organization



**Scott Hol-
lis scaling a
tree in the
Quinault
Rain For-
est**

devoted to facilitating the continuing interaction of people concerned with forest canopy ecosystems around the world (<http://academic.evergreen.edu/ican/ican/>). It is supported by a global community of scientists, conservation advocates, canopy educators, and environmental professionals to develop effective strategies for research, education and conservation. The organization is headed by Evergreen faculty member Nalini Nadkarni, who is an internationally-known canopy ecologist with over 30 years of experience studying canopy ecosystem processes.

I became involved at ICAN because of my interest in environmental communications and ecology. As an MES student, I am deeply curious

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Carbon Detective on Sustainability Mission

By Annie Lindberg
MES Student

I am a first-year MES student working as Centralia College's Sustainability Intern, an opportunity made available to me through the MES program last fall. In September 2007, Centralia College signed the American College & University Presidents Climate Commitment, joining Evergreen and hundreds of other colleges nationwide in a pledge to eliminate greenhouse gas emissions over time. It has been my privilege to help make this happen.

In January of this year, I set to work. My first task: to define the

college's elusive carbon footprint. But first I needed to decide which emissions to include in my inventory. Ideally, my search would prove exhaustive, incorporating emissions from the smallest sources to the most prominent, but in reality, time and the availability of records limited my scope. Fortunately, Centralia College (CC) filed and systematically archived records of its electricity use, natural gas consumption, college-fleet fuel consumption, and college-reimbursed travel miles (both air and car). To quantify these emissions, I literally waded through thousands and thousands of papers. I looked for relevant data, recorded it in Excel, and converted it to units

of “metric tons of carbon dioxide equivalents” (MT CO₂E).

Obtaining accurate data on commuter habits, fertilizer application, tonnage of solid waste disposal, and refrigerant use, though, proved tricky. Putting my

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Annie with one of her favorite critters—the tortoise!

The Evergreen Avian Monitoring Program

By Jora Rehm-Lorber
MES Student

With an interdisciplinary Bachelors of Science degree from Evergreen and several years working as field biologist, I returned to complete the Master of Environmental Study and conduct my own research in ornithology (the study of birds). I was particularly drawn to the MES program by a desire to carry out my own research endeavors in a way that would contribute to the conservation of birds in the Pacific Northwest. Little did I know that a new professor in ornithology and natural history had already begun to think about the bird communities of the campus's forest reserve, the largest tract of non-managed, second-growth rain forest in South Puget Sound. Dr. Alison Styring was interested in monitoring Evergreen bird populations, but needed a student to take the project under her wing (no pun intended!). I became that student, and this project became my thesis.

The Evergreen Avian Monitoring Program (EAMP) is the child of a larger ecological monitoring program started at the college in 2006. The Evergreen Ecological Observation Network (EEON) consists of 51 permanent plots in a randomized grid across the entire campus. Basic forest structure data exist for each of these plots, with marked live trees, snags, and downed woody debris. These forest plots allow students and faculty to track temporal changes in forest ecology ranging from soil respiration to net primary productivity. EAMP is the first addition to the network focused on population structure and function of vertebrates.



Aerial view of Evergreen's campus; the forest reserve increases in value as surroundings are developed.

As an interdisciplinary scientist, my thesis consists of three chapters, each addressing the importance of monitoring long-term changes in bird populations in our rapidly changing world. Chapter One describes the baseline bird community data. How many land birds does the campus support? What species occur here? Who are the confirmed breeders? Such information informs future student research and guides campus land-use objectives. Chapter Two addresses hypothesis-driven research by asking how forest structure affects bird communities. If you walk through the evergreen forest you might notice it to be extremely heterogeneous; one moment you will probably wander through a forest dominated by early succession alder and the next be immersed in a dense forest of towering cedars and hemlocks. How might these factors influence the birds living and breeding there? After addressing the usefulness of monitoring birds and providing an example of the empirical work that is possible, Chapter

Three turns to the methodologies of EAMP and the educational and outreach opportunities the program will provide. I hope students will continue to refer to this chapter as EAMP moves from implementation to a foundational component of scientific research and education at the college. Think of it as a guidebook for research projects involving birds at Evergreen. The protocols and data collection material provided will not only inspire students to engage in independent and collaborative research, but will standardize data collected over time, providing a long-term dataset comparable to only a handful of other multiple-decade programs across the globe.

The success of EAMP will be determined by future student interest and outreach via electives and core programs. Whether you are a natural scientist or resource manager, a policy maker or a citizen advocate interested in public education, EAMP provides research possibilities for students looking to assess the ecological, political, and economic changes that our college and the local area face. If our forest reserve will remain protected for years to come, it will only be through the effort and engagement of students developing new ways of thinking and providing critical information to campus decision makers. The Evergreen forest reserve, EEON, and EAMP offer an affordable, local, and diverse research resource for students as their graduate education takes shape.

Jora Rehm-Lorber plans to graduate in December 2008 and continue chasing birds in the Sierra Nevada.

"I was particularly drawn to the MES program by a desire to carry out my own research... that would contribute to the conservation of birds in the Pacific Northwest."

The 18th Annual Rachael Carson Forum

By Lucienne Guyot
MES Student

The Graduate Student Association's 18th Annual Rachel Carson Forum on May 20th was coordinated by MES students J Cantin, Lucienne Guyot, Patricia Hildebrandt, and Su-Miao Lai. Each year, the group of coordinators asks for nominations from all current MES students. We put out a ballot based on the nominations and eventually come up with a speaker. The Rachel Carson Forum also typically includes a cultural component. Other years have seen a renowned classical guitarist, a local percussion band, and many other musicians. Once the speaker is selected it is all systems go. The Graduate Student Association (the Association) chose to commission MES student and graphic artist Natalie Pyrooz to create the advertising poster. The Association is responsible for all aspects of planning the annual event, from contacting and negotiating with the speaker and the entertainment to securing media services and the venue on campus.

Our lovely Longhouse served as a welcoming arena to William Ruckelshaus, former administrator of the EPA and current chair of the Puget Sound Partnership, and local acoustic jazz band Hot Club Sandwich. Ruckelshaus, who is also on the advisory board of Evergreen's MES program, spoke to an audience of around 100 people. One gentle-

man came from Tacoma just to hear Ruckelshaus speak on the topic, "The Health of Puget Sound: It Is Up To Us." An undergraduate writing class was in the audience as well. Ruckelshaus highlighted other partnerships and organizations across the country with similar endeavors. He asserted that he felt strongly that if we worked together, we could improve the health of our local treasure, which looks beautiful on the outside, but is hurting on the inside. Ruckelshaus fielded a few questions from audience members and left us feeling that in the face of such a difficult task, he, an environmental icon, is still hopeful.



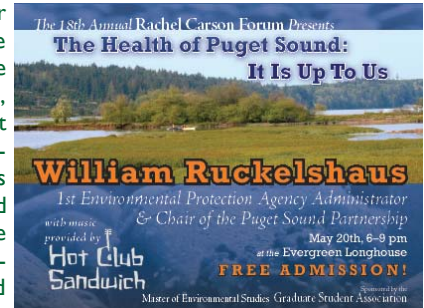
William Ruckelshaus spoke on the health of Puget Sound

After Ruckelshaus' speech, the audience members were treated to the musical, gypsy jazz stylings of Hot Club Sandwich. One of the musicians who played the violin received his undergraduate degree from Evergreen. To the amazement of a group of MES students waiting for the event to get under-

way, he produced his old, worn student ID card. Perhaps his connection to our school is the reason for the s o n g , "Stompin' at Kaos." Referred to as part string and part bop, the talented musicians played several upbeat songs on their beautiful string instruments before we learned we were in for something delightful. Luke Painter, an MES alum, brought his wife, Michelle, with him to the Rachel Carson Forum. Later in the evening Hot Club Sandwich called for requests. One thing led to another and Michelle was on stage singing, accompanied by the band. Her voice was rich and melodic, with a sound that harkened back to Billie Holiday.

It was a pleasure to have William Ruckelshaus, a key environmental figure, speak to us about the Puget Sound Partnership. Hot Club Sandwich was very talented and lively. The 18th Annual Rachel Carson Forum was a great success. Stay tuned for next year's speaker and cultural component!

Lucienne Guyot is a member of the Graduate Student Association and expects to finish her MES degree in the fall.



Flyer by Natalie Pyrooz advertising the event.

Congratulations to the Graduating Class of 2008

Graduation festivities will take place this Friday, June 13, 2008. The joint MES/MPA/MPA Tribal hooding ceremony begins at 10:00 am in Evergreen's Longhouse. Doors open at 9:30 am, and refreshments will be served. Friends and family are welcome.

The hooding ceremony will be fol-

lowed by an all-school graduation in Red Square at 1:00 pm, rain or shine, followed by a reception in the Longhouse.

This is a time to celebrate the great accomplishment of the class of 2008. Come support your classmates, and congratulations to the graduates!



“We have an opportunity in Washington to take our leadership in green building to the next level.”

Alumna as Green Building Coordinator

By Rachael Jamison
MES Alumna

When many of us think about “green building,” it is easy to drift back to the 1960s and ‘70s, when the back-to-the-land movement was in full swing and tension between environmentalists and industry was palpable. Times are changing. Today, “green” applies to buildings ranging from 30-story office buildings, to luxury homes and multi-family developments, to the straw-bale homes built for—and often by—single families.

Washington has led the country in transforming the green building movement into a viable industry. For example, Washington was the first state to require that publicly-funded buildings comply with green building standards. Washington was also the first state to offer statewide residential green building certification through BuiltGreen programs.

Recent events in Snohomish County, however, where four 3-5 Star BuiltGreen luxury homes were burned down by arsonists in the name of the environment, have stimulated a debate about what is truly “green” and which “green” standards are actually environmentally sound. To begin addressing questions that have been raised, it may be helpful to get clear about what the green building standards in Washington are and are not.

Washington State has a number of green building standards to which a private home or a commercial building can, and in some cases must, be constructed.

Leadership in Energy and Environmental Design (LEED). The LEED standard is developed by the United States Green Building Council, a DC-based nonprofit organization. Within the LEED system, standards exist for new construction, existing building (major renovation), homes, and schools. The standard is broken down into five major categories: sustainable sites, water efficiency, energy and atmosphere, materials and resources, and indoor environmental quality. Both required and optional credits are contained within each LEED program. A builder must achieve the minimum within each category and can choose which of the optional credits s/he wants to achieve to obtain LEED certification. Level of certification (certified, silver, gold, or platinum) is based on the total number of credits the project achieves.

BuiltGreen Washington.

BuiltGreen programs across Washington are developed and implemented by individual Master Builder Associations and apply exclusively to residential construction projects. Similar to LEED, the programs contain five primary credit categories, including required and optional credits: site and water, energy efficiency, health and indoor air quality, and materials efficiency. Three- to five-star levels of certification require third-party verification that the goals of the project have been met.

Public Sector Standards.

In 2005, the Washington Legislature passed a bill requiring all public projects, from commercial office buildings to affordable housing projects, be built to one of three green building standards: LEED Silver, Washington Sustainable Schools

Protocol, or The Evergreen Standard for Affordable Housing. After July 1, 2006, all state projects that received funds from the capital budget had to be built to the LEED Silver standard. After July 1, 2007, all K-12 schools that received funding from the Office of the Superintendent of Public Instruction had to be built to either the LEED Silver standard or the Washington Sustainable Schools Protocol (a standard developed specifically for K-12 schools). Finally, after July 1, 2008, all homes receiving Housing Trust Fund dollars must be built to comply with the Evergreen Standard for Affordable Housing, a standard developed specifically for affordable housing in Washington.

No green building standards in Washington, in either the private or public sectors, restrict or offer credits for reduced square footage. A large, green-built luxury home can ultimately do less damage to the environment than a small, non-green home due to using local, nontoxic materials and incorporating energy-efficient techniques.

We have an opportunity in Washington to take our leadership in green building to the next level. Green building can be a mechanism to build bridges between environmental groups and businesses to grow an expansive market for clean energy jobs, to revive rural communities by keeping the timber industry alive and thriving, and to ensure that every family lives, works, and plays in healthy indoor environments.

Rachael Jamison is a 2003 MES graduate and currently works at the Department of Ecology as the Green Building Coordinator in the Solid Waste and Financial Assistance Program.



A BuiltGreen house in the Olympia area.

MES Opportunities at the Canopy Lab (continued)

about ecosystem processes and concerned about environmental protection, but I also am keenly aware that the way in which both are communicated to the public and to decision makers largely influences how forests are managed and used. The cross-disciplinary framework of ICAN's mission has allowed me to be involved in both and has helped me achieve my MES goals. I have had the opportunity to conduct tree-climbing fieldwork in the Quinault River valley of the Olympic National Forest, network with canopy ecologists from around the world, interact with young students, and promote the aesthetic values of forests with numerous creative people. Here is a sampler of some ICAN activities:

Research. ICAN publishes new findings in a quarterly newsletter, "What's Up?"; promotes connections among researchers through our email bulletin board; and compiles new canopy research in an online scientific database containing more than 7,200 scientific publications. ICAN also collaborates with Evergreen's Canopy Database Project, which addresses issues of data

acquisition, management, analysis, and exchange relating to canopy studies at all stages of the research process.

Outreach. ICAN's Board and staff publish popular articles on forest canopies and regularly consult with the media to supply scientifically sound information for newspaper and magazine journalists, radio commentators, and television writers and producers. ICAN also established the Research Ambassador Program (RAP) to reach nontraditional audiences with science and conservation messages. ICAN promotes and sells TreeTop Barbie, a modern-girl Barbie doll prepared with all the accoutrements she will need to access the forest canopy and discover its mysteries. ICAN has worked with minimum-security prisoners and school children. ICAN and RAP have brought legislative aides to the forest canopy as well as artists and musicians to allow opportunities for learning and new views of the forest canopy.

Education. Children's education about the canopy is of highest importance. The long generation time

of trees imposes a long-term view of conservation, so investment in educating young people is crucial to the fulfillment of ICAN's missions. ICAN has developed several programs and projects, such as the "Ask Dr. Canopy!" program. This program provides scientifically sound information about the canopy to children, and directly connects inquisitive students with researchers.

As an MES student, ICAN has given me a unique opportunity to study canopy ecology, plus work with others for forest conservation. Anyone interested in canopy ecology and conservation can contact us about a work/study position at ICAN. Stop by our office at 3064 Lab II, or contact me at 867-6788; canopy@evergreen.edu.

Scott Hollis is a second-year MES student interested in environmental communications. See his ICAN videos at http://youtube.com/view_play_list?p=75C0B7D72AFA47AB.

"ICAN has given me a unique opportunity to study canopy ecology..."



Evergreen's canopy lab is part of the International Canopy Network (ICAN).

Carbon Detective (continued)

MES-ingrained industriousness to task, I developed surveys, conducted interviews, and took measurements. Inspired by the cause and motivated by the challenge, I became a carbon detective on a sustainability mission!

Ultimately, I calculated Centralia College's 2006-2007 emissions to be 28,690 MT CO₂E (4.3 MT CO₂E per full-time equivalent student); this is significantly less than the national average of 11.2 MT CO₂E. Despite the favorable comparison, it is essential to look at the larger picture. Whereas many colleges are residential, Centralia College is a commuter campus devoid of dorms, resulting in colossal commuting emissions. Eighty-six percent of the college's total emissions come from student commuting,

with some trekking 50 miles every day just to get to class.

Our first task is complete—we have developed a baseline carbon emissions inventory—but the work that I am most excited about lies ahead! Centralia College is now beginning to formulate concrete goals for the reduction of carbon emissions and to develop and institute a plan of action. How can we best facilitate a change in deeply ingrained behaviors such as commuting habits? Clearly, the answer demands a creative, multi-faceted approach. Significant change will be a challenge, no doubt, but with the support of Centralia College's sustainability committee, an exceptionally inspired, motivated, and eclectic group of faculty, staff, students, I am both hopeful and excited about the road ahead.

I am fortunate for the opportunity to immerse myself in this sustainability project, working to elicit real, positive change. This summer I will focus my work on reducing CC's commuting footprint by negotiating more convenient bus routes with public transit, developing a carpool website, investigating the possibility of installing bike racks and bike lockers, and developing a sustainability workshop for incoming students. I am optimistic that next year's footprint will be smaller than the last!



Bicycle commuting may help reduce emissions.

Annie Lindberg is from Seattle and graduated from Pomona College with a BA in biology.

EVERGREEN

THE EVERGREEN STATE COLLEGE
OLYMPIA, WASHINGTON

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Graduate Study at Evergreen

- ✦ MES integrates the study of the biological, physical and social sciences with public policy.
- ✦ Its core curriculum explores the interactions among environmental problems, policy responses and environmental science.
- ✦ Electives and a thesis project allow students to develop specialized skills and knowledge in areas of their choice.
- ✦ Faculty members come from biological, physical, social science, providing a full understanding of environmental issues.
- ✦ The program is centered on highly participatory evening classes that accommodate full- or part-time students.
- ✦ MES alumni combine an interdisciplinary understanding of environmental sciences with the skills and wisdom to intelligently address environmental problems.
- ✦ Many alumni are employed in the public, private, and non-profit sectors, while others continue their graduate study in related PhD programs.

**Registration Open for
Summer Courses**

Letter from the Director

Evergreen is in love with evaluations. At the end of every course, students write self-evaluations, evaluations of their instructors, and evaluations of their courses. Their instructors write self-evaluations, evaluations of their teaching partners, and evaluations of their students. Faculty members write annual retrospective self-evaluations, and I also write an annual self-evaluation of my work as MES Director. Even the President of the College writes a self-evaluation and sends it to everyone else at the college each year via email. We do a lot of evaluations.

Now it is the end of the spring quarter of 2008, and I find myself in the midst of all this evaluating. But I just can't get enough. I want even more! I want YOU to write to me with your evaluation of the MES program.

Whether you are among current students, prospective students, alumni, faculty colleagues, college administrators and staff, members of the community, or anyone else, I urge you to write to me with your thoughts. Knowing what you know about the MES program, tell me what you think about what's good and bad in our program; changes you wish we'd make; things you want to make sure we keep doing. If you are an



**Ted Whitesell, Director of the
Graduate Program on the
Environment**

alumnus with a story to share about what you've been doing since you left, please let me know. I just can't get enough evaluations from those we are serving, we have served, and we are going to serve. I look forward to hearing from you. Thanks and Happy Summer!

Best wishes,

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