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

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 Limon SW 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, Charles Storrs, 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 SW 1:100,000 quadrangle was done on 1:80,000 black and white aerial photographs taken in June, July, August 1975 and July, August 1976. 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. Field checking was done on May 25, 1979.

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 SW 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 SW falls into four Hammond Land-Surface Forms which systematically characterizes United States' topography (Ecoregion and Land-Surface Form Map, 1975). All forms are in the Interior Division (III). Two forms are in the High Plains Subdivision (14). In the northeastern corner, covering 30 percent of the quadrangle, are Smooth Plains (III-14A2c) which have more than 80 percent of area gently sloping, local relief 100 to 300 feet and 50 to 75 percent of gentle slope on upland. Irregular Plains (III-14B2c) cover 10 percent on the eastern edge and are characterized by 50 to 80 percent of area gently sloping, local relief 100 to 300 feet, and 50 to 75 percent of gentle slope on upland. The remaining two forms are in the Rocky Mountain Piedmont Subdivision (13). On the northern edge, covering 3 percent, are Irregular Plains (III-13B2b) characterized by 50 to 80 percent of area gently sloping, local relief 100 to 300 feet, and 50 to 75 percent of gentle slope in lowland. Tablelands of Moderate Relief (III-13B3c) cover 57 percent in the south and west ahd have 50 to 80 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 SW (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). Four units are in the Missouri Region (10). 10190011 covers 6 percent in the northwestern corner, 10190013 covers 6 percent in the northwest, 10250001 covers 20 percent on the northern edge, and 10250003 covers 28 percent on the eastern edge. Two units 11010011 and 11020012, are in the Arkansas-Red-White Region (11) and cover 20 percent each.

Geography

Limon SW is a semi-arid quadrangle covered by plains which have level to rolling topography. Elevations are from 4,800 and 6,100 feet and vegetation is short grass prairie with cottonwoods and willows along streams.

Big Sand Creek, an intermittent stream, is the quadrangle's largest river. It flows through the Southwestern quarter of the quadrangle by Limon.

Limon is the quadrangle's largest town and is supported by agriculture, which is Limon SW's major economic activity. Intensive irrigated agriculture occurs on the quadrangle's eastern half where center-pivot sprinklers are supplied with well water. Dryland farming and ranching are practiced away from water sources.

Geology

The oldest rocks in Limon SW are Cretaceous (70 to 135 million years ago) shale, claystone, sandstone, and major coal beds deposited when this part of Colorado was under the sea. Most of the western half is covered by the Ogallala aquifer, an important water bearing formation deposited in the Tertiary Period (3 to 70 million years ago) which supplies irrigation water for center-pivot sprinklers. In the southwestern corner are Quaternary (present to 3 million years ago) gravels and alluviums, and eolian deposits consisting of dune sand, silt and loess. Modern alluviums are found along Big Sandy Creek (Chronic and Chronic, 1972; Tweto, 1979).

Soils

Soil is an important element of wetlands; 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 SW, 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; 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 irrigated 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.; Heil, et al.).

Climate

Limon SW's climate is semi-arid and continental, with cold dry winters and cool, relatively dry summers. Limon receives 14.5 inches of precipitation annually, 27 inches of this coming as snow. January's average maximum temperature is 43.3°F, average minimum is 12.8°F. July's average maximum temperature is 87.9°F. average minimum is 55.5°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 SW (information in this section comes from field notes taken May 25, 1979).

Riverine System

One stream type delineated is 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 emergents 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 scrub/shrub areas.

Tree species include Populus sargentii and Salix spp. Understory species are the same as those mentioned with scrub/shurb-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.

Many palustrine wetlands are cultivated, but remain wetlands. These 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. 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 SW. This quadrangle is sparsely populated and there were few wetlands originally.

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