

COASTAL STEELHEAD TROUT: LIFE IN THE WATERSHED

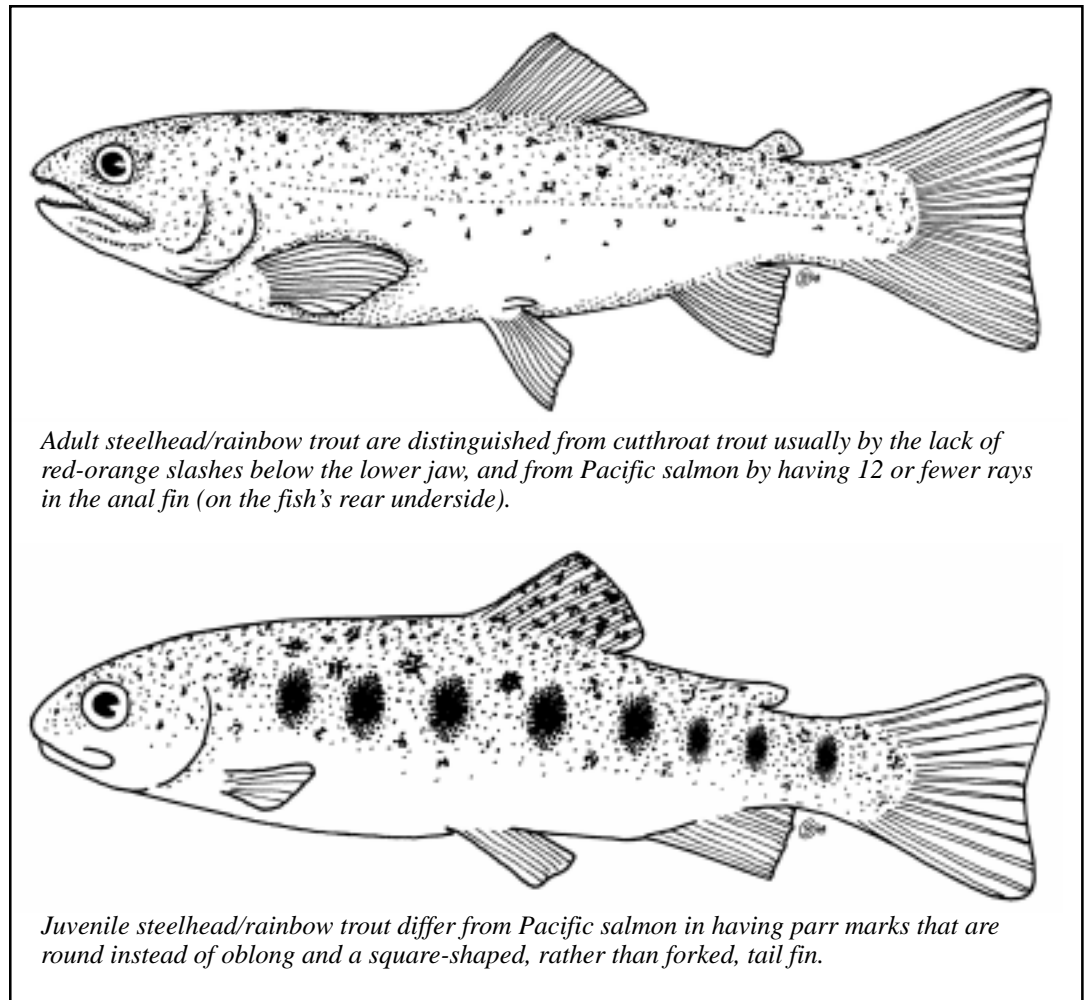
Anglers and nature-lovers prize steelhead trout for their mystique and power. Oregon has two subspecies of steelhead (so-called because of the metallic appearance of maturing adults) or rainbow trout: a coastal form and an inland form.

Like the closely related cutthroat trout and chinook salmon, coastal steelhead have diverse, flexible modes of life. Some populations (steelhead) undertake long ocean migrations while others (rainbow trout) reside full time in freshwater. Different steelhead populations migrate during distinct portions of the year.

Coastal steelhead are widely distributed from southern California (historically, even into Baja California) to the coast of Alaska's Bering Sea. In Oregon, coastal steelhead live their various life histories in most coastal and lower Columbia River streams (as far east as Hood River).

A typical mature coastal steelhead is slightly over 2 feet long and weighs 6 to 8 pounds, but many atypically sized fish ply Oregon's coastal streams, luring anglers to spend countless hours casting and hoping.

The Oregon Department of Fish and Wildlife considers most populations of



coastal steelhead to have been in decline in the past two decades, partly because of unfavorable ocean conditions but also because of degraded freshwater habitat and the negative impacts of hatchery fish.

The federal government listed the coastal steelhead trout as endangered throughout the Willamette

River Basin and considers the populations on the Oregon coast as candidates for listing. In many of Oregon's coastal streams, more than 50 percent of the naturally spawning fish are of hatchery origin, which suggests that wild fish may be in even greater jeopardy.

The freshwater rearing period is critical for the

survival of individual fish, so efforts to restore and conserve steelhead trout must focus on improving habitat in the watersheds where they live. We must also address other factors that threaten steelhead, such as harvest and hatchery effects.

Coastal residents have a critical role to play in

improving fish habitat in watersheds. Improving watersheds will prevent the extinction of species and benefit individuals and communities by enhancing water quality and quantity.

This publication is designed to help you understand how, where, and when steelhead trout live in watersheds, and the role you can play in conserving and restoring this natural heritage.

THE MAVERICK COASTAL STEELHEAD TROUT

Coastal steelhead trout, given the chance, display an almost uncanny determination to successfully live in the diverse environments found in Oregon's coastal streams and rivers. Like their closely related cousin, the cutthroat trout, steelhead achieve their success by being flexible—adapting to local conditions in terms of migratory timing, age at maturity, and length of time spent in freshwater or in the ocean.

The Oregon Department of Fish and Wildlife recognizes 295 populations of this subspecies of steelhead/rainbow trout, but these species tend to fall into major categories. The first division separates those fish that migrate to the ocean (steelhead trout) from those that remain in freshwater throughout their lives (rainbow trout). Among steelhead trout, some adults return from the ocean between May and October in an immature state and require several months of

maturation in freshwater before they spawn (summer steelhead). Others return to freshwater between November and April very mature and spawn shortly thereafter (winter steelhead).

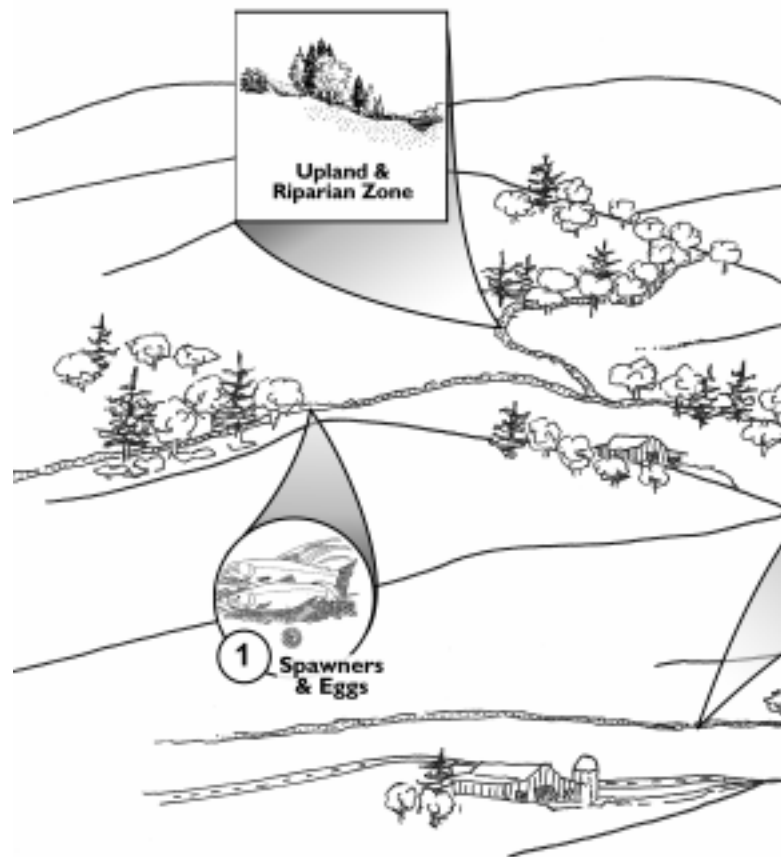
Most coastal populations of steelhead in Oregon are winter-run fish. Rainbow trout populations tend to be found above impassable barriers in coastal streams and rivers, although in some river systems like the Rogue, Willamette, and North Umpqua, rainbow and steelhead populations overlap.

Regardless of migration time, coastal steelhead trout spawn in winter or early spring. The adults often swim further up tributaries than chinook or coho to seek out cool spawning streams with smaller-sized gravel. Unlike Pacific salmon, steelhead adults may survive after spawning to migrate again to the ocean. Once the young emerge from the gravel, they flourish in cool streams that have (1) good stream-side vegetative cover to keep the water cool and provide plenty of leaf litter for growing the insects that steelhead eat and (2) lots of wood and boulders in the stream to create riffle-pool complexes with plenty of places to hide and rest.

Most Oregon coastal steelhead remain in freshwater to grow for two years; however, some may spend as little as one year or up to four years before migrating to the ocean.

Cape Blanco is the geographical landmark

WE LIVE IN WATERSHEDS . . .



LIFE HISTORY

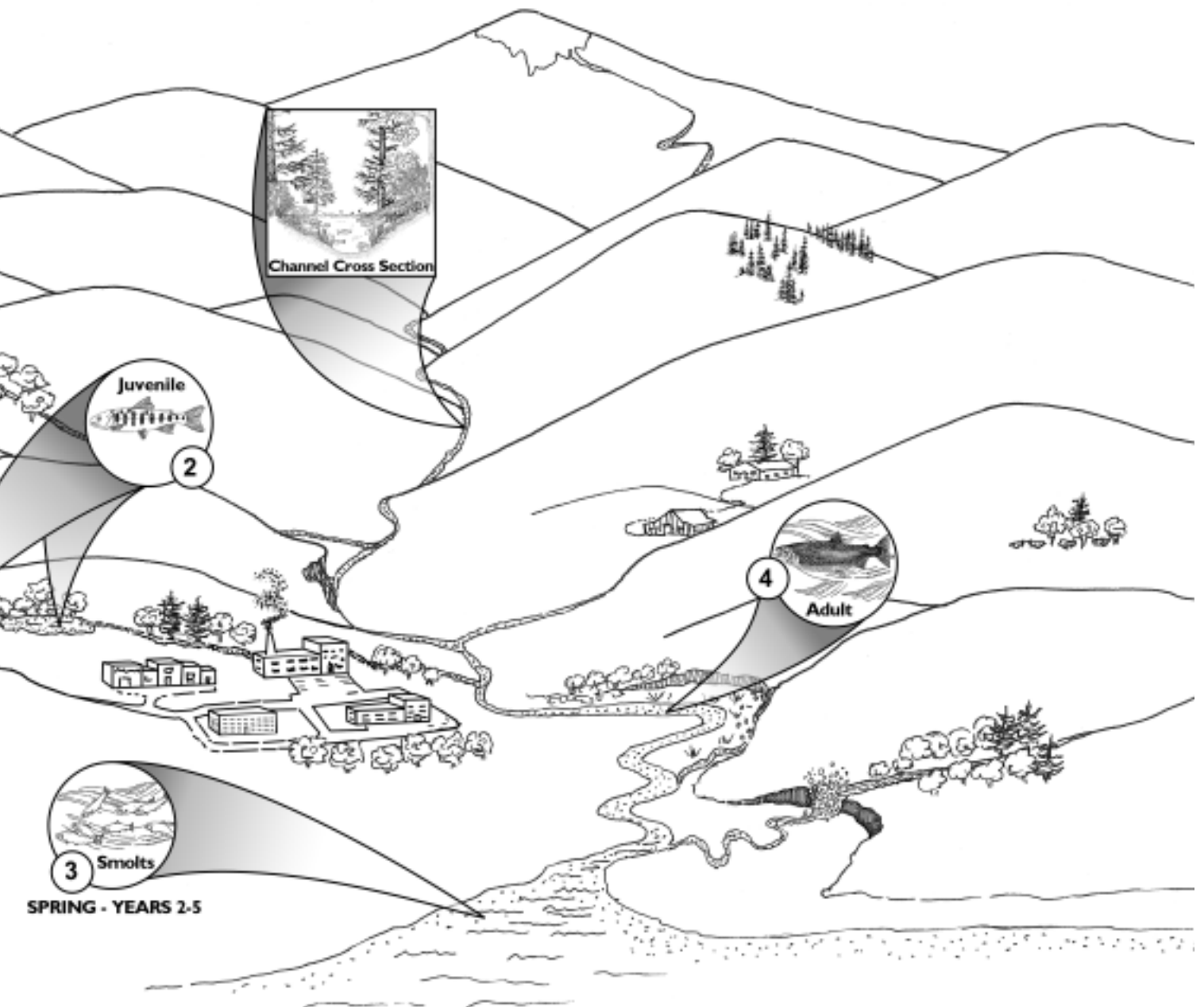
1 Adult summer steelhead migrate into freshwater from late spring to early fall, usually to the streams in which they hatched (natal stream), and spawn in winter or early spring. Spawners can be a variety of ages (some males mature as one-year-olds). Steelhead tend to spawn in the headwaters of streams and rivers. Those fish that survive spawning return to the ocean the same spring.

Adult winter steelhead return to freshwater from late fall to late winter, usually to their natal streams a few days or weeks before they spawn in late winter or early spring. Spawners can be of mixed age, and survivors migrate back to the ocean shortly after reproducing.

The number of eggs laid by each female can vary between fewer than 2,000 to almost 10,000. The eggs hatch in about one to two months, depending on water temperature.

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AND STEELHEAD TROUT LIVE IN WATERSHEDS



2 Steelhead fry emerge in the winter and either remain close by or migrate to the upper or lower reaches of streams and rivers. Steelhead may spend from one to four years in freshwater before embarking on their seaward migration.

Juvenile steelhead reside in a variety of freshwater habitats, but for good production they depend on abundant instream structure created by logs and root wads.

3 Steelhead migrate to the ocean in the spring at age two to five years. Smolts enter the ocean where they usually find abundant food and thus grow rapidly.

4 Once in the ocean, steelhead may remain near their natal stream or migrate long distances, such as to the Gulf of Alaska. Seawater residency for steelhead may be for as short as several months or as long as four years.

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separating north- and south-migrating populations of steelhead once they reach the ocean. They spend from one to three years in the ocean.

One interesting life history variation can be found in the Rogue River system, where some sub-adult steelhead (so-called “half-pounders”) return from the ocean after three or four months to spend a half year in freshwater before turning around to head back out to sea.

For spawning and early rearing, coastal steelhead push into upper basins of coastal watersheds. Watersheds are the circulatory system of the lands, draining ridgetops through streams and then rivers and finally coming to a confluence in a lake or the ocean. (Evaporation from the ocean falls on the highlands in the form of rain or snow to complete the circuit.) Coastal steelhead can be hurt by excessive stream siltation, loss of streamside shade, and reduced instream complexity.

Fire, landslides, erosion, and flooding occur naturally in watersheds, helping to create and maintain the conditions and habitats in which steelhead and other species have evolved. For example, steelhead rely on clear, cold streams with plenty of wood or boulders in pools to grow and develop. Periodic disturbances that occur naturally within a watershed create this habitat. Human activities sometimes modify the watershed drastically or frequently, exaggerating the natural disturbances to a

stream and compromising fish survival.

Functioning watersheds are important to us and to fish. We’ve come to depend on them for timber, suitable land for farming and grazing, and drinking and irrigation water. The lands that people manage provide large wood, boulders, gravel, shade, and food that build healthy stream habitats for trout and salmon. It’s a fact: we share the watershed, so we must care for the watershed. We, and other living things, depend on it.

YOU CAN HELP SALMON

Oregon's coastal steelhead—and coho, chinook, and cutthroat trout—can be saved! Land owners and managers play an important part in this effort. Whether your land covers hundreds of acres or a residential lot in town, you can help.

The first way is by simply being aware of your place in the watershed and of your local fish runs.

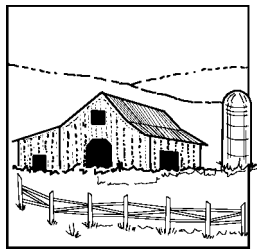
The second way is to help provide the habitat conditions the fish need. Here are a few helpful tips for different kinds of landowners.



FOREST OPERATIONS

- Protect streamside trees and other vegetation at least consistent with the Oregon Forest Practices Act requirements.

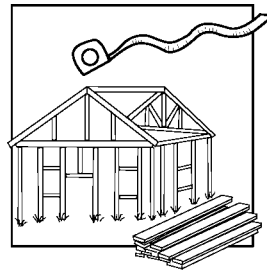
- Leave good natural features, such as a beaver pond or natural side channel, alone. These are important rearing areas for fish.
- Check areas where your roads cross streams. If your culverts have a drop or are above the stream channel, they could be barriers to fish passage. Consider redesigning problem culverts or replacing them completely with a bridge structure.



AGRICULTURAL BUSINESSES

- Create streamside (riparian) pastures that can be managed for grazing during times when livestock will prefer pasture grasses over riparian trees and shrubs. Provide a trough or watering tank away from the stream.

- Plant willows, cottonwood, poplar, or other shrubs and trees along your waterways. They help stabilize the banks, filter out sediments from runoff, and provide cooling shade.
- If riparian pastures are not viable options for your operation, consider using fencing to keep animals away from the water's edge.
- Protect wetlands, rivers, and estuaries through careful animal waste management and from the effects of poor fertilizer or herbicide application.



LAND DEVELOPERS, HOMEOWNERS, BUSINESSES

- While state and federal law may allow filling wetlands or estuaries (with

the proper review and permits), loss of such habitat can harm fish. Consider options that preserve these habitats.

- Construction can cause serious sediment problems, even well away from a waterway, if storm-water runoff is not properly contained. Although smaller operations may not need permits, they still can have significant impacts. Check with the state Department of Environmental Quality or local construction companies about responsible runoff management at your site.

- If possible, homeowners and businesses should connect to a sewage treatment and disposal facility. Poorly performing septic tanks can contaminate groundwater and nearby streams, lakes, and bays. If you must use a septic tank, be certain it is properly designed, located, and maintained.

- Dispose of household chemicals such as used motor oil, antifreeze, pesticides, and paints at approved collection facilities in your area.

MORE ABOUT SALMON

Field Guide to the Pacific Salmon. Robert Steelquist. Seattle: Sasquatch Books, 1992. 64 pages. Partial proceeds from the guide's sale (\$5.95) go to the Adopt-A-Stream Foundation.

Pacific Salmon Life Histories. C. Groot and L. Margolis, editors. Vancouver, B.C.: University of British Columbia Press, 1991. 608 pages. The standard reference work, available in larger libraries.

Oregon Department of Fish & Wildlife publications are available from the department's Information Services office: 2501 SW First Ave., Portland, OR 97207; 503-872-5264, ext. 5366. All listed below, except *Stream Scene* curriculum, are free:

Oregon's Migratory Fish Species. Leaflet.

Oregon's Threatened and Endangered Species. Leaflet.

Stream Care. A Salmon/Trout Enhancement Program (STEP) publication.

ODFW "Backgrounders":

- *Coho Salmon*
- *Oregon's Coastal Salmon and Trout*
- *Oregon's Wild Fish Management Policy*
- *Instream Water Rights*
- *Fish Screening*
- *The Stream Scene: Watersheds, Wildlife and People.* 500 pages. Call for price. A curriculum package for watershed awareness.

MORE ABOUT WATERSHEDS

A Watershed Assessment Primer. F. D. Euphrat and B. P. Warkentin. U.S. Environmental Protection Agency, 1994. 270 pages. Available from USEPA, Region 10, 1200 Sixth Avenue, EXA-124, Seattle, WA 98101, or call 206-553-1200. (Document EPA 910/B-94-005.) Free (if in stock).

Healing the Watershed workbook series. Includes *A Guide to the Restoration of Watersheds and Native Fish in the Pacific Northwest* and *A Citizen's Guide to Funding Watershed and Wild Salmon Recovery Programs.* The Pacific Rivers Council, Inc. Available from Pacific Rivers Council, P.O. Box 10798, Eugene OR 97440. \$15 per book. To order, call 541-345-0119.

A Guide to Placing Large Wood in Streams and Forest Practices Notes Series. Available from Oregon Department of Forestry, Forest Practices Section, 2600 State Street, Salem, OR 97310. Free. To order, call 503-945-7470.

The Return of the Salmon—Restoring the Fish to Rivers and Watersheds. Thirty-minute video produced by Oregon Sea Grant. Sea Grant Communications, A402 Kerr Administration, Oregon State University, Corvallis, OR 97331. \$30. To order, call 1-800-375-9360.

The Streamkeeper's Field Guide: Watershed Inventory and Stream Monitoring Methods. Thomas Murdoch, Martha Cheo, and Kate O'Laughlin. Adopt-A-Stream Foundation, 600 128th St. SE, Everett, WA 98208. 310 pages. \$29.95 + shipping. To order, call 425-316-8592.

ORGANIZATIONS, INSTITUTIONS, AND PROGRAMS

You can obtain additional information about salmon and watersheds by directly contacting organizations, institutions, and programs. A sampling is presented below.

Adopt-A-Stream Foundation
600 128th St. SE
Everett, WA 98208
425-316-8592

Fish Restoration and Enhancement Program
Oregon Department of Fish & Wildlife
PO Box 59
Portland, OR 97207
503-872-5252, ext. 5429

For the Sake of the Salmon
319 SW Washington
Ste. 706
Portland, OR 97204
503-223-8511
Fax 503-223-8544
www.4sos.org/

Oregon Sea Grant: Extension Sea Grant Program
Hatfield Marine Science Center
2030 S. Marine Science Dr.
Newport, OR 97365
541-867-0368
seagrant.orst.edu

Oregon State University Extension Service
Publication Orders
Extension & Station Communications
OSU
422 Kerr Administration
Corvallis, OR 97331-2119
541-737-2513
eesc.orst.edu

continued

ORGANIZATIONS, INSTITUTIONS, AND PROGRAMS *continued*

Partners for Wildlife Program
US Fish & Wildlife Service
2600 SE 98th Avenue
Suite 100
Portland, OR 97266
503-231-6179

RELATED MANAGEMENT AGENCIES

Governor's Watershed Enhancement Board
255 Capitol St. NE
Salem, OR 97310
503-378-3589, ext. 831
Fax: (503) 378-3225

National Marine Fisheries Service
Enviro. & Tech. Services
525 NE Oregon St.
#500
Portland, OR 97232
503-230-5400
www.nmfs.gov/

Oregon Department of Agriculture
635 Capitol St. NE
Salem, OR 97310
www.oda.state.or.us

Oregon Department of Environmental Quality
811 SW Sixth Avenue
Portland, OR 97204
1-800-452-4011
www.deq.state.or.us

Oregon Department of Fish & Wildlife
2501 SW First Avenue
PO Box 59
Portland, OR 97207
503-872-5310
www.dfw.state.or.us

Oregon Department of Forestry, Forest Practices Program
503-945-7470 or contact local Forestry offices
www.odf.state.or.us

US Environmental Protection Agency
Watershed Branch
200 SW 35th
Corvallis, OR 97331
541-754-4389

For more information and for details on your local site, contact your local soil and water conservation district or watershed council, or a listed organization.



Oregon Sea Grant
Phone: 1-800-375-9360
E-mail: sea.grant.communications@orst.edu
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