NATIONAL WETLANDS INVENTORY

1:100,000 Map Narrative

Palestine NW

INTRODUCTION

In 1974, the U.S. Fish and Wildlife Service directed its Office of Biological Services to complete an inventory of the nations wetlands. As part of this overall objective, an effort began in August 1980 to delineate and classify wetlands by means of photo interpretation combined with field checking in the northeastern section of Texas which borders Louisiana. A total of eight 1:100,000 scale maps are to be produced:

Tyler NE, NW, SE, SW

Texarkana SE, SW

Palestine NE, NW

Wetland maps at 1:100,000 scale and wetland overlay maps at 1:24,000 or 1:65,000 are produced at the National Wetlands Inventory headquarters in St. Petersburg, Florida. Information regarding final Texas maps is available from the U.S. Fish and Wildlife Service's regional office located in Albuquerque, New Mexico. An integral part of all final wetland maps is the completion of narrative reports for each U.S. Geological Survey 1:100,000 quadrangle inventoried. The following narrative report provides both basic and specific data which aid the user in understanding not only the general area of the Palestine NW quadrangle but also representative details of its wetland habitat.

Map Preparation

The wetland classifications that appear on the Palestine NW wetland maps are in accordance with Cowardin et al. (1979). The delineated mapping units resulted from stereoscopic interpretation of 1:65,000 scale color-infrared transparencies taken in February 1980. The delineated units were transferred to 1:24,000 scale U.S. Geological Survey topographic maps or orthophoto quads with a zoom transfer scope.

Overall the photography has good resolution and contrast. Distinguishing between classes, subclasses and water regimes posed few difficulties. Collateral data included U.S.G.S. topographic maps (7.5 min. and 15 min.) and Soil Conservation Service soil surveys. Specific mapping conventions developed at NWI headquarters were used to assist in photo-interpretation. Field checking was done September 7 to 27, 1980, January 25 to 30, 1981 and May 18 to 21, 1981.

Map users are cautioned that mapping with high altitude aerial photography has limitations. Wetlands are identified and classified through stereoscopic examination of photography on the basis of photo characteristics; e.g. tone, texture, pattern, site and size, in addition to local ecology. Aerial photographs reflect conditions during the year and season in which they were taken. In addition, the small scale of the photography limits the size of the mapping unit thus precluding

delineation of very small wetlands (less than 1/4 acre approximately) and narrow linear wetlands (less than 15 feet wide approximately). Changes in the landscape and/or land use could have occured since the time of photography; therefore some discrepancies between the map and current field conditions may exist.

Any discrepancies regarding wetland omissions, inclusions or errors should be brought to the attention of the Regional Wetlands Coordinator, Region 2. The Project Officer for this wetland map is Warren Hagenbuck, Regional Wetlands Coordinator, U.S. Fish and Wildlife Service, Region 2, P. O. Box 1306, Albuquerque, New Mexico, 87103.

SPECIAL MAPPING PROBLEMS

The most significant problem encountered was determining a break between palustrine, emergent, temporarily flooded wetlands (PEM5A) and upland. Many sites originally interpreted on the photos as PEM5A were found to be upland improved pastures. Although these pastures have a signature similar to that of temporarily flooded areas and are occasionally flooded, they do not meet the wetland criteria set by Cowardin et al. (1979). The substrate is not predominatly undrained hydric soil and does not constitute non-soil covered by water at some time during the growing season Due to disturbances designed to enhance grazing

productivity, these sites support predominatly upland vegetation that can tolerate temporary flooding. Should man's impact cease, many of these areas would support some hydrophytic vegetation.

In most cases, transitional or marginally wet areas in improved pastures were considered upland. However, small areas within these problematic improved pastures were mapped as temporarily flooded wetlands if the predominance of hydrophytes was strongly suspected through soil surveys, significantly darker signatures or other pertinent factors. Drainage ways in these pastures were often found to contain an abundance of hydrophytes and were mapped using the temporary (A) or seasonal (C) water regime. Darker toned depressions within these pastures were delineated as seasonally flooded.

Difficulty was encountered in determining the break between palustrine forested, temporarily flooded wetlands (PFO1A) and upland. In some instances these forests are transitional between wetland and upland. Palustrine forests characteristically include narrow berms and isolated hillocks of upland too small to map. Relatively small changes in elevation define the wetland/upland break. For this reason, upland species can be found interspersed with wetland vegetation. Careful analysis of photographic characteristics and the use of collateral data helped alleviate this problem.

FIELD WORK COMPLETED

Three field trips were completed. The first, September 7 to 27, 1980, was conducted in order to relate various photographic characteristics to actual wetland classification. East Texas was experiencing a serious drought during this trip. This drought posed some difficulties in assigning water regimes. Many of the field check sites were dry. The characteristic wetland vegetation was often desiccated, making identification difficult. In some instances pioneer upland vegetation had invaded the site. Water regimes were assigned according to such factors as wetland species composition, condition of the soil and the high water mark visible on woody vegetation and man-made structures.

The second trip, January 25 to 30, 1981, was conducted to investigate signatures not checked on the first field trip and to gain a more complete understanding of the break between palustrine emergent wetlands and uplands. Over 40 sites were field checked. Many were those classified as palustrine emergent. This checking led to the decisions discussed in the section on special mapping problems. During this field trip, conditions were closer to normal than those found during the first trip, but were not as wet as would be expected during the early part of the growing season. The third trip in May was a first check on a limited number of draft maps. No significant problems were encountered during this field check.

AREA DESCRIPTION

BAILEYS ECOREGIONS

Palestine NW lies mostly within Bailey's (1978) Southern Mixed Forest Province. The area is characterized by medium to tall forests of broad-leaved deciduous and needle-leaved evergreen trees. Common species include loblolly pine (Pinus taeda) short leaf pine (Pinus echinata), oak (Quercus spp.), sweetgum (Liquidambar syraciflua) and red maple (Acer rubrum). The predominant range plants include bluestem (Andropogon spp.) panicum (Panicum spp.), and long leaf uniola (Uniola spp.).

The eastern portion of the quadrangle is transitional to the Oak-Bluestem Parkland of the Prairie Parkland Province. Vegetation is similar to the Southern Mixed Forest though prairie plant associations become more significant spatially.

GEOGRAPHY

Palestine NW lies mainly in the Gulf Coastal Plain. The prevailing terrain slopes gently to the southeast with hilly and nearly level areas. Local relief is from 100 to 600 feet. This gentle terrain enhances the potential for farming. The production of beef and dairy cattle is the major farming enterprise. Forest products, oil and gas production, crop production and surface mining are significant land uses. Drainage is provided through the Neches, Angelina and Trinity Rivers.

SOILS

Soil is an important element of wetlands and is one of the criteria used to define wetlands. The most extensive wetland soils are located in long flood plains along rivers and streams. According to S.C.S. soil surveys, soils frequently flooded in the study area include Pelham, Robinson, Thenas, Trinity, Hannahatchee, Nahatche, Kaufman and Wrightsville. These soils are typically nearly level loams and clays located in bottomlands. They are flooded at least annually. Unless artificially protected, they have low potential for cultivation or urban uses. The highest potential use for these soils is hardwood forest (PFO1A). Another use with high potential is as pastureland (PEM5A or upland).

CLIMATE

According to S.C.S. soil surveys, the Palestine NW quadrangle is humid subtropical with hot summers. Rainfall averages 40 inches annually and is fairly evenly distributed throughout the year. The growing season (frost-free period) averages 250 days. Winter temperatures are mild, usually above freezing during the day. Snowfall is rare and is an unimportant source of moisture. Summers are hot with occasional thundershowers. Rainfall is slightly decreased during the summer.

CHARACTERISTICS OF NWI WETLAND SYSTEMS IN PALESTINE NW

MARINE AND ESTUARINE SYSTEMS

No marine or estuarine wetlands are found in Palestine NW.

LACUSTRINE SYSTEM

With few exceptions all lacustrine wetlands are impounded. Significant fluctuation in water level occurs in many of these lakes due to artificial inundation and drainage. The water is drawn down in anticipation of high water and is allowed to flood back temporarily to prevent flooding downstream. The water level at the instant of photography is assumed to approximate normal water level. New impoundments may have standing dead trees (PF05).

Lacustrine aquatic beds (L1AB, L2AB) commonly consist of duckweed (Lemna spp.), water lily (Nymphaea spp.) and lotus (Nelumbo spp.).

RIVERINE SYSTEM

Palestine NW quadrangle has a dendritic drainage pattern and numerous sluggish rivers and streams. Many of these overflow their banks annually. All perennial streams are considered lower perennial (R2OWH). Intermittent streams are often seasonally flooded (R4SBC). Delineation of vegetation in the channel takes precedence over the above classification. The break between perennial and intermittent streams is made using USGS topographic maps.

PALUSTRINE SYSTEM

An important aspect of the East Texas landscape is the high number of permanently flooded man-made ponds. These ponds are used for watering livestock and many are of recent construction. Although the area was field checked during an unusually dry year, most of them contained water. They are therefore considered permanently flooded (POWHh, POWHx).

The most extensive wetland type is broad-leaved deciduous forest, temporarily and seasonally flooded (PFO1A, PFO1C). Sweetgum, oaks, red maple, willow (Salix spp.) and river birch (Betula nigra) are quite common. These wetlands are frequently found on the level flood plains of most major rivers and streams. Seasonally flooded forest in this situation are small depressions or areas surrounded by natural levees. Linear palustrine forests reflect the vegetation growing on the stream bank which floods during high water. Temporarily flooded forests have a greater abundance of typically drier vegetation such as some oaks and sweetgum. Seasonally flooded forests tend towards, but are not limited to, species such as river birch, red maple and willow.

A few sites with cypress (Taxodium distichum) were noted. These are generally in regions protected from or inaccessible to timber harvesting. Cypress is also found in and along streambanks. Cypress swamps are usually semipermanently or seasonally flooded (PFO2F, PFO2C). Where a break between broad-leaved deciduous and needle leaved deciduous subclasses could not be reliably made the general deciduous subclass (PFO6) was used.

Needle-leaved evergreens indigenous to the Palestine NW quadrangle do not tolerate flooding for extended periods. Shortleaf pine (Pinus echinata) and loblolly pine (P. taeda) are common species and are planted extensively on uplands. Although loblolly can grow in wetland situations (Fowles 1965), it tends to be restricted to uplands here.

Temporarily and seasonally flooded scrub-shrub wetlands (PSS1A, PSS1C) are similar in species to their forested counterparts. In the Palestine NW quadrangle they are often immature (less than 20 feet in height) forests. Buttonbush (Cephalanthus occidentalis) and speckled alder (Alnus rugosa) are prevalent in open semipermanently flooded scrub-scrub wetlands. These species need full sunlight to thrive. Planner or water elm (Planera aquatica) was found almost exclusively in and among creeks bordered by forest vegetation. This shrub, which can grow over 20 feet tall, requires a considerable amount of water but can tolerate shade.

All palustrine emergents mapped in Palestine NW are narrow leaved persistent (PEM5). Common genera include Juncus, Polygonum and Cyperus. Although broad-leaved emergents are present (e.g. Sagittaria spp.), they are not found in pure stands large enough or in mixed stands of sufficient quantity to be delineated separately. Semipermanently flooded emergents (PEM5F) are predominatly cattail (Typha spp.) marshes. Important in some

regions are extensive stands of giant cutgrass (Zizaniopsis miliacea).

Palustrine aquatic beds (PAB) are found throughout the quadrangle. Commonly found are duckweed, water lily and lotus.

WETLAND VALUES

As was demonstrated during the drought of 1980, water is an important resource to the Palestine NW quadrangle. The numerous excavated and impounded ponds illustrate the concern of local inhabitants. Large lakes are carefully managed for water and flood control.

Forested and scrub-shrub wetlands, especially those flooded temporarily (PFO1A, PSS1A), are important wildlife habitat. These wetlands support a great variety of wildlife including white-tailed deer and numerous species of birds.

WETLAND VULNERABILITY

Wetland loss is potentially a major problem in Palestine NW. Large acreages of bottomland hardwoods are being removed and the land converted to rangeland.

Another problem is the loss of wetlands through coal mining. With the cost of energy rising rapidly, it is now profitable to strip mine for low grade coal that can be found in Palestine NW and the other quadrangles in northeast Texas. Several mines and test pits can be found on the photography.

In summary, th wetlands of the Palestine NW quadrangle are a valuable resou:ce; a resource that needs management and protection if they are to survive. This inventory is the first step in this management.

LITERATURE CITED

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TABLE 1. SUMMARY OF NWI WETLAND TYPES

NWI CODE	DESCRIPTION	VEGETATION COMMONLY FOUND	COMMENTS
L1OWHh	Lacustrine, open water, permanently flooded, impounded	Unveg.	Carefully regulated for flood control. Distinct signature.
L1AB L2AB	Lacustrine, aquatic bed	Lemna spp. (duckweed); Nelumbo spp. (lotus); Nymphaea spp. (water lily)	Unknown surface sublcass (AB7) used when identification unsure.
L2USCh	Lacustrine, unconsolidated shore, seasonally flooded, impounded	Unveg.	Lake margins
R2OW	Riverine, perennial open water	Unveg.	Distinct signature.
R4SB	Riverine, intermittant streambed	Unveg.	USGS topos used to determine intermittent/perennial break.
POWH	Palustrine, open water, Permanently flooded	Unveg.	Distinct signature.
POWHh POWHx	Palustrine, open water, permanently flooded, impounded or excavated	Unveg.	Stock tanks often used for watering cattle. Distinct signature.
PFO1	Palustrine, forested, broad-leaved deciduous	Salix spp. (willow); Betula nigra (river birch); Fraxinus pennsylvanica, (green ash); Acer rubrum (red maple)	Signature occasionally subtle.
PFO2	Palustrine, forested, needle-leaved deciduous	Taxodium distichum (cypress)	Subtle signature. General deciduous subclass (PFO6) used when unsure.
PSS1	Palustrine, scrub-shrub, broad-leaved deciduous	Cephalanthus occidentalis (buttonbush); Alnus rugosa (alder); Ulmus spp. (elm);	Occasionally difficult to separate from palustrine forest.
PEM1	Palustrine, emergent, persistent	Typha spp. (cattail); Zizaniopsis miliacea (giant cutgrass); Juncus spp.; Polyganum spp.	
PAB	Palustrine, aquatic bed	Lemna spp. (duckweed); Nelumbo spp. (lotus); Nymphaea spp. (water lily)	Unknown surface subclass (AB7) used when identification unsure.