NATIONAL WETLAND INVENTORY

NOTES TO USERS

Northern California Coast-Oil Creek to Oregon Border
1983 Update

INTRODUCTION

The U.S. Fish and Wildlife Service, Office of Habitat Resources, is conducting an inventory of the wetlands of the United States. The National Wetlands Inventory (NWI) is establishing a wetland data base in both map and computer forms for the entire country. The NWI information will serve to identify the current status of U. S. wetlands and can be used as a reference point from which future changes in wetlands can be evaluated.

PURPOSE

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

AREA COVERED

The area covered is defined by the Crescent City NE, SE, and Eureka NE intermediate-scale USGS maps (1:100,000). The area falls within the Humid Temperate Domain, Marine Division, Pacific Forest Province of Bailey's Ecoregions.

PHYSIOGRAPHY

The subject area falls within the Coast Range geomorphic province. The Coast Range consists of a narrow belt of mountains separating the Klamath Mountain province (to the east) from the coastal alluvial plain. Low lying alluvial valleys and tidal plains are at the mouths of principal streams which empty into the Pacific Ocean. Adjacent to the valleys along the coast are high terraces of limited extent. Coastal mountains are highly dissected by numerous streams and steep, narrow valleys.

CLIMATE

The climate is typified by mild, moist winters and cool, foggy summers. A narrow range of temperatures results from the

maritime influence. Temperatures along the coast vary only 10° from summer to winter, with a greater range exhibited inland where fog is less prominent. Rainfall is light to nonexistent in summer and heavy in winter. Average annual precipitation varies over the region from 30" to 40" in the Humboldt Bay area to 80" at Crescent City and East of Fort Dick. Snowfall is light and infrequent (with substantial snowfall occurring further inland). Freezing temperatures occur over most of the area every year. the first freeze in fall is usually during November along the coast, resulting in a frost-free growing season of approximately 250 days.

Wetlands in the area are largely associated with the major waterbodies including estuaries, lakes, and rivers. River mouth estuaries are similar in that tidal effect and saltwater influence are restricted to short stretches (a few miles or less). They are greatly affected by river flow and tidal stage such that during high flow and low tides the salt water wedge may be forced completely out of the estuary. Commonly the mouths of the estuaries close off completely during low flows.

Humboldt Bay, the dominant hydrologic feature of the area, is the fourth largest estuary in the Pacific Northwest and is characterized by a small freshwater input and a large volume of exchange with the ocean during each tidal cycle.

Big Lagoon and Stone Lagoon (located north of Patrick's Point) are considered estuaries because they are periodically open to tidal exchange. During most of the year saltwater exchange is restricted by the presence of barrier bars (except by seepage). In Big Lagoon, fall flows from Maple Creek raise the water level above that of the ocean and breaching occurs. The lagoon may remain open for days or weeks, and breaching may occur a number of times between December and April. During summer months the lagoon is highly stratified, but becomes partially mixed after breaching. Stone Lagoon has a similar seasonal pattern, although breaching is less frequent and less prolonged due to a lower freshwater input. Freshwater Lagoon, situated between Big and Stone Lagoons, is not subject to tidal exchange and is not considered an estuary.

Lake Earl, north of Crescent City, has the properties of an estuary in its western reaches although the main body of the Lake is freshwater.

HYDROLOGY

Due to the climatic characteristics of the areas, the majority of inland wetlands in the region occur as the result of seasonally high groundwater tables in low-lying areas, or seasonally high river flows. Because the rainy season normally persists through the month of April, the early portions of the growing season are characterized by heavy rainfall with accompanying high water tables. Surface and groundwater tables rapidly drop following

cessation of rains, although heavy snow cover in the mountains may prolong high flows in rivers. Major rivers in the region are characterized by widely disparate summer and winter flow.

Flooding frequently occurs along streamcourses throughout the area whenever severe rainstorms coincide with a period of snow-melt in the mountain regions. The December 1964 flood was considered the most severe in over 100 years and constituted a 1,000-year flood event. In 1955 a 100-year flood affected all the streamcourses in the region.

SOILS AND SURFACE DEPOSITS

Coastal terrace soils range from well drained to poorly drained alluvial soils formed from old marine terrace and coastal mountain parent material. Wet soils are associated with depressed poorly drained dissections of terraces, bottoms, river floodplains and reclaimed tidal marsh.

Surface deposits which are strongly associated with wetlands include dune sands, river deposits and mud bays. Wetlands are abundant in the low lying dune hollows north of Crescent City and adjacent to Humboldt Bay. River bars of sand and gravel are common along all major rivers in the area. Humboldt Bay and the Eel River delta contain large expanses of intertidal mudflats.

MAP PREPARATION

Wetland classification for the NWI maps is in accordance with "Classification of Wetlands and Deep-Water Habitats of the United States " Cowardin, et al, 1979, and mapping conventions developed for the purposes of the Inventory.

Wetland classification and delineations were produced by air photointerpretation of high level aerial photography. The aerial photography used was 1983 color infared at a scale of 1:58,000. The area covered encompassed three flightlines photographed during the months of July and August.

Photographs were stereoscopically viewed under magnification and wetland boundaries were delineated directly on overlays which were labelled according to the classification system. Delineations were enlarged to a scale of 1:24,000 using a zoom-transfer scope and fitted to USGS 7 1/2' topographic maps. Large scale (1:24,000) are available for the USGS 7 1/2' 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 Andrea Pickart, U. S. Fish and Wildlife Service. Maps were prepared by Martel Laboratories, Inc., and the NWI National Team in St. Petersburg, Florida.

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.

WETLAND COMMUNITIES AND DEEPWATER HABITATS

All five wetland systems; Marine, Estuarine, Riverine, Lacustrine, and Palustrine are represented in the subject area. In terms of total acreage, the majority of wetlands are located within the coastal alluvial plains and are associated with estuaries, lakes and rivers. Interior wetlands are mainly associated with stream corridors.

Deepwater habitats are areas that are permanently flooded at a depth of more than 2 m. (6.6 ft) in the Lacustrine and Riverine systems, or lie below Extreme Low Water in the Marine and Estuarine systems. Deepwater habitats appear as open water on the aerial photographs, however not all open water areas constitute deepwater habitat. These habitats are present within the Marine system as subtidal areas underlain by unknown bottom (M1OW) and in the Estuarine system as subtidal areas underlain by unknown bottom (E1OW), unconsolidated bottom of sand (E1UB2) or

mud (E1UB3), or vegetated with eelgrass (Zostera marina) (E1AB3). Bottom sediments of deepwater habitats for Humboldt Bay were classified with the aid of collatoral data. Oyster beds used for aquaculture were not classified due to inadequate data. Deepwater habitats of the subject area within the Lacustrine system are limited to open water underlain by unknown bottom (L1OW) and aquatic bed of rooted vascular plants (L1AB3). In the Riverine system deepwater habitats include unknown bottom and unconsolidated bottom of the tidal, lower perennial and upper perennial subsystems (R1OWV, R2OWH, R3OWH, R1UBV, R2UBH, R3UBH). Unconsolidated bottom was not classified to subclass in the Riverine system due to lack of collatoral data and the limitations of aerial photography.

Non-vegetated wetlands in the study area are confined to the Riverine, Marine, and Estuarine systems and consist of unconsolidated and rocky shore. In the intertidal Marine subsystem, unconsolidated shore wetland types fall predominantly within the subclass sand (M2US2 subclasses). In the Estuarine intertidal both sand and mud are present (E2US2 and E2US3). Unconsolidated shore subclasses were delineated with the aid of collatoral data in Humboldt Bay. In the Riverine system seasonally flooded sand and gravel unconsolidated shores are common; however, due to the limitations of photography, these were not classified to subclass.

A second non-vegetated wetland type present in the Riverine system is the class streambed (SB), which occurs in association with intermittent streams (R4SBC). This wetland type was not classified to subclass due to limitations of photography.

Many stream banks are lined with persistent emergent or woody wetland vegetation. In cases where Palustrine wetland vegetation cannot be separately delineated from the Riverine system, then the area is mapped as a linear Palustrine wetland feature.

The aquatic bed (AB) class is represented in the Estuarine and Palustine systems of the area. The majority of Estuarine aquatic beds consist of algae (E2AB1) and eelgrass (Zostera spp.) (E1AB3, E2AB3). In the Palustrine system, aquatic bed consists of floating vascular plants, principally yellow pond lily (Nuphar polysepalum). A single occurrence of a moss/lichen (PML1) wetland (Sphagnum spp.) was mapped in the southwest corner of Big Lagoon.

Emergent wetlands (EM) are common within the Estuarine and Pe2alustrine systems throughout the area. Within the Estuarine system (E2EM) they occur most commonly as salt marsh dominated by cordgrass (Spartina spp) and pickleweed (Salicornia virginica). Pickleweed dominates at lower elevations, often in association with saltgrass (Distichlis spicata). Diversity increases with elevation, and species such as arrowgrass (Triglochin maritimum),

Jaumea (Jaumea carnosa), sea lavendar (Limonium californicum) and orache (Atriplex patula) become increasingly common. Cordgrass occurs in middle and high elevation marshes and may comprise 75% or more of the cover. Cordgrass-dominated salt marshes within the subject area are restricted to the Humboldt Bay region.

Brackish marshes within the Estuarine system (E2EM1P) occur at the upper fringes of salt marshes or in former salt marsh in which tidal exchange is inhibited but not entirely prevented by poorly functioning tide gates. These marshes support brackish species [various fresh water and salt-tolerant hydrophytes] such as hairgrass (Deschampsia caespitosa), slough sedge (Carex obnupta), brass buttons (Cotula coronopifolia), and alkali grass (Puccinellia spp.).

Farmed wetland (Pf) comprises the largest emergent wetland type in the area, encompassing approximately 7500 acres in the Humboldt Bay region. Farmed wetland is primarily historic salt marsh that has been diked and converted to pasture. Seasonally high water tables cause these areas to function as seasonal wetlands, although grazing and other disturbances may preclude the establishment of hydrophytes. The farmed wetland boundary for the area was determined following analysis of historic maps, vegetation and soil surveys, and other date for indications of historic tideland boundaries. The resulting boundary closely coincides with the 5-foot contour, a tide-land boundary indicator used elsewhere in California (and arrived at independently).

Farmed wetlands often contain scattered or dense patches of soft rush (Juncus effusus) or other hydrophytes which are not palatable to grazing animals. Where these hydrophytes dominate, Palustrine emergent wetlands (PEM1C) were differentiated from farmed wetland in recognition of the fact that they also occur as a distinct wetland type above the 5-foot contour. In addition, relict sloughs within farmed wetlands were delineated as Palustrine emergent wetlands or open water areas (PEM1C, PEM1F, POWH). Larger sloughs which have been diked but retain their tidal nature fall within the Estuarine system.

In addition to seasonal Juncus-dominated wet pasture, there are abundant persistent emergent wetlands throughout the area which are seasonal, semipermanent, or permanent in nature. Semipermanent and permanent emergent wetlands are less common in the area due to seasonal fluctuations of groundwater. The great majority of emergent wetlands are seasonal in nature; ponding water into the first few months of the growing season. Seasonally flooded emergent wetlands commonly include such species as bulrush (Scirpus microcarpus), buttercup (Ranunculus repens), silverweed (Potentilla anserina) and water parsley (Oenanthe sarmentosa). More permanent marshes contain cattail (Typha latifolia), marsh pennywort (Hydrocotyle ranunculoides) Veronica (Veronica americana), mare's tail (Hippuris vulgaris), water parsley and a variety of other species.

Within the dune fields of Humboldt Bay and north of Crescent City a distinctive type of seasonal emergent wetland occurs. These wetlands develop in low-lying interdune swales which become inundated by high groundwater tables during winter and spring months and are dominated by hydrophytes such as Juncus leseureii, and spike rush (Eleocharis palustris).

The scrub/shrub class (SS) is less common in the subject area than emergent. Scrub/shrub wetlands are generally seasonally wet. Willows (Salix spp.) are the dominant constituent of scrub/shrub wetlands throughout the area. Other species include red alder (Alnus rubra), blackberry (Rubus spp), and California myrtle (Myrica californica).

Wetlands dominated by woody vegetation greater than 6m are classified as forested (FO). Forested wetlands in the subject area are typically temporarily or seasonally wet broad-leaved deciduous stands dominated by red alder, willows, and big leaf maple (Acer macrophyllum). Understories of these forested wetlands commonly consist of sedges (Carex spp.), buttercup (Ranunculus spp.), rushes (Juncus spp.), and skunk cabbage (Lysichiton americanum). These wetlands are concentrated in the Crescent City area and, to a lesser extent, the Humboldt Bay area.

A needle-leaved evergreen forested wetland (PFO4C) was mapped at only one location in the redwood forest east of Gold Bluffs Beach (Prairie Creek State Park). The wetland canopy consisted of redwood (Sequoia sempirvirens) with an understory of sedge (Carex sp.), and was associated with a stream course.

MODIFIERS

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. Mapping codes for these modifiers are indicated in parentheses in the discussion that follows. 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 the Tidal Riverine, Lacustrine, and Palustrine areas, a nontidal modifier is used with a tidal suffix to describe a water regime more appropriately: Temporarily Flooded-Tidal (S), Seasonally Flooded-Tidal (R), Semi-Permanently Flooded-Tidal (T), or Permanently Flooded-Tidal (V). The exception is regularly flooded fresh tidal areas (flooded at least once daily) which retain the Regularly Flooded modifier (N).

Nontidal

TEMPORARY (A): Surface water present for brief periods during the growing season, but water table usually lies well below soil surface.

SATURATED (B): Surface water is seldom present, but substrate is saturated to the surface for extended periods during the growing season.

SEASONAL (C): Surface water is present for extended periods especially early in the growing season, but is absent by the end of the growing season in most years.

SEMIPERMANENT (F): Surface water persists throughout the growing season in most years.

PERMANENT (H): Water covers the land surface throughout the year in all years.

Special Modifiers

Special modifiers utilized in the subject area include:

f: farmed
h: diked/impounded
r: artificial
s: spoil
x: excavated

The farmed wetland modifier was used only in delineating diked former tidelands. The diked/impounded modifier was used primarily for log ponds and impoundments along streamcourses, though in many instances, log ponds are also excavated. The excavated modifier was assigned to non-diked artificially created wetlands including drainage channels. The "s" modifier was used to denote wetlands occurring on dredge spoil (the only mapped occurrence of this was in the Eureka area). Artificial (r) was assigned to jetties (classified as rocky shore) in Humboldt Bay and Crescent City harbors.

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