United States Environmental Protection Agency

Office of Research and Development
National Health & Environmental Effects Research Laboratory

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WESTERN ECOLOGY DIVISION

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Meeting Information Needs for EPA and the Nation

The Western Ecology Division (WED) is part of the National Health and Environmental Effects Research Laboratory (NHEERL), with research facilities in Corvallis and Newport, OR. WED scientists provide information to EPA offices and regions nationwide to improve our understanding of how human activities affect estuarine, freshwater, and terrestrial ecosystems.

The Division addresses a broad range of ecological issues. Our scientists collaborate with other EPA research labs, as well as with scientists in other programs located in Corvallis and Newport, such as Oregon State University, USDA Forest Service, USGS Biological Resources Division, and NOAA Fisheries. These collaborations have greatly enhanced our collective capabilities.

above: Novel sampling designs and biological indicators ensure accurate assessment of aquatic condition

Field data and stress-response modeling improve estuarine water quality criteria.

Contributing to Environmental Improvements

Past research programs at WED have informed environmental policy in the United States and elsewhere. Early work on contaminated waters led the Office of Water to develop water quality criteria. WED scientists led efforts in ***acid rain research*** that influenced U.S. .policies restricting air pollutants. Studying the ***effects of ozone on terrestrial ecosystems*** led the Office of Air to undertake changes in regulations. WED scientists have developed ***techniques for assessing the condition of aquatic ecosystems*** that are used nationally. Wetland assessments have ***helped define new federal policies***. Research at WED has contributed to ***better tools for pesticide risk assessments*** for protection of wildlife and their habitats.

Landscape and population modeling identify important stresses on wildlife

Continuing Leadership in Environmental Research

Research at WED continues a long tradition of developing information to meet Agency and national needs. Current work focuses on providing data for the Offices of Water and Pesticides, as well as information requested by Regional EPA Offices, benefiting citizens across the United States :

►**Monitoring the Nation's Waters:** Scientists at WED's Environmental Monitoring and Assessment Program (EMAP) have developed innovative approaches to monitoring coastal and freshwater environments. Federal and State Agencies which implement the Clean Water Act rely heavily on information generated by EMAP to evaluate the condition of U.S. waters.

►**Salmon Habitat:** WED is working to identify stream and landscape characteristics that are important spawning and rearing habitats for at-risk populations of coho salmon and other native fish.

►**Freshwater/Estuarine Ecosystems:** Nutrients coming into streams, rivers and estuaries can have both positive and negative effects on aquatic life, and can impact the use of those waters by humans. WED scientists are providing information that will help establish nutrient criteria and guide management of excess nutrients coming into our nation's estuaries.

►**Pesticides:** Crops, native plants, and wildlife face individual and cumulative risks due to pesticide use. The EPA's Office of Pesticide Programs assesses the environmental risks posed by pesticides to a variety of plant and animal species, utilizing many innovative techniques developed in WED laboratories. Research may also predict other stressors on key wildlife species and ecosystem processes.

►**Genetically modified crops:** Recent concern over use of genetically modified crops has prompted WED research into the potential ecological risks caused by movement of genetically altered material into native plant communities.

above: WED researcher conducts an analysis under black light

WED'S CAPABILITIES

above: The future of wild salmon in the Pacific Northwest remains the subject of ongoing research at WED.

The long-term success of WED is due to its dedicated and highly capable workforce that consists of over 70 federal employees. In addition, WED works with contract employees, research collaborators, student interns and post-doctoral researchers to address priority research needs of the agency.

Our scientific expertise is distributed among three research Branches:

► Freshwater Ecology Branch

- Developing new indicators and approaches to assess biological condition of freshwater resources
- Developing new statistical survey designs to assess status and trends in biological condition of aquatic resources
- Developing understanding of headwater streams and isolated wetlands and how they contribute to the biological condition of other aquatic resources
- Characterizing and assessing ecoregions across the United States

► Pacific Coastal Ecology Branch (Newport)

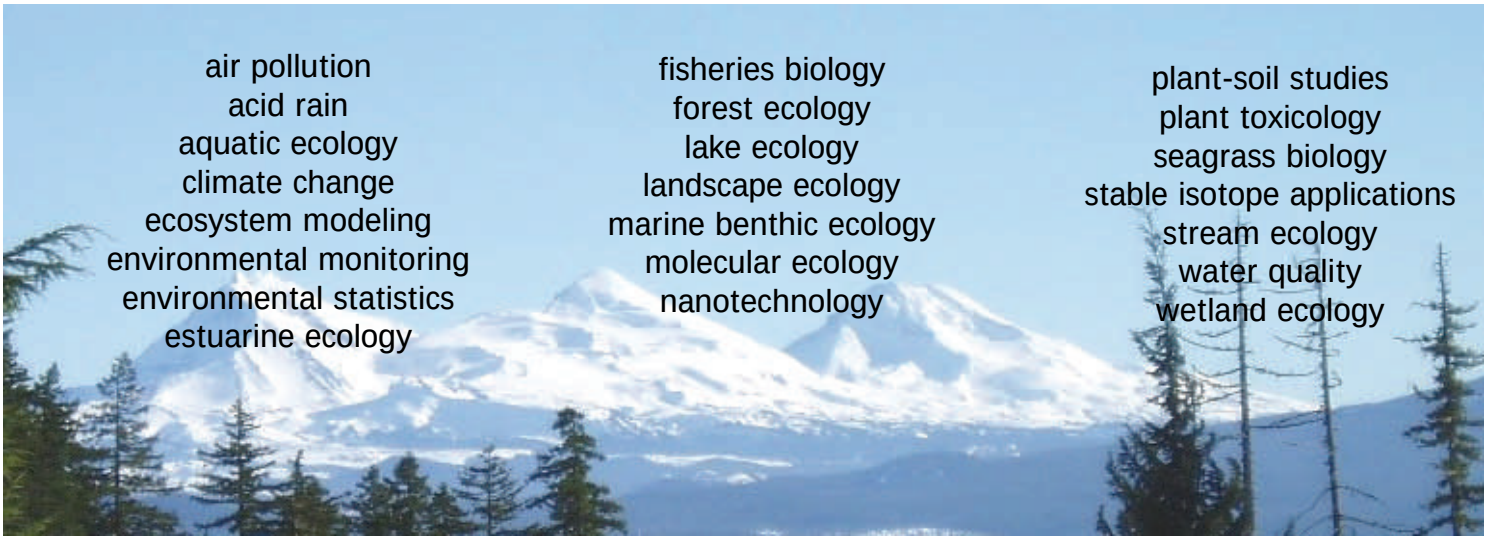
- Developing models of the effects of stressors such nutrients, sediments, toxics, and non-native species on estuarine species, habitats and ecosystem processes
- Developing new indicators of ecological condition of estuarine and near-coastal environments
- Developing approaches for evaluating the impacts of habitat alteration within estuarine systems

► Ecological Effects Branch

- Developing tools to understand and predict effects of stressors on terrestrial ecosystem functions
- Characterizing relationships between terrestrial ecological processes and aquatic ecosystem conditions
- Analyzing the effect of landscape patterns and pesticide applications on habitat quality for wildlife
- Understanding risks to native plants associated with genetically engineered crops

WED—Addressing New and Emerging Information Needs

Our disciplinary expertise allows us to be prepared to respond to new and emerging Agency needs effectively and efficiently. Among the many issues that can be addressed by our scientists, staff, and unique experimental facilities are the following:



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—WED—
providing sound science for environmental decision-making

Visit our Website
for more information**:**
http://www.epa.gov/wed/