



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

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## NATIONAL WETLAND INVENTORY

### NOTES TO USERS

LOWER COLUMBIA RIVER AND ESTUARY, OREGON

1:100,000 SCALE MAPS COVERED

Ilwaco  
Astoria

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# NATIONAL WETLAND INVENTORY

## NOTES TO USERS

### Lower Columbia River and Estuary

#### 1. PURPOSE

The purpose of Notes to Users is to provide general information regarding the production of National Wetlands Inventory (NWI) maps and wetlands found within a relatively similar geographic area. Notes to Users are not intended to include descriptions of all wetlands found in the area nor provide complete plant species information.

#### 2. AREA COVERED

The area covered is defined by the Ilwaco and Astoria U.S.G.S. 1:100,000 intermediate scale maps (see attached index maps). The area extends from the mouth of the Columbia River inland to 123° W longitude and is bound north and south by 46°31' N latitude and 46° N latitude respectively.

According to Bailey's ecoregions, the area is in the Humid Temperate Domain, Marine Division, Pacific Forest Province. These mountains are fronted in places by narrow coastal plain. Its climate is characterized by generally mild temperatures averaging 35° to 50° F. (2° to 10° C.) throughout the year. Rainfall is heavy, 30 to 150 inches (750-3,800 mm); maximum rainfall comes in winter. Humidity is always high and produces an extremely favorable precipitation/evaporation ration. The major geologic features of the area are the coastal range mountains and the Columbia River.

#### 3. MAP PREPARATION

Wetland classification for the NWI maps is in accordance with "Classification of Wetlands and Deep-Water Habitats of the United States (An Operational Draft)," Cowardin, et al, 1977.<sup>1</sup> Wetland classification and delineations were produced by air photointerpretation of high level aerial photography. The following photography was used.

<sup>1</sup>/The classification system was published in 1979: Cowardin, Lewis M., Virginia Carter, Francis C. Golet, and Edward T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States, Fish and Wildlife Service, U. S. Department of the Interior, Washington, DC, December 1979.

<u>MAP</u>	<u>SCALE</u>	<u>FILM</u>	<u>DATE</u>
Ilwaco	1:80,000	Black and White	7/77
Astoria	1:80,000	Black and White	7/77

Limited field reconnaissance was conducted during the spring of 1979 and winter of 1981.

Stereoscopically reviewed aerial photographs had wetland boundaries and labels delineated on the photographs. Delineations were enlarged to a scale of 1:24,000 using a zoom-transfer scope and fitted to USGS 7 1/2 minute topographic maps. The 1:100,000 scale wetland maps were prepared from the 7 1/2 minute series. Large scale NWI wetland maps (1:24,000 scale) are available for the USGS 7 1/2 minute topographic sheets indicated on the attached index map.

The Project Officer for production of the wetland maps was Dennis Peters, Regional Wetlands Coordinator, U. S. Fish and Wildlife Service, Region 1, Lloyd 500 Building, 500 NE Multnomah Street, Portland, Oregon 97232, telephone (503) 231-6154. Aerial photo interpretation was completed by Area Information Systems (AIS), Crestline, California. Maps were prepared by Martel Laboratories, Inc., and the NWI National Team in St. Petersburg, Florida.

#### 4. USER CAUTION

The map documents were prepared primarily by stereoscopic analysis of high altitude aerial photographs. Wetlands were identified on the photographs based on vegetation, visible hydrology, and geography. The aerial photographs typically reflected conditions during the specific year and season when they were taken. In addition, there is a margin of error inherent in the use of aerial photographs. Thus a detailed on-the-ground and historical analysis of a single site may result in revision of the wetland boundaries established through photographic interpretation. In addition, some small wetlands and those obscured by dense forest cover may not be included in the map document.

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define limits of proprietary jurisdiction of any federal, state, or local government or to establish the geographical scope of regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specific agency regulatory programs and proprietary jurisdictions that may affect such activities.

## 5. WETLAND COMMUNITIES

All five wetland systems of--Marine, Estuarine, Lacustrine, Riverine, and Palustrine--are represented in the subject area. Deepwater habitats are areas that are permanently flooded (except during periods of extreme drought) and are characterized by open water on the aerial photography. These habitats are present in the Marine system (MLOW), Estuarine system (ELOW), Riverine system (RLOW, R2OW), Lacustrine system (LLOW) and Palustrine system (POW).

Aquatic beds (AB) present in the Marine and Estuarine systems are composed of eel grass beds (Zostera spp.) or algal mats (Ulva spp.) Aquatic beds in the Lacustrine, Riverine, and Palustrine system commonly include species such as pond lily (Nuphar spp.), pond weeds (Potamogetan spp.) or duck weeds (Lemna spp.).

Unvegetated wetlands, present in all systems, include the classes beach/bar (BB), flats (FL), and rocky shore (RS). Beach/bar and rocky shore are generally restricted to the open coast within the marine system. Estuarine flats may be seasonally covered with algal mats (Ulva spp.) and support eel grass beds (Zostera spp.). These areas are coded E2 AB/FL.

Emergent wetlands (persistent) are present in the Estuarine and Palustrine system. Estuarine emergent wetlands (E2EM) in the southern Willapa Bay area and Bakers Bay are commonly characterized by such plants as pickleweed (Salicornia spp.), saltgrass (Distichlis spicata), Pacific silverweed (Potentilla pacifica), gum weed (Grindelia integrifolia), and jaumea (Jaumea carnosa). Different species dominate the estuarine emergent wetland within the Columbia River due to extensive freshwater mixing. Species common to these estuarine emergent wetlands are american bulrush (Scirpus americanus), arrow grass (Triglochin maritimum), Pacific silverweed (Potentilla pacifica), salt rush (Juncus boltious), lilaeopsis (Lilaeopsis occidentalis), tufted hair grass (Deschampsia caespitosa), and creeping bentgrass (Agrostis alba).

Common palustrine emergent wetlands (PEM) species within the tidal freshwater reach of the Columbia River include lyngby's sedge (Carex lynbyei), water horsetail (Equisetum fluviatile), soft stem bulrush (Scirpus validus), and river bulrush (Scirpus fluviatile). Palustrine emergent wetlands or higher sites are commonly characterized by cattail (Typha spp.), spike rush (Eleocharis spp.), rushes (Juncus spp.), reed canary grass (Phalaris arundinacea), sedges (Carex spp.), skunk cabbage (Lysichitum americanum), and water parsley (Oenanthe sarmentosa).

Palustrine scrub shrub (PSS) wetlands are characterized by woody species. Common wetland shrub species include willow (Salix spp.), red alder (Alnus rubra), hardhack (Spirea douglassii), salmon berry (Rubus spectabilis), redosier dogwood (Cornus stolonifera), wax myrtle (Myrica californica) and vine maple (Acer circinnatum).

Common palustrine forest (PFO) species include Oregon ash (Fraxinus latifolia), red alder, big leaf maple (Acer macrophyllum), Sitka spruce (Picea sitchensis), western red cedar (Thuja plicata), and black cottonwood (Populus trichocarpa). The classification of forested or scrub/shrub wetlands is determined by height of woody vegetation - forested greater than 6m and scrub less than 6m.

Natural or artificial basin greater than 20 acres are in the Lacustrine system. The Lacustrine system on the NWI maps include the classes lacustrine open water (L1OW, L2OW), aquatic bed (L2AB) and flats (L2FL). The open water areas are covered by water whereas the flats are exposed at some time during the growing season. Common lacustrine aquatic bed (L2AB) species include duck weed (Lemna spp.), pond weed (Potamogeton spp.), and water lily (Nymphaea spp.). Basins less than 20 acres are classified as palustrine, but at the class level would be classified as described above (PAB, PFL, POW).

The Riverine system includes the classes open water (OW), flats (FL), and streambeds (SB). Open water and flats are restricted to the Riverine tidal (R1OW), lower (R2OW) and upper (R3OW) perennial subsystems. While the flats are not covered by a perennial flow, they are associated with the reach of the river that contains permanent water and are included in the perennial subsystems. Streams which do not flow year round are classified as Riverine Intermittent Streambeds (R4SB). Some riverine systems have their banks lined with trees or shrubs. In cases where streamside palustrine scrub/shrub or palustrine forested wetlands cannot be separately delineated from the riverine system, the wetlands are mapped as linear palustrine wetland features (PSS or PFO).

#### Modifiers

The small-scale (1:100,000) NWI maps' legends do not include water regime nor special modifiers. Mapping codes for these modifiers are indicated in parentheses in the discussion that follows.

Hydrologic characteristics are an important aspect of wetlands. The water regime modifiers describe in general terms the duration and timing of surface inundation, as well as groundwater fluctuations. These modifiers are grouped under two major headings: Tidal and Nontidal.

#### Tidal

Subtidal (L). The substrate is permanently flooded with tidal water.

Irregularly Exposed (M). The land surface is exposed by tides less often than daily.

Regularly Flooded (N). Tidal water alternately floods and exposes the land surface at least once daily.

Irregularly Flooded (P). Tidal water floods the land surface less often than daily.

In Tidal Riverine, Lacustrine, and Palustrine areas, a nontidal modifier is used with a tidal suffix to describe the water regime more appropriately: Temporarily Flooded-Tidal (S), Seasonally Flooded-Tidal (R), Semipermanently Flooded-Tidal (T), or Permanently Flooded-Tidal (V).

### Nontidal

For the purpose of mapping, nontidal water regime modifiers have been lumped into three broad categories. These are:

Intermittently flooded-temporarily flooded (W). The substrate is usually exposed, but surface water is present for variable periods without detectable seasonal periodicity, or surface water is present for brief periods during the growing season.

Saturated/Seasonally-flooded/Semipermanently flooded (Y). The substrate is saturated to the surface for extended periods during the growing season, or surface water is present for extended periods especially early in the growing season but is absent by the end of the season in most years, or surface water persists throughout the growing season in most years.

Intermittently exposed/Permanently flooded (Z). Surface water is present throughout the year except in years of extreme drought, or water covers the land surface throughout the year in all years.

An artificially flooded (K) water regime modifier can be applied with all water regime modifiers. In this case, flooding is under the direct and purposeful control of man.

Special modifiers included on these 1:100,000 scale NWI maps, where applicable, are:

Diked/impounded (h). Created or modified by a barrier, dike, or dam which obstructs the inflow or outflow of water.

Excavated (x). Lies within a basin or channel excavated by man.

## 6. SOURCES OF ADDITIONAL INFORMATION

Since the purpose of the Notes to Users is to provide a general overview of a relatively large geographic area, in this case about 1,600 square miles, it is important to be aware of sources of additional information. The following is a list of reports providing information about the area of concern.

Bailey, Robert G. 1978. Description of the ecoregions of the United States. U. S. Forest Service, USDA, Ogden, Utah.

Booz Allen Energy and Environment Division. The Natural Resource Benefits of Freshwater Riverine Wetlands: A Literature Review, prepared for Davis G. Davis Office of Analysis and Evaluation, 1978.

Cowardin, Lewis M., Virginia Carter, Francis C. Golet, and Edward T. LaRoe. 1977. Classification of wetlands and deep-water habitats of the United States (An Operational Draft), U. S. Fish and Wildlife Service, October 1977.

Tabor, J. E. 1976. Inventory of riparian habitats and associated wildlife along the Columbia river. Vol. 2A. U. S. Army Corp of Engineers, N. Pacific Division, Portland, Oregon. 861 pp.

Thomas, D. W. 1980. Intertidal Vegetation of the Columbia River Estuary; a study for CREDDP. U. S. Army Corp of Engineers, North Pacific Division, Portland, Oregon.

NATIONAL WETLANDS INVENTORY

Notes to Users

1:100,000s covered by Lower Columbia River and Estuary



