



United States Department of the Interior

FISH AND WILDLIFE SERVICE

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NATIONAL WETLAND INVENTORY

NOTES TO USERS

SACRAMENTO-SAN JOAQUIN DELTA, CALIFORNIA

1:100,000 SCALE MAPS COVERED

Lodi	-	Sacramento SW
Stockton	-	San Jose NW

NATIONAL WETLAND INVENTORY

NOTES TO USERS

Sacramento-San Joaquin Delta

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 Lodi and Stockton USGS 1:100,000 intermediate scale maps (see attached index maps). The area is between 122°W longitude and 121°W longitude and bounded on the north by 38°30'N latitude and on the south by 38°N latitude.

According to Bailey's ecoregions, the area is in the Humid Temperate Domain, Marine Division, California Grassland Province. The Delta has Mediterranean-type climate with hot, nearly rainless summers and cool, moist winters. The summer heat is tempered somewhat by cool ocean breezes and winds that enter the Delta through Carquinez Strait. Average July temperatures range between 55°F and 90°F, and average January temperatures range between 35°F and 55°F. Average rainfall, which occurs primarily between October and April, ranges from 12 to 18 inches annually with the larger amounts falling in the northern portion of the Delta.

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, 1977.1/

Wetland classification and delineations were produced by air photointerpretation of high level aerial photography. The following aerial photography was used for wetlands photointerpretation:

<u>Map</u>	<u>Scale</u>	<u>Film</u>	<u>Date</u>
Lodi	1:130,000	Color-infrared	6/76
Stockton	1:130,000	Color-infrared	4/75, 7/76, 7/72
		Color-infrared	6/76

1/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.

Limited field reconnaissance was conducted in January of 1979 and 1982.

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

Four wetland systems--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 Estuarine system (ELOW), Riverine system (RLOW, R2OW), Lacustrine system (LLOW), and Palustrine system (POW).

Emergent wetlands (persistent) are present in the Estuarine and Palustrine system. Estuarine emergent wetlands (E2EM) are dominated by such species as pickleweed (Salicornia spp.), saltgrass (Distichlis spicata), salt cordgrass (Spartina foliosa), three square (Scirpus americanus) gum weed (Grindelia spp.) jaumea (Jaumea carnosa), Pacific silverweed (Potentilla pacifica), frankenia (Frankenia grandifolia), and salt bush (Artiplex spp.). Less saline estuarine emergent wetlands (brackish marsh) support such species as Olney's bulrush (Scirpus olneyi), rush (Juncus balticus), cattail (Typha spp.), alkali bulrush (Scirpus robustus), and brass buttons (Cotula coronopifolia).

Palustrine emergent wetlands (PEM) are characterized by numerous and various species; some of the most common being bulrush (Scirpus spp.), sedges (Carex spp.), horsetails (Equisetum spp.), rushes (Juncus spp.), spike rushes (Eleocharis spp.), cattail (Typha spp.), dock (Rumex spp.), smartweeds (Polygonum spp.) reed grass (Calamagrostis spp.), nutgrass (Cyperus spp.), mannagrass (Glyceria spp.), and bentgrass (Agrostis spp.). Vernal pool wetlands (PEMW) are a wetland type essentially unique to California. These wetlands contain certain species of Juncus, Scirpus, and Carpus as well as some species found only in vernal wetlands. Such species include eryngium (Eryngium spp.), downingia (Downingia spp.), blennosperma (Blennosperma nanum), skunk weed (Navarreta spp.), meadow foam (Limnanthes douglasii), brodiaea (Brodiaea spp.), and hairgrass (Deschampsia danthonoides).

Historically large areas of estuarine emergent wetlands were diked off from tidal influence. These wetlands are classified as Palustrine farmed (Pf). Diked former estuarine tidelands are commonly characterized by such species as pickleweed, saltgrass, rushes, brass buttons, plantain (Plantago spp.), salt bush, "sickle" grasses (Monerma cylindria and Paraphalis incurua), and various "weedy" or "ruderal" grasses on high spots.

Large areas of freshwater wetlands have also been diked off within the Sacramento-San Joaquin Delta from the influence of the delta's rivers. These peatlands, which have been mostly

converted to croplands, are also classified as Palustrine farmed (Pf). These areas do not support wetland plants due to intensive farming, however, the peat soils are wet for short periods early in the growing season before planting begins.

Palustrine scrub shrub (PSS) wetlands are characterized by woody species. Common wetland shrub species include willow (Salix spp.), red alder (Alnus rubra), white alder (A. rhombifolia), red osier dogwood (Cornus occidentalis), baccharus (Baccharus spp.), and elderberry (Sambucus spp.). Typical forest (PFO) species are red alder, sycamore (Plantanus racemosa) and cottonwood (Populus fremonti). Some forested wetlands of a temporary nature (PFOw) contain cottonwood, Eucalyptus (Eucalyptus spp.), or Valley oak (Quercus lobata). The classification of scrub/shrub or forested wetlands is determined by height-forested greater than 6m. and scrub/shrub less than 6m.

The Riverine system includes the classes open water (OW), aquatic bed (AB), 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. Portions of slow moving rivers are dominated by water hyacinth (Eichornia crassipes) and classified as Riverine aquatic bed (R1AB, R2AB).

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).

Natural or artificial basins greater than 20 acres are in the Lacustrine system. The Lacustrine system on the NWI maps includes 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 identified as palustrine, with classes as described above; i.e., palustrine open water (POW), palustrine aquatic bed (PAB), and palustrine flat (PFL).

Modifiers

The intermediate-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 3,200 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.

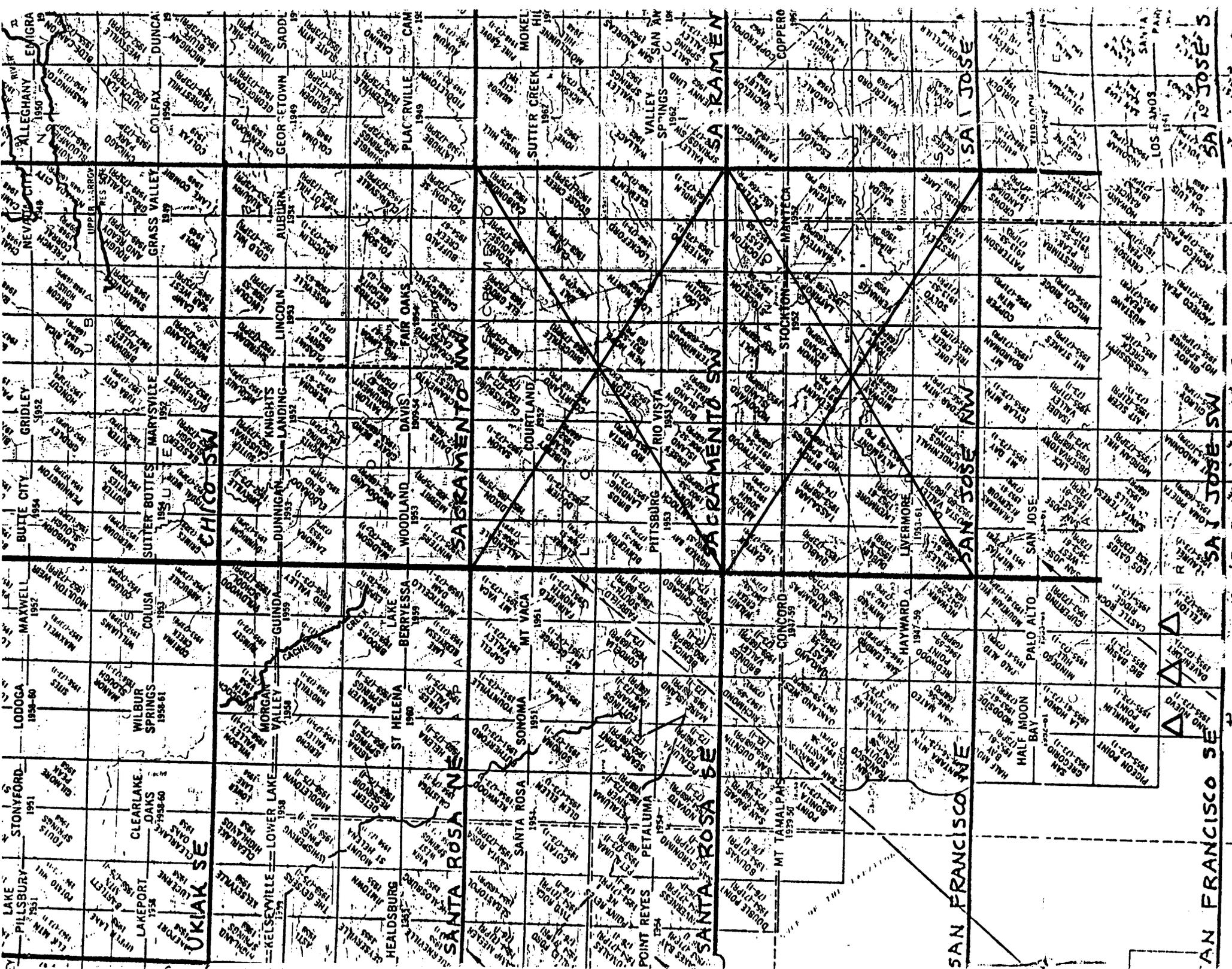
Bailey, Robert G. 1978. Description of the ecoregions of the United States. U. S. Forest Service, USDA, Ogden, Utah.

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.

Ecological Studies of California. 1973. Sacramento-San Joaquin Delta Master Recreation Plan.

Holland, R., and S. Jain. 1977. "Vernal Pools" p.515-533. In M.G. Barbour and J. Major. Terrestrial Vegetation of California. John Wiley and Sons, New York.

Resources Agency of California. 1973. Sacramento-San Joaquin Delta Master Recreation Plan.



LAKE
PILLSBURY
1951

STONYFORD
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LODOGA
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MAXWELL
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