MISC0179

Woodland Fish and Wildlife

Wetlands as Varied as Our Region

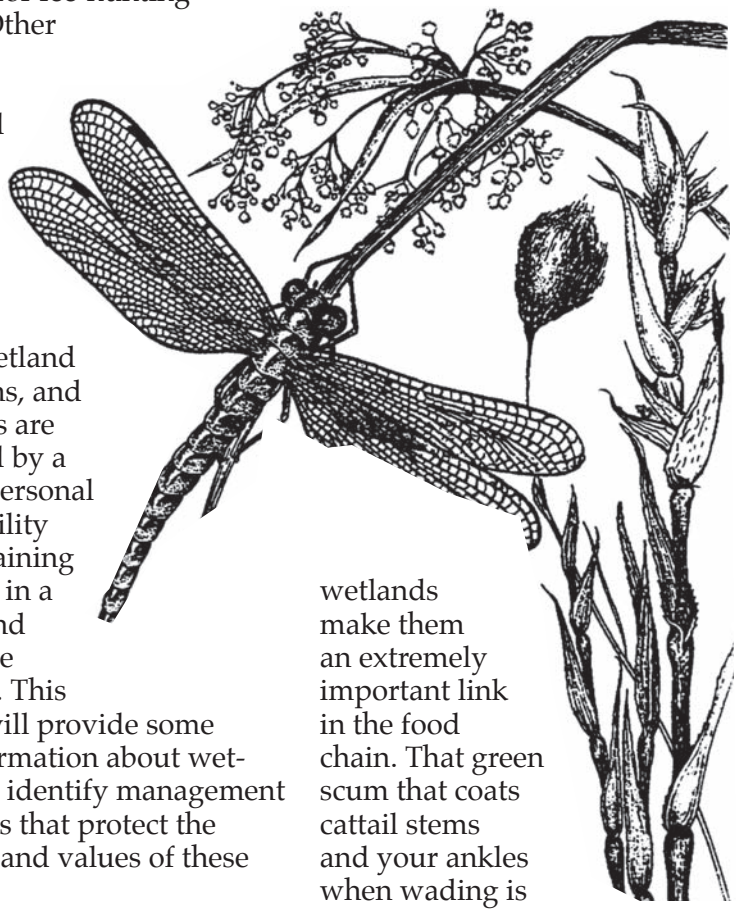
The Pacific Northwest is highly varied geologically and biologically. This leads to an equally diverse range of wetlands types, including Sitka spruce/skunk cabbage swamps near the coast, willow-choked stream canyons and seasonally-wet salt grass flats east of the Cascades, remnant river channels and wet prairies in the Willamette Valley, and lodgepole pine/sedge forests and saturated meadows in the Cascades.

In Oregon and Washington, more than 50% (and up to 70% in some areas) of our original wetlands have been lost, mostly by conversion to agricultural or urban uses. Many other wetlands have been severely degraded through poor land use practices and by invasion of undesirable plants. Wetlands, like streams, are very sensitive to surrounding and upslope land uses. Unlike many activities that permanently alter wetlands, forest management can be compatible with good wetland management.

Why would you, as a woodland owner and/or manager, be concerned about wetlands? Wetlands provide a wide range of important functions and values, though the benefits that wetlands provide vary greatly by type, location, and condition. Many landowners manage and protect wetlands to improve wildlife habitat for their own enjoyment or to improve the potential for fee-hunting income. Other managers may be motivated mostly by the desire to comply with state and federal wetland regulations, and still others are motivated by a sense of personal responsibility for maintaining their land in a healthy and productive condition. This bulletin will provide some basic information about wetlands and identify management techniques that protect the functions and values of these lands.

Importance of Wetlands to Fish and Wildlife

Wetlands are highly effective at converting the sun's energy into food. The plant material and small organisms produced in abundance in wetlands make them an extremely important link in the food chain. That green scum that coats cattail stems and your ankles when wading is



Box 1

Number of wildlife species using riparian zones or freshwater wetland habitats.

Source: Brown, 1985. Volume 2, Appendix 8 gives specific information on these 414 species, including their use of different wetland types for breeding, resting, and/or feeding, and whether the wetland type is a primary or secondary habitat (see Reference section for full citation).

Class	Number of westside wildlife species	Number of species using riparian or wetland plant communities	Number of species using riparian zones or wetlands as a specialized habitat but not using plant communities	Total number of species using riparian zones or wetlands
Amphibians & Reptiles	44	35	2	37
Birds	267	192	38	230
Mammals	103	91	1	92
Total	414	318	41	359

teeming with small organisms. The swarms of swallows, flycatchers, and bats scooping up insect hatches over wetlands are one common indicator of the high productivity of wetlands.

Importance to Fish

Stream-associated wetlands provide essential fish habitat. Plant material and organisms produced in stream-associated wetlands are important food sources for fish. Also, side channels and backwater pools are used by fish as rearing areas and as "refuges" during high stream flows.

Young cutthroat trout and Coho salmon grow many times faster in a stream-associated wetland than in the main stream. This is because fish reared in calm waters of wetlands use most of the food they consume for growth, whereas fish reared in stream currents must convert a large

Box 2

Wetland Functions and Values

Wetlands vary greatly in location and type, and therefore not all provide the same functions and values that wetlands in general are known to provide.

Flood Storage and Stream Flow Augmentation—Stream-associated wetlands store water during high flows, reducing flood peaks. Then the areas augment summer stream flows by slowly releasing stored water back into the stream system.

Water Quality Protection—Wetlands reduce pollution by filtering and processing harmful substances.

Fish and Shellfish Production—Wetlands are important spawning and nursery areas for fin and shellfish.

Timber Production—Forested wetlands are a source of commercially valuable timber.

Erosion and Sediment Control—Wetlands reduce flood velocities, reduce erosion, and trap water-borne sediments.

Recreation—Wetlands provide opportunities for fishing, hunting, boating, plant identification, scientific study, and wildlife observation.

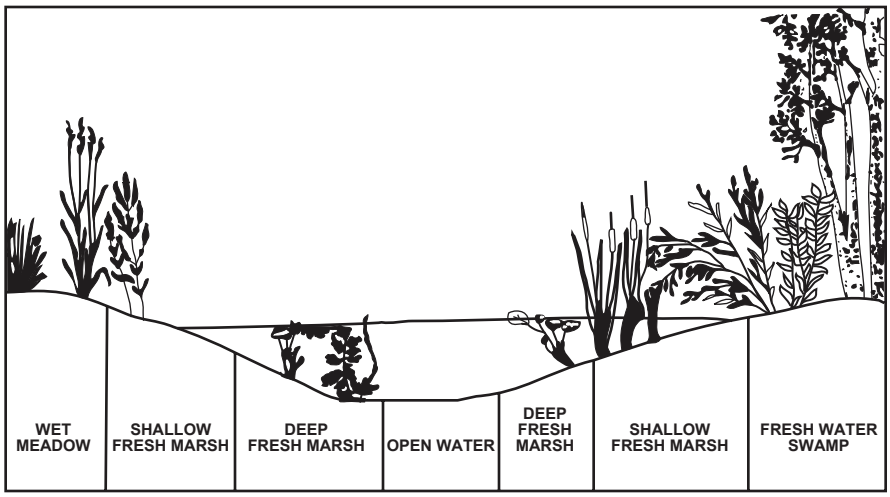
portion of the food they consume into energy. Also, wetland habitats such as beaver ponds, side channels, and seasonal swamps are critical to salmonids for winter survival. One study found that 15% of a watershed's Coho production came from fish that over-wintered in wetlands that are dry during the summer. The survival rate of Coho salmon that over-winter in abandoned beaver ponds that are dry in the summer was about twice as high as the survival rate for the overall stream system.

Importance to Wildlife

Wetlands and streamside riparian areas are crucial to the survival of many wildlife species. These habitats provide food in abundance, water, refuge from summer heat, shelter from winter cold, hiding cover, and late-summer green forage when upland areas are dry, as well as critical breeding and rearing habitats.

Despite comprising a relatively small portion of the landscape, wetlands and riparian areas are relied on heavily by nearly all of the wildlife in Oregon and Washington. Of 414 western Oregon and Washington wildlife species, 359 use riparian zones or wetlands during some season or parts of their life cycle (see Box 1, page 2). The situation is similar east of the Cascades. Of 378 terrestrial species in the Blue Mountains, 285 are either directly dependent on wetlands and riparian areas or utilize them more than other habitats.

Idealized Cross Section View of Freshwater Wetland



How to Recognize Wetlands

What are Wetlands?

Although there are many types of wetlands in the Pacific Northwest, they share three common characteristics. **Most important is an abundance of water.** Whatever the water source—high water table, rainwater "perched" on impervious layers in the soil, frequent flooding, or groundwater seeps—**prolonged saturation is what creates the wetland.** Saturated soils form distinctive, visible physical characteristics and are called **hydric soils.** Most often, these saturated conditions support a plant community dominated by **hydrophytes**—plants that survive in permanently or seasonally saturated soils.

WETLAND DEFINITION
Wetlands are areas inundated by surface or ground water at a frequency and duration sufficient to support, and that normally do support, mostly vegetation adapted for life in saturated soil.

However, plants, like animals, have varying degrees of specialization. While some species adapt readily to a wide variety of conditions and may be referred to as "generalists" (weeds are prime examples), other plants are specialists and thrive in a very specific habitat. For this reason, some plant species are better indicators of wetlands than others. The U.S. Fish and Wildlife Service has compiled a list of plants that grow in wetlands. Each species is given a wetland indicator status based on the frequency with which it occurs in wetlands. For example, skunk cabbage is an **Obligate Wetland species** and is found only in wetlands. **Facultative Wetland species** occur in wetlands 66–99% of the time; they are found in either permanent or seasonal wetlands and can be used to identify seasonal

wetlands during the dry time of the year. **Facultative species** are often the generalists—they occur in a wide variety of sites, including seasonal wetlands, and are especially common in areas disturbed by farming, grazing, or other activities. As generalists, they are the least reliable "indicators" of wetlands.

Where Will You Find Wetlands?

Wetlands are usually found in the lowest portion of the landscape. They may be stream-associated or "isolated." Landscape position, climate, and soil type all influence wetlands formation. Expect to find wetlands:

- in low areas with a very high winter water table
- in valley flats or depressions where impervious soil layers create a "perched water table"
- near rivers and streams
- low on slopes where groundwater seeps or breaks out as springs
- in mountain meadows watered by gradual snowmelt
- in broad river valleys with side channels or abandoned stream channels

Types of Wetlands

There are many types of wetlands and many terms used to describe them. Terms such as "swamps," "bogs," "marshes," and "wet meadows" all refer to types of wetlands. Wetlands

Box 3

EXAMPLES OF WETLAND TYPES AND TYPICAL VEGETATION

Open Water Wetlands
water lily
pondweed
duckweed
bladderwort
water-cress


Pacific Willow
Salix Lastandra Benth

Marsh

common cattail	wapato
hardstem bulrush	slough sledge
yellow iris	bur-reed
spike rush	rice cutgrass
reed canarygrass	marsh speedwell
water parsley	water plantain

Wet Meadows

creeping buttercup	nodding beggars-tick
willow dock	American sloughgrass
giant horsetail	fragrant popcorn flower
sedges	tufted hairgrass
gum weed	soft rush

Shrub Wetlands

Pacific willow	red-osier dogwood
Douglas' spirea	alpine bog laurel
sweetgale	bog birch

Forest Wetlands

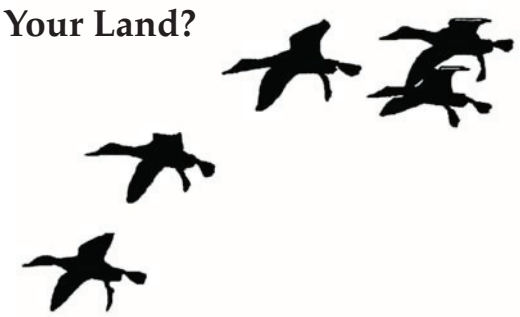
<u>Overstory</u>	<u>Overstory</u>
red alder	lodgepole pine
Oregon ash	quaking aspen
Sitka spruce	Engelmann spruce
western redcedar	
<u>Typical Understory</u>	**<u>Typical Understory</u>**
lady fern	aquatic sedge
water parsley	widefruit sedge
slough sedge	Baltic rush
skunk cabbage	Douglas spirea
Douglas' spirea	bog blueberry

scientists have developed formal terms that are used to classify and map wetlands, lakes, streams, and estuaries. Types of wetlands are grouped mainly by their vegetative characteristics. For example, wetlands dominated by trees are classified **Forested Wetlands,** while those dominated by sedges and grasses are classified **Emergent Wetlands.** One wetland can be a mix of various types.

Forested wetlands may be particularly difficult to identify because many of the trees in the forested wetlands are classified as "facultative," that is, they are generalists that occur in both wetlands and uplands. Therefore, the presence of these tree species does not mean that area is or is not a wetland. For

Box 4

Are There Wetlands On Your Land?



A YES answer to any of the questions may indicate that the site is a wetland.

Yes	No	
☐	☐	Are there natural drainage channels or swales?
☐	☐	Is the ground soggy underfoot in the spring?
☐	☐	Are there depressions where water pools for two to three weeks in the spring?
☐	☐	Do you avoid the area with heavy equipment for fear of getting bogged down?
☐	☐	Has the site been ditched to dry it out?
☐	☐	Are seeps or springs present?
☐	☐	Is the soil black or light gray rather than brown or reddish brown?
☐	☐	Is there evidence of surface scour from running water?
☐	☐	Do you see many clumps of rushes (round stems), sedges, (triangular stems), skunk cabbage, willows, or Oregon ash? (These are just a few of the many plants that grow in wetlands.)
☐	☐	In forested areas, are there large hummocks, trees with fluted bases, and trees grown on nurse logs?

A Word of Caution—**Seasonal wetlands may look very dry in mid-to-late summer. Use the checklist to evaluate your land, and consult a specialist before doing work in an area that may be a wetland. Many activities in wetlands are regulated by state and federal law.**

forested wetlands then, the understory species as well as the soil characteristics and the hydrology of the site provide the needed clues for wetlands identification. In addition, well developed forested wetlands often exhibit a hummock and hollow topography, with trees restricted to the hummocks.

Some wetlands are agriculturally managed and have been used many years for grazing or to grow crops. Some of these have been ditched, drained, or diked to remove the water, thus converting them to non-wetlands. Others, however, still have wetland hydrology and still pond water for several days in the spring. When cropped, these agricultural wetlands may not look at all like wetlands; when abandoned, however, the wetlands plant species gradually reappear.

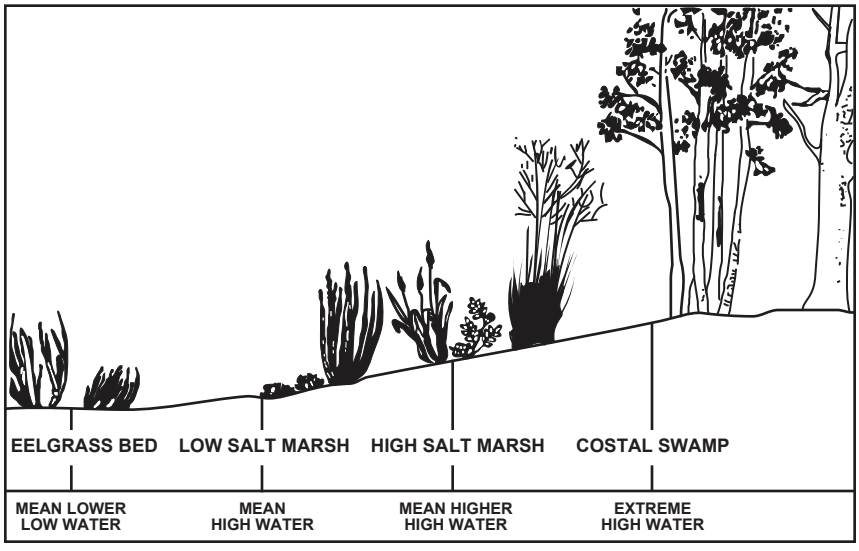
There are a number of regional publications that serve as excellent guides to wetlands types and identification in Oregon and Washington (see References).

Management Considerations

The many functions that wetlands provide make protection, restoration, and wise management of wetlands important to landowners and the general public. Forestry can be compatible with sound wetland management. While most forestry activities may alter the wetland, they need not convert it to an upland. The goal in managing woodlands and wetlands, then, is to avoid activities that may convert the wetlands to uplands and to manage site alterations to retain the benefits provided by the wetlands.

Wetlands change in a variety of ways. Some change is inevitable, as landscapes are changing all the time. While some change is natural, other change is not, or is accelerated by the activities of people. The key to managing wetlands and woodlands is to plan carefully and thoughtfully, and to be aware of the effects your activities will have on the landscape. *Some wetland sites may be so sensitive and so difficult to reforest that you may want to consider excluding them from your harvest plans.*

The amount and duration of water on a site affects soil development. Soil development, in turn, affects the plant community characteristics. Just as specific water, soil, and vegetation characteristics define a wetland, it is these characteristics that we must manage with care in order to maintain the functions and values of wetlands. Some potential forest practices disturbances to wetlands are: alteration of hydrologic functions; soil compaction; introduction of invasive plant species; changes in the microclimate due to vegetation removal in and around the wetland; alteration of habitat through the removal of vegetation, snags, and downed wood; and reduction of woody debris that simplify the composition, structure, and stability of wetlands.



Idealized cross sectional view of spatial and vertical relation of estuarine wetland types.