NW

COLORADO WETLAND INVENTORY
U. S. FISH AND WILDLIFE SERVICE
1:100,000 MAP NARRATIVE REPORT
-LIMON NW-

INTRODUCTION

In 1974, the U. S. Fish and Wildlife Service directed its Office of Biological Services to complete an inventory of the Nation's wetlands. As part of this overall objective, an effort began in September, 1978, to delineate and classify photointerpretable wetlands within the eastern five-sevenths of Colorado.

Wetland maps at 1:100,000 scale and wetland overlay maps at 1:24,000 scale are produced at National Wetland Inventory headquarters in St. Petersburg, Florida. Final Colorado wetland maps are available at the U. S. Fish and Wildlife Service's Regional Office located in Denver, Colorado. An integral part of all final wetland maps is the completion of narrative reports for each 1:100,000 quadrangle inventoried. The following narrative report provides both basic and specific data which aids the user in understanding not only the general area of the Limon NW quadrangle but also representative details of its wetland habitat.

MAP PREPARATION

Contractor for this wetland inventory was Colorado Division of Wildlife, 317 West Prospect, P. O. Box 2287, Fort Collins, Colorado 80526. Richard Hopper was the contract officer. Photointerpretation was done by the subcontractor, Colorado State Forest Service, Foothills Campus, Colorado State University, Fort Collins, Colorado 80523. Photointerpreters were Thomas Owens and Alexander Kosinski. Preparation of this narrative report was completed by Thomas Owens. Regional Wetland Coordinator was Charles Elliott, U. S. Fish and Wildlife Service, Denver Federal Center, P. O. Box 25486, Denver, Colorado 80225.

Wetland delineation and classification for Limon NW 1:100,000 quadrangle was done on 1:80,000 black and white aerial photographs taken in June, July, and September 1975. Photography covered 100 percent of the quadrangle. Wetland classification was done in accordance with Cowardin, et al., 1979. Specific mapping conventions developed at National Wetland Inventory headquarters were used to assist in photointerpretation. Although no field checking was specifically done in Limon NW, similar wetland habitat was field checked in other quadrangles.

Map users are cautioned that mapping with aerial photography has limitations. Wetlands are identified and classified through stereoscopic examination of photography on the basis of tone, texture, pattern, site, size, local ecology, and cultural patterns. Aerial photographs reflect conditions during the year and season they are taken. In addition, the 1:80,000 black and white photography used on this project was photographed for purposes other than wetland mapping. The small scale precludes delineating very small wetlands (less than 1/4 acre) and narrow linear wetlands (less than 15 feet wide). Black and white emulsion makes distinguishing between classes of vegetation (and non-vegetation) difficult. Some imagery was not photographed during the best season for wetland delineation and classification. If photographed too early or too late in the season, moist (dark) tones are not evident. The photography was four to five years old when it was interpreted and land use changes have occurred.

Any discrepancies noticed regarding wetland omissions, inclusions, or errors should be given to the U. S. Fish and Wildlife Service Regional Wetland Coordinator who is located in Denver, Colorado, and whose address is on the previous page.

Special Mapping Problems

This quadrangle has many small depressions scattered across the plains. There are two types of depressions: wetlands with emergent species and non-wetlands without emergents. Non-wetland depressions without emergents are often dark in tone and conspicuous on the imagery, which is due to slightly more moisture and lusher vegetation than surrounding areas, but have no lighter toned ring. Depressions with wetland species (usually) have a lighter toned ring in them which shows the extent of inundation after rain. Depressions receive water from local summer thunderstorms, are dry most of the time, and are not part of drainage systems. These wetlands are locally important, but are often difficult to see on the imagery, unless flooded after a thunderstorm.

AREA DESCRIPTION

Bailey's Ecoregions

Limon NW 1:100,000 quadrangle falls into one province in Bailey's Description of the Ecoregions of the United States, 1978, which classifies land into a hierarchal system based upon bioclimatic, geologic, and geomorphic criteria. The province is Great Plains-Shortgrass, Grama-Buffalo Grass Section (3113L) and is characterized by bunched short grasses, with scattered trees and shrubs.

Hammond's Land-Surface Forms

Limon NW falls into four Hammond Land-Surface Forms which systematically characterizes United States' topography (Ecoregions and Land-Surface Form Map, 1975). All forms are in the Interior Division (III). Two forms are in the High Plains Subdivision (14). Covering 3 percent on the eastern edge is Irregular Plains (III-14B2c) which has 50 to 80 percent of area gently sloping, local relief 100 to 300 feet, and 50 to 75 percent of gentle slope on uplands. Two areas in the north and east are in Smooth Plains (III-14A2c) characterized by more than 80 percent of area gently sloping, local relief 100 to 300 feet, 50 to 75 percent of gentle slope on upland, and covers 40 percent of area. Two forms are in the Rocky Mountain Piedmont Subdivision (13). Irregular Plains (III-13B2b) covers 55 percent in the west and has 50 to 80 percent of area gently sloping, local relief 100 to 300 feet, and 50 to 75 percent of gentle slope in lowland. In the southwestern corner, covering 2 percent, is Tablelands with Moderate Relief (III-13B3c) characterized by 50 to 75 percent of area gently sloping, local relief 300 to 500 feet, and 50 to 75 percent of gentle slope on upland.

Hydrologic Mapping Units

Six hydrologic mapping units are found in Limon NW (Hydrologic Unit Map of Colorado, 1974). Hydrologic units are part of an effort by the United States Geological Survey to provide a series of uniform, Nationally consistent maps which accurately delineate hydrographic boundaries for Federal and State water resource agencies. Units are designated by eight-digit numbers tied to a computer file (Catalog of Information on Water Data) which contains information on water data activities (Langford and Kapinas, 1979). All units in Limon NW are in the Missouri Region (10). 10190011 covers 11 percent on the western edge, 10190012 covers 13 percent in the west, and 10190013 covers 45 percent in the center. 10250002 covers 15 percent in the northeastern corner, 10250001 covers 15 percent in the southeast, and 10250003 covers 1 percent in the southeast.

Geography

Limon NW is a semi-arid quadrangle covered by plains which have level to rolling topography. Elevations are from 4,600 to 5,500 feet and vegetation is short grass prairie with cottonwoods and willows along drainages. There are no permanently flowing streams on this quadrangle and no towns.

Agriculture is Limon NW's major economic activity. Center-pivot irrigated agriculture occurs where the Ogallala aquifer occurs. Dryland farming and ranching are practiced away from water sources.

Geology

In Limon NW's western half are Cretaceous (70 to 135 million years ago) deposits of shale, claystone, sandstone, and major coal beds; products of a marine environment. The northeastern corner and southern edge are covered by the Ogallala aquifer, an important water-bearing formation of sandstone deposited in Tertiary (3 to 70 million years ago) times. Much of eastern and central Limon NW is covered by Quaternary (present to 3 million years ago) eolian deposits of dune sand, silt, and loess. The Arikaree River floodplain in the southeastern corner is covered by modern alluviums (Chronic and Chronic, 1972; Tweto, 1979).

Soils

Soil is an important element of wetland; it is one criterion used to define wetlands. "The substrate of wetlands is predominately undrained hydric soil" (Cowardin, et al.). The National Wetland Inventory, in cooperation with the U. S. Soil Conservation Service, is preparing a list of hydric soils to accompany the Cowardin, et al. wetland classification system.

Two major wetland soil types are found in Limon NW: soils associated with drainages and soils associated with flood-irrigated meadows.

Where streams are intermittent, wetland soils are sandy and gravelly, unstable, excessively drained, subject to occasional flooding, and have low water tables. Native vegetation includes cottonwoods and annual forbs (Larsen, et al., 1966; Sampson and Baber, 1974; Larsen and Brown, 1971; Heil, et al., 1978).

Flood-irrigated soils are found where there is a ready supply of water. These soils may not have been wetland soils originally, but since they have been irrrigated the water table is less than 3 feet from the surface. These soils are deep, level, range in texture from sandy loam to clay loam, and are often saline. Vegetation includes saltgrass, alkali sacaton, tall grasses, sedges, rushes, and cattails in low pockets (Larsen, et al.; Sampson and Baber; Larsen and Brown; Heil, et al.).

Climate

Limon NW's climate is semi-arid and continental, with cold dry winters and cool, relatively dry summers. Byers, which is the closest weather station, a few miles west, receives 15.0 inches of precipitation annually, 47 inches of this coming as snow. January's average maximum temperature is 43.6^{o}F, average minimum is 14.3^{o}F. July's average maximum temperature is 90.1^{o}F, average minimum is 56.3^{o}F (Benci and Mckee, 1977). The growing season is 150 days (SCS data, 1978).

WETLANDS

Community Description

Lacustrine System

No lakes are found in Limon NW (information in this section comes from field notes taken in adjacent quadrangles).

Riverine System

One stream type is delineated as intermittent stream (R4SBW). This stream type is the most common stream type on the eastern plains where there is no permanent water source to supply moisture. Intermittent streams have a sandy substrate that is very well drained, which is often scoured by flash floods. These streams flow after snowmelt and after local summer thunderstorms.

Palustrine System

An important palustrine type is flood-irrigated meadow (PEMKC). Flood-irrigated meadows are found along streams and below springs. Ditches were built along the meadows' upper edges to allow water to flow from upper sources and spill out over the meadows. Standing water can be found for short periods early in the growing season; soil remains moist for extended periods through the growing season. Flood-irrigated meadows have not been cultivated and vegetation is native. Meadows are hayed or grazed by cattle. Vegetation includes Juncus arcticus, Eleocharis acicularis (species identification was according to Harrington, 1955; Fassett, 1957; Weber, 1976; Nelson, 1977), along with grasses and forbs. Many flood-irrigated fields are cultivated; these were not delineated.

Scrub/shrub and scrub/shrub-emergent areas are found along streams in this quadrangle (PSSW, PSSY, PSS/EMW, PSS/EMY). The water regime is dependent upon the amount of water flowing in the stream. In the western portion, where water is relatively plentiful, the water regime tends towards the seasonal regime. In the east, where moisture is scarce, water regimes are drier. Shrub species are Salix spp.; understory emergent include Juncus arcticus, Carex spp., Eleocharis acicularis, as well as grasses and forbs.

Forested wetlands (PFOW, PFOY, PFO/EMW, PFO/EMY, PFO/SSW, PFO/SSY) are found throughout the quadrangle along streams. The water regime situation is the same as that of the scrub/shrub areas. Tree species include Populus sargentii and Salix spp. Understory species are the same as those mentioned with scrub/shrub-emergent areas.

On the plains numerous areas (PFLW, PEMW) are delineated which are small dugouts or impoundments constructed to supply water to livestock. These flats are dependent upon local precipitation for their water supply and do not receive enough moisture to remain wet year round. They often have saline soils. Vegetation consists of sparse stands of Distichilis stricta, Sporobolus airoides, forbs, and grasses.

Intermittent depressions are also delineated on the plains (PEMJ) that are the result of: wind deflation or blowouts, solution subsidence (leaching water removes limestone and subsequent deflation), or differential compaction of Tertiary sediments of the plains (Thornbury, 1965). Delineated depressions are generally a few feet in depth and from one hundred to several hundred feet across. There is not sufficient moisture in spring after snowmelt to supply them with moisture; they are filled with water after local summer thunderstorms and hold water for a few days. They are dry most of the time, but do receive enough moisture to support stands of Eleocharis spp., as well as upland vegetation.

One open water wetland (POWKF) is delineated. It is an impoundment on an intermittent stream. Water remains through the growing season and is artificially controlled.

Many palustrine wetlands are cultivated, but remain wetlands. There are called palustrine farmed (PF).

Wetland Values

An important wetland value is flood-irrigated hay meadow production of hay for cattle (information in values section is from Hopper, 1980). Flood-irrigated hay meadows produce hay at a much higher rate than dryland meadows do: flood-irrigated meadows will produce up to 4,500 pounds per year per acre of air dried herbage, while the best upland site will produce up to 2,500 pounds (Amen, et al.,). Wildlife also benefit from wet hay meadows: ducks nest in them and shorebirds use them for forage and cover.

Forested wetlands along streams are important habitat for mule deer and a variety of wildlife.

Semi-permanently flooded cattail stands provide critical habitat for pheasants.

Intermittent depressions, streams, and windmills are important water sources for wildlife, such as antelope and livestock in this semi-arid region.

Wetland Loss and Vulnerability

Wetland loss is not a major problem in Limon NW. This quadrangle is sparsely populated and there were few wetlands originally.

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