ATTENTION

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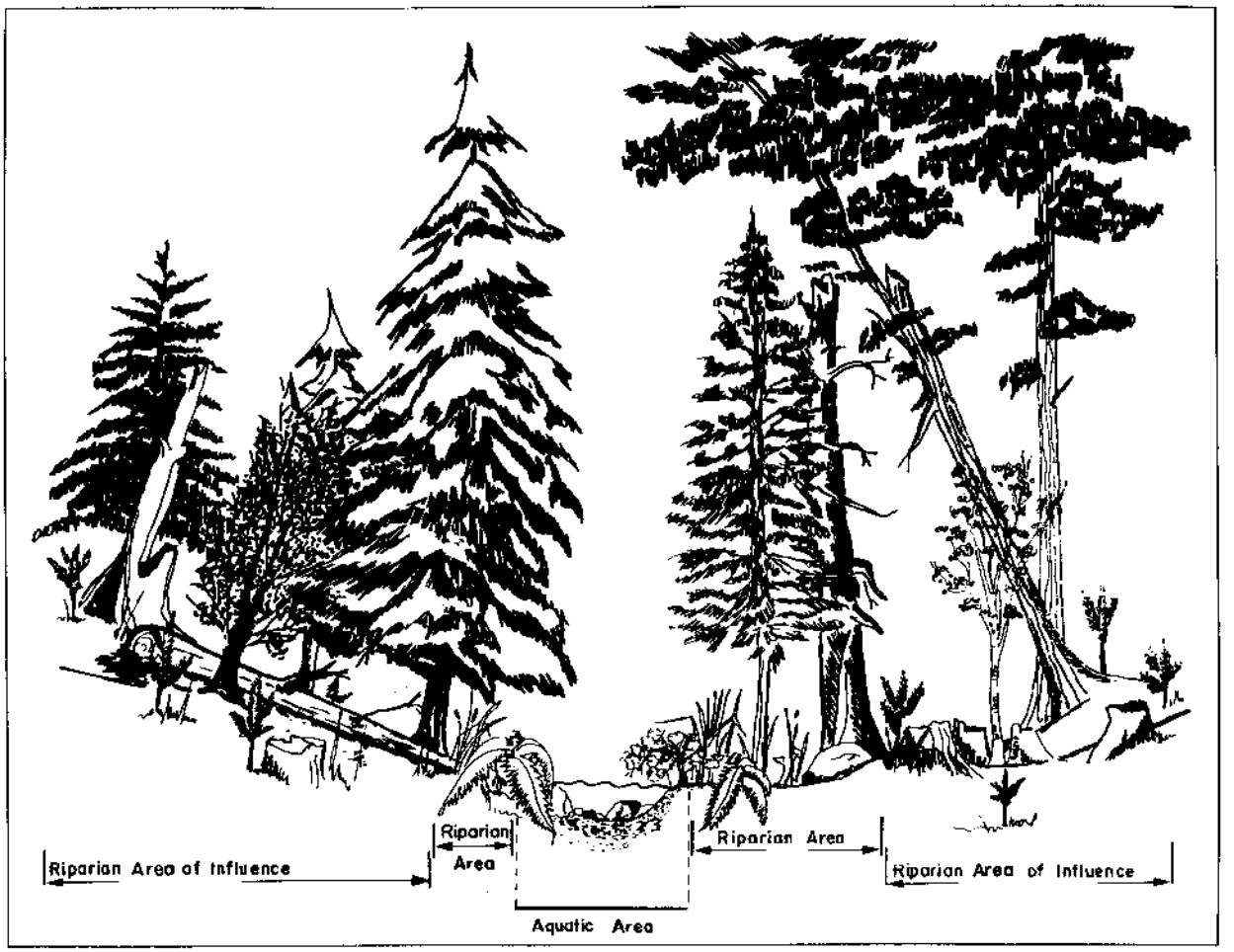
Woodland
Fish and Wildlife June 1989

Riparian Areas: Fish and Wildlife Havens



If your property includes a body of water such as a pond or stream, part of your land is riparian. "Riparian" is simply a name for the border of moist soils and plants next to a body of water. This area may be only a foot or so wide, like the steep bank of a small creek, or hundreds of feet wide along lowland streams, rivers, lakes and ponds.

Riparian areas are only a small part of the natural landscape, but they are of great value to fish and wildlife. They are also productive areas for timber and forage, and are important for recreation. Landowners can maintain these unique areas by giving them special attention.

This publication tells how riparian areas provide essential fish and wildlife habitat, how land use can affect this habitat, and briefly describes management practices that protect or enhance habitat. (Future publications are planned to provide more detailed advice for managing specific kinds of fish and wildlife.) Some of these practices are required by law.

by Millard S. Deusen and Paul W. Adams

H/R/89

Managing riparian areas can increase your use and enjoyment of your land, and may even increase the value.

Riparian Habitat

To live and thrive, fish and wildlife have a number of requirements:

Fish

- food and year-round water
- clean, cool water
- cover from predators
- spawning and rearing areas
- stable conditions during spawning and rearing

Wildlife

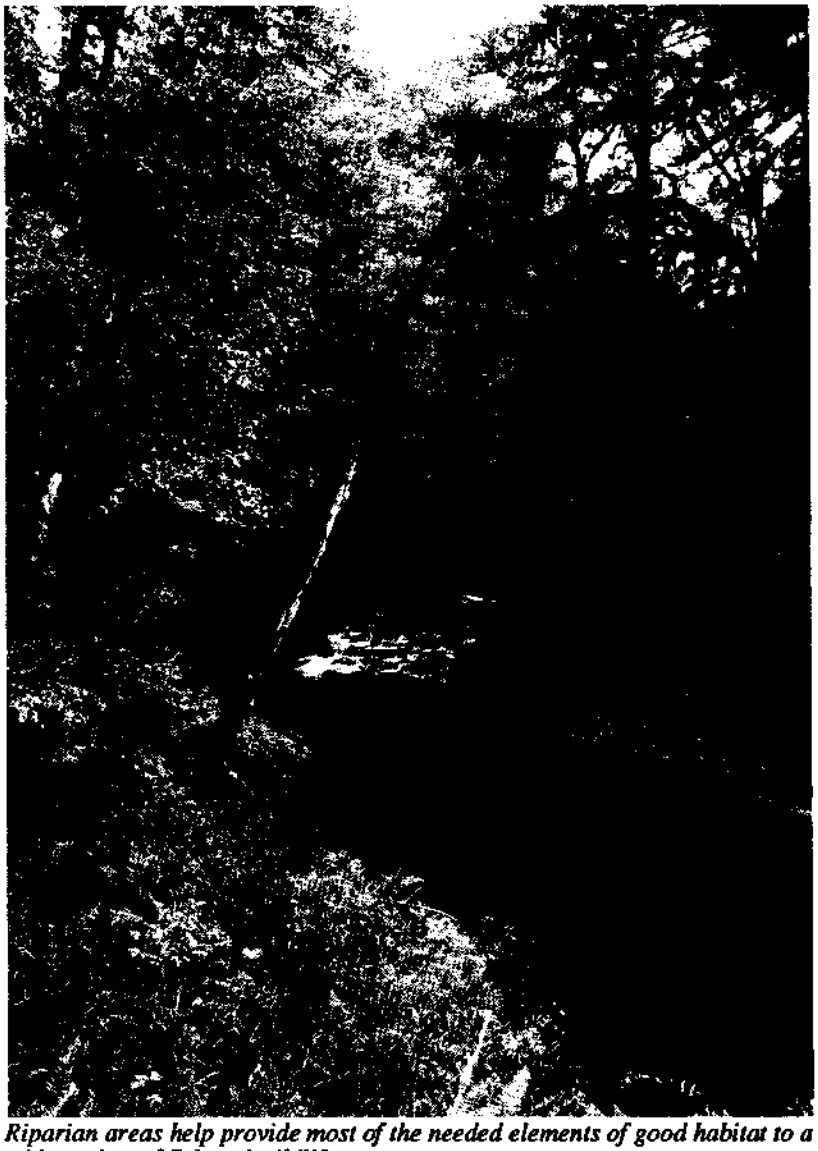
- food and water
- cover from heat and cold
- cover from predators
- breeding and rearing areas

Riparian areas help provide most or all of these elements to a wide variety of fish and wildlife species. Trees and other plants which shade streams help keep water cool while stabilizing banks and providing food (leaves, twigs, etc.) for insects that fish eat. Trees also provide food and cover for wildlife. When trees die and fall into streams, the logs create small dams and pools that offer fish rearing habitat and cover from predators. Logs that remain on land provide cover for wildlife.

Wildlife heavily use riparian areas because the moist, fertile soils support a rich food supply and offer good shelter from predators and the elements. Despite their relatively small size, riparian and wetland areas are used at some time by nearly all of the animal species in Oregon and Washington.

Riparian habitats can look very different depending on their location, the water body they border, and the season of the year. For example, east of the Cascades, riparian areas may have pine, cottonwood or aspen trees with willow shrubs or grass and edge undergrowth. West of the Cascades, ash, red alder, cedar and spruce are more common, as are salmonberry and devil's club.

Differences in riparian habitats are often related to differences in terrain and stream size. Riparian areas along small upland streams may be very narrow and noticeably different from each other only in undergrowth. Where broadleaf plants are common, the natural pattern of spring leaf-out and autumn leaf fall lead to some unique riparian conditions.



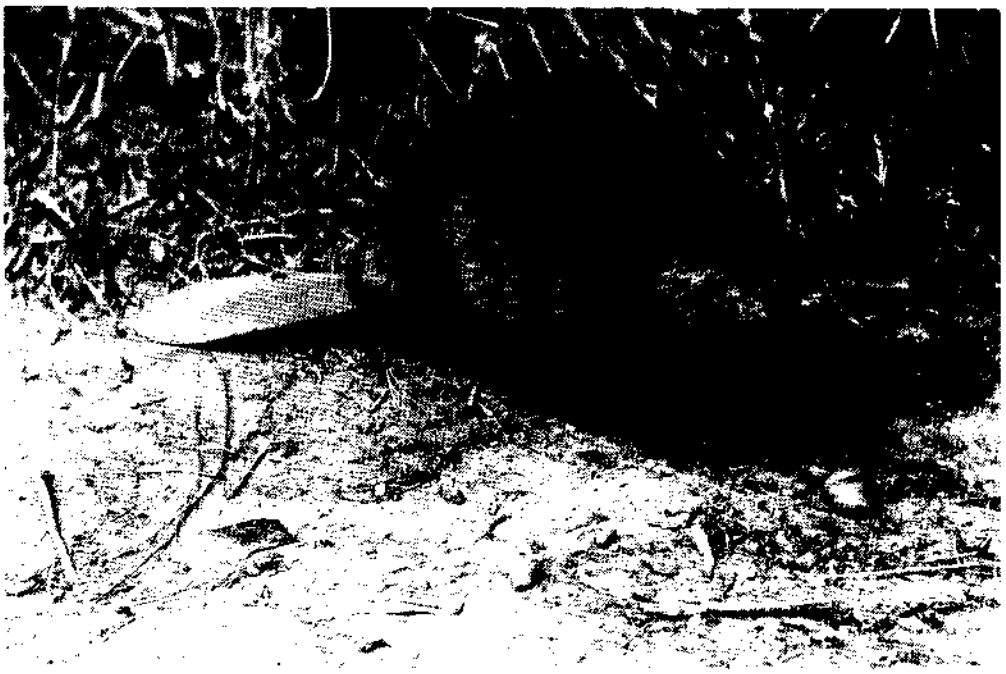
Riparian areas help provide most of the needed elements of good habitat to a wide variety of fish and wildlife. Photo: Oregon Dept. of Fish and Wildlife

Effects of Land Use On Riparian Habitat

As is the case with most everything in nature, riparian areas are constantly changing. A great many of the changes occur naturally, while others come about as a result of

human activities. Floods and landslides are the most common natural disturbances in riparian areas.

Human activities in riparian areas include forest management, road construction, mining, grazing, agriculture, recreation and development. However, with proper thought and planning, impacts that might be detrimental to fish and wildlife can be minimized without seriously interfering with other land uses. In many instances, fish and wildlife habitat may be improved in conjunction with other activities.



A pair of beavers can make dramatic changes in a riparian area, but the activities of wildlife generally do not harm an area. Photo: Oregon Dept. of Fish and Wildlife

Protecting and Enhancing Riparian Areas

Loss of vegetation is one of the most serious changes affecting the riparian area. The impact can be great because, until regrowth occurs, the land is prone to erosion and food and cover for fish and wildlife are altered. The adjacent water may be subject to siltation and increased temperatures.

In the case of streams, fallen trees present a particularly challenging situation. Removal can contribute to the loss of streambank stability because of increased streamflow velocities. Leaving the trees may also contribute to soil erosion by directing the flows into banks. If carried to extremes, either case can be detrimental to fish and wildlife populations.

Forest Harvesting Operations: If timber harvest is planned in riparian areas along major streams, it should allow for the retention of "leave" trees that will provide shade and organic debris to the aquatic and riparian area. A mix of broadleaf and coniferous trees helps provide year-round cover and supplies of debris. The conifers are important because the debris from them is slow in decaying and the cover provided is long-lasting.

Leaving both dead snags and live trees of varying sizes provides essential and diverse habitat for many kinds of birds and mammals, as well as travel corridors for big game. Such trees do not have to be the most valuable ones in the areas, but should be representative of the stand both in species and size.

When a riparian area is logged trees should be felled so they do not damage the remaining "leave" trees. Logging slash and debris should not be allowed to enter the water. Designated skid trails are preferred and heavy equipment should be kept out of the riparian area. Although some small organic material and larger debris is important to the aquatic habitat, too much material entering the water in an uncontrolled manner can deplete oxygen and block fish passage.

Leaving trees of varying sizes along streams provides essential and diverse habitat for many kinds of birds and mammals.
Photo: World Forestry Center

Conversely, if the pond or stream is quite barren, a logging operation can be an opportunity to make some improvement. Large logs used to create fish habitat can

It is preferable to locate roads along benches to avoid the riparian area. If a road must enter the area, along a stream, it should be at right angles to minimize the impact.
Photos: World Forestry Center

be placed to give maximum benefit, and anchored to prevent them from drifting away. This type of activity should only be carried out in streams by getting expert advice and the necessary permits before the work begins.

Roads: Forest roads may be a major contributor of siltation to streams and alteration of riparian areas. In the past, riparian areas were often used for roads and skid trails because they provided easy access routes. Changes brought on by such activity were quite obvious. Water quality was sometimes degraded, vegetation changed, and the riparian habitat eliminated.

It is preferable to locate roads along benches to avoid the riparian areas. If a road must enter a riparian area along a stream, it should be constructed at right angles to the area to minimize the impact. Excavated soil is not pushed over the side of the road but hauled away from the area where it won't pollute the water. Road width should be minimized to retain as much vegetation as possible, and exposed soils can be seeded with grass to prevent erosion.

Chemical: Use of insecticides, herbicides and other toxic chemicals should be avoided in the riparian area. Application methods in adjacent areas should prevent chemicals from getting into the riparian area or the water.

In both Oregon and Washington there are many specific logging, road construction, and other regulations that apply to riparian areas. Seek advice from forestry or other natural resource agencies before operating in these areas!

Grazing and Agriculture: Occasionally, grazing by deer and elk may alter the riparian area and the busy working of a pair of beavers can make dramatic changes, but the activities of wildlife generally do not harm an area. However, heavy domestic animal use of streambanks can break them down and cause erosion. Animal waste will affect water quality. Fencing animals out of sensitive areas can help eliminate these impacts. Controlling the timing and numbers of animals allowed on the areas will help provide protection.

Agricultural activities can greatly affect the riparian area when conducted near the water's edge. Runoff from

such lands can carry chemicals and soil into the water, causing problems for fish. Protection of the riparian area as a filter can minimize these problems. If the damage has already been done, plantings help the area recover. Cost share payments for rehabilitation of riparian areas retired from crop production may be available to qualified landowners. Contact your county USDA, Agricultural Stabilization and Conservation Service for more information.

Recreation and Development: Recreational activities in the riparian area may include fishing, hunting, hiking and camping. In some instances sites may be developed in conjunction with these pursuits. Such facilities can eliminate habitat as well as disrupt the activities of wildlife. Locating recreation sites outside of the riparian area is desirable to avoid such changes.

Surveys made prior to development can help make sure important nesting sites for eagles, herons, and other sensitive species are not disturbed. Developments such as summer homes not only directly eliminate habitat, but also cut wildlife travel routes. Structures may create the need for bank protection with riprap, causing further loss of habitat. Septic systems are a potential source of water pollution.

Values tied to the riparian area make the site desirable to begin with...development that harms these values is counterproductive. It can be prevented by limiting development to stable upland areas.

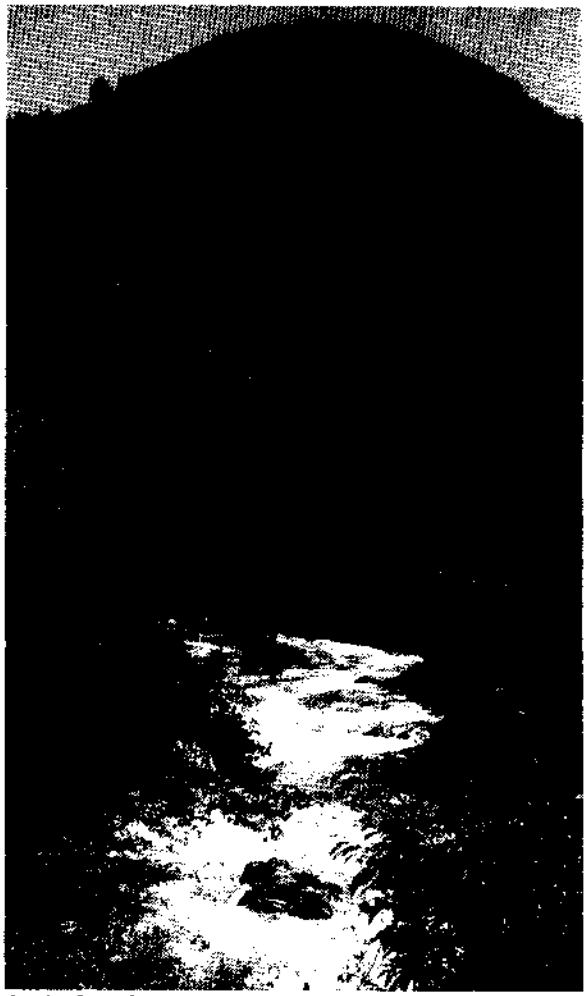
Habitat Management

General information on habitat improvement may be obtained from a variety of publications. On a more personal and local level, you can consult with professional resource foresters and biologists working for public and private organizations. Both technical and financial assistance programs exist for landowners. Help is usually as near as your telephone, but you must ask for it.

Perhaps the first, most important step in habitat management is to maintain what is already there if it is optimum for fish and wildlife. Protection of riparian areas from undesirable change is much more effective than trying to restore areas that have been damaged. Change in riparian areas is not necessarily detrimental, but it should be carefully planned if fish and wildlife are to benefit.

Management to improve fish habitat usually involves restoration of vegetation, bank stabilization, and possible placement of large debris or boulders in streams. The in-stream activities are mostly aimed at increasing cover for fish. Because of concerns for water supplies and the hydraulic forces involved, expert advice is important and state fish and wildlife agencies must approve such projects. This is especially true with streams. Early consultation will make the job easier and less frustrating.

As has been mentioned, riparian areas usually contain food, water and cover needed by wildlife. Fruits that tend to dry on the stems and are slow to fall the the ground supply important winter food. Mountain ash, hawthorn, Russian olive, crabapple and rose can be planted to increase winter food for many birds and mammals. Information on the best food plants for your area



Agricultural activities can greatly affect the riparian area if conducted near the water's edge.
Photo: Oregon Dept. of Fish and Wildlife

can be obtained from your fish and wildlife agencies in either Washington or Oregon. Publications listing preferred food for various species are available.

Adjacent to cultivated lands, wildlife cover may be seriously lacking. Some of the material planted to supply food may also provide good cover for wildlife. Again, suggestions for plants that will do best in your area may be obtained from your fish and wildlife, as well as forestry, agencies.

More specific information on riparian areas is available in publications and from the agencies listed in the reference

Recreational improvements such as bridges, trails and shelters should be properly placed to minimize the impact on riparian areas. Photo: World Forestry Center

section that follows. Direct contact with individuals working in your area can help produce ideas specifically tailored to your situation.

Generally, the best management of riparian areas for fish and wildlife is protection of the plant life. If the area is in a somewhat natural condition, it is probably supporting a great number of plants valuable to fish and wildlife. However, by looking at the area for needed improvements, new plants may be added for the benefit of both fish and wildlife and for you as landowner.

For example, willow can be planted to stabilize banks while providing shade and organic matter. Rosebushes might be added in certain areas to provide winter food and cover while creating a fence effect. Again, consultation with technical experts can be time well spent.

You have taken a big step by recognizing the value of riparian areas. By properly managing and protecting such areas, and staying informed about new developments and techniques, you can help assure the continued existence and enhancement of these valuable areas.

Abused riparian areas can be rehabilitated by restoration of the vegetation and bank stabilization.
Photo: Oregon Dept. of Fish and Wildlife

References

(For information listed below, please contact source directly)

Available from:
Out of print, review at public libraries, Game Department, and National Forest Offices.

•Jack Ward Thomas. *Wildlife Habitats in Managed Forests and the Blue Mountains of Oregon and Washington.* USDA, Forest Service Agricultural Handbook No 553. Sept. 1979.

Available from:
USDA, Forest Service Division of Fish & Wildlife P.O. Box 3623 Portland, OR 97208

•Neil F. Payne and Frederick Copes. *Wildlife and Fisheries Habitat Improvement Handbook*, USDA, Forest Service, Dec. 1986. Wildlife and Fisheries Administration Report (unnumbered).

•E. Reade Brown. *Management of Wildlife and Fish Habitats in Forests of Western Oregon and Washington*, USDA, Forest Service, June 1985. Parts I and II.

Available from:
Oregon Dept. of Forestry 2600 State Street Salem, OR 97310

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•*Riparian Management Area Requirements-Field Aid* (waterproof card). 1987.

Available from:
Agricultural Communications, Publications Orders Oregon State Univ. Corvallis, OR 97331

•Adams, P.W. 1988. *Oregon's Forest Practice Rules.* EC 1194. Oregon State Univ. Extension Service. 12 p. Price: $1.25

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Available from:
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•Adams, P.W., R.L. Beschta and H.A. Froehlich. 1988. "Mountain logging Near Streams: Opportunities and Challenges". In: *Proceedings, Intl. Mountain Logging Symposium.* 10 p.

•Elmore, W. and R.L. Beschta. 1987. "Riparian Areas: Perceptions In Management". *Rangelands* Vol. 9 No. 6. 6 p.

Available from:
Institute of Forest Resources AR-10, Univ. of Washington Seattle, WA 98195

•Salo, E.O. and T.W. Cundy, eds. 1987. *Streamside Management: Forestry and Fisheries Interactions.* Contribution No. 57. College of Forest Resources. 471 p. Price: $30.

•Raedeke, K.J., ed. 1988. *Streamside Management; Riparian Wildlife and Forestry Interactions.* Contribution No. 59. College of Forest Resources. 277 p. Price $30.

Available from:
118 Umberger Hall Kansas State Univ. Manhattan, Kansas 66506

•*Wildlife Habitat Handbook*

•Great Plains Agriculture Council Wildlife Resource Committee, 1984. *Guidelines for Increasing wildlife on Farms & Ranches.* (Excellent Eastside reference)

Available from:
WA Dept. of Natural Resources 1007 S. Washington , EL-03 Olympia, WA, 98504

•Timber/Fish/Wildlife Agreement *A Better Future In Our Woods and Streams*, Final Report, February 17, 1987.

Available From:
U.S. Environmental Protection Agency, Washington, D.C. 20460.

• A descriptive brochure, *Vegetative Filter Strips now Eligible for CRP Enrollment - Consider the Advantages!*. U.S. Environmental Protection Agency, Washington, D.C. 20460.

Assistance Programs

•Oregon Riparian Tax Incentive Program
Contact: Riparian Tax Incentive Program
Dept. of Fish and Wildlife
P.O. Box 3503
Portland, OR 97208

•Conservation Reserve Program - Vegetative Filter Strips
Contact: Local offices of the Oregon Dept. of Forestry, Agricultural Conservation and Stabilization Service, Soil Conservation Service, or the Cooperative Extension Service.

Our Purpose...

This publication was written by Millard S. Deusen, Fisheries Biologist, Washington State Department of Fisheries, and Paul W. Adams, Forest Watershed Extension Specialist, College of Forestry, Oregon State University.

The Woodland Fish and Wildlife Project is a cooperative effort among the World Forestry Center, Oregon State Department of Forestry, Washington State Department of Natural Resources, Oregon State University Extension Service, Washington State University Cooperative Extension, University of Washington Center of Streamside Studies, Oregon Association of Conservation Districts, Oregon Small Woodlands Association, Washington Farm Forestry Association, Oregon Department of Fish and Wildlife, Washington Department of Fisheries, Washington Department of Wildlife, Oregon Soil Conservation Service, Washington Soil Conservation Service and the USDA Forest Service. The World Forestry Center serves as the coordinating organization for the project.

The Woodland Fish and Wildlife Project was initiated to provide information on fish and wildlife management to private woodland owners and managers. It is the intent of the organizations involved in this project to produce publications that will serve as practical guides to woodland owners.

Each publication is intended to be complete in itself. Users may find it convenient to collect all publications in this series in a three ring binder to form a permanent reference file. Woodland Fish and Wildlife Project publications range from an overview of fish and wildlife opportunities on woodland properties to specific publications concerning techniques for managing individual species.

These publications can be obtained from any of the cooperating organizations or by contacting the World Forestry Center, 4033 SW Canyon Road, Portland, OR 97221, (503) 228-1367.