

SALMON
Group Contract/ Fall 1994

Faculty Sponsors: Lawrence Eickstaedt, Robert Sluss, and Peter Taylor.

General. This program was about the Pacific salmon and trouts: their biology, uses, management, and conservation in the Pacific Northwest. A principal focus was freshwater ecology and the interactions of forest, streams, and salmonid fishes in forested watersheds west of the Cascade Range. Issues of salmon in the Columbia River-basin were also examined. Water quality and aquatic insects, which are important elements of salmonid freshwater ecology, were featured in lab and field studies. Program activities overall included assigned reading, lectures by faculty and invited speakers, labs, field trips, seminars, and research projects.

Texts. Readings were assigned in: *Influences of Forest and Rangeland Management on Salmonid Fishes and Their Habitats* (W.R. Meehan, editor), *Ocean Ecology of North Pacific Salmonids* (W.G. Pearcy), *Better Trout Habitat: A Guide to Stream Restoration and Management* (C.J. Hunter/ Montana Land Reliance), and *An Introduction to the Aquatic Insects of North America* (R.W. Merritt and K.W. Cummins, editors).

Lectures. Faculty-sponsors covered: an overview of biological and human-social topics and issues of Pacific salmon in the Pacific Northwest, the species of Pacific salmon and trouts, their distributions and ecological life histories, stream ecology for salmonids, the anatomy of salmon and trout, the systematics of teleostean fishes and Salmoniformes, the phylogeny and evolution of the Salmonidae, Columbia River dams and the technical problems and solutions (existing and proposed) for passage of salmon and trouts, introduction to aquatic insects, survey and selected highlights of aquatic-insect taxa, and selected water-quality parameters of freshwater streams (oxygen, phosphate). Invited speakers variously presented stream-survey methods, stream-habitat classification, field surveys of rivers and salmonid habitats of the Olympic Peninsula, salmon-habitat restoration in the Chehalis Basin, the influence of salmon carcasses on stream ecology, Chehalis River-basin water quality studies, aquatic insects as water-quality indicators in freshwater habitats, Native Americans and the Columbia-River fisheries, and proposed restoration of the Elwha River. Two videos featured various social (cultural and political) issues of salmon fisheries, environmental degradation, dams on the Columbia and Snake Rivers, and salmon farming.

Seminars. There were three seminars early in the quarter. The first was to compile a list of salmon topics and issues. Two seminars were held to discuss reading in *Mountain in the Clouds: A Search for the Wild Salmon* (Bruce Brown).

Labs. The identification of aquatic insects was the basis of lab sessions during weeks 1-4, based on examination of samples from local streams. The primary reference was *An Introduction to the*

Aquatic Insects of North America (R.W. Merritt and K.W. Cummins, editors). Continuation of aquatic-insect identification (and of other invertebrates) in subsequent weeks was optional and related to the research projects described below. Labs on water quality during weeks 1-6 (instructed by Susan Landesman) featured quantitative determinations of dissolved oxygen, phosphate, ammonium/ ammonia & nitrate, and coliform bacteria. The water-quality labs were optional during weeks 7-8 for applications of the methods to water samples collected for research projects (see below). One lab session featured salmon anatomy, based on examination and dissection of fresh aquaculturally-reared specimens.

Field trips. Observational/ informational field trips were conducted to the Chehalis River-Basin (salmon hatchery, habitat-restoration projects, aquatic-insect collecting), the Bonneville Dam on the Columbia River (fish-bypass facilities), Porter Creek (salmonid-habitat restoration, salmonid ecology), and Kennedy Creek (spawning behavior).

Academic journal. As an ongoing assignment, each student was expected to produce written notes, reflective comments, and weekly summaries or syntheses about all activities, including lectures, reading, labs, field trips, and project work, accumulated in an organized notebook.

Research projects. A major research assignment for each student, to be pursued individually or in small groups, following one of two options. One option was to assess the present status of salmon habitats and runs of a local stream or watershed, reviewing references and undertaking field studies as practicable, with the goal of recommending "prescriptions" for their restoration and/or improvement. The other option was to research a particular biological or human-social topic, not necessarily geographically specific, of Pacific salmon or trout. Research on either option was to be produced as a written report. A final informational exchange about the projects were poster sessions and discussions of the findings presented.

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