

CANADIAN BORDER BASINS

Field Summary Report

INTRODUCTION

The Canadian Border Basins included the following nine 1:100,000 scale maps, each with 32 U.S.G.S. 7.5 minute quadrangles:

Devils Lake NW
Minot NE
Minot NW
Williston NE
Williston NW

Wolf Point NE
Glasgow NW
Glasgow SW
Havre NE

Personnel from U.S. Fish and Wildlife Service were Charles Elliott and Kelly Drake. Martel Laboratories personnel included Mike Colby (Task Order Manager), Mike Bevilacqua, and Kevin Bon. The imagery was ground truthed 7 July, 1987-18 July, 1987.

NASA color infra-red high altitude photography was used as the primary data source. All photography used was at a scale of 1:65,000.

Dates of coverage for the Canadian Basin are:

Devils Lake NW - 4/5/81
Minot NE - 4/5/81; 5/27/83; 5/26/83; 4/28/86
Williston NE - 4/5/81; 5/27/83; 5/26/83
Williston NW - 4/5/81; 5/27/83; 5/26/83
Glasgow NW - 5/28/86
Glasgow SW - 5/28/86
Havre NE - 5/28/86

Collateral information used to analyze the photography was obtained from S.C.S soil surveys and U.S.G.S. 7.5 minute quadrangles. In addition, meetings were held with personnel at the J. Clark Salyer and Bowdoin National Wildlife Refuges to obtain information concerning wetland plant identification, water conditons, and land use.

PROJECT AREA

The Canadian Basin project is located within two distinct provinces as described by Bailey (1980). Devils Lake NW, Minot NE and NW, and Williston NE are in the Tall-grass Prairie Province; Williston NW, Wolf Point NE, Glasgow NW and SW, and Havre NE are in the Great Plains Short-grass Prairie Province.

Tall-grass Province

Geography:

According to Bailey, Description of the Ecoregion of the United

States (1980), the Tall-grass Prairie Province is characterized by flat and rolling plains with relief of less than 30 feet. The majority of land is young glacial drifts and dissected till plains. Water covers much of the surface. Areas south of the Missouri River are loess and sand deposits. The flat to rolling hill features have well developed drainage systems.

Climate:

The annual precipitation in the Tall-grass Prairie is approximately 20 inches. Droughts are less frequent and less severe near the forest areas than in the westerly areas. Average annual temperatures range from 40°F (4°C) in the north to 55°F (13°C) in the east, 60°F (15°C) in the west, and 65°F (18°C) in the south.

Vegetation:

The Tall-grass Prairie includes the tall-grasses and mixed grasslands. Bunch grasses and the sod-forming species are the dominant cover types. Woody vegetation is rare, except on the cottonwood flood plains. Dominant plants are prairie dropseed, little bluestem, and side-oates grama. Only small amounts of native prairie remain, as much of the area is under cultivation.

Soils:

Tall-grass Prairie soils are generally Mollisols, with smaller areas of Entisols and Vertisols. Most Tall-grass Prairie soils have dark upper horizons, are level, and poorly drained. These soils are covered by water much of the year, and support many different hydrophytes.

Short-grass Prairie

Geography:

According to Bailey, Description of the Ecoregion of the United States (1980), the Great Plains Short-grass Prairie Province is characterized by rolling plains and tablelands of moderate relief. They are in a broad belt that slopes gradually eastward down from an altitude of 5,500 tft. (1,520 m.) near the foot of the Rocky Mountains to 2,500 ft. (760 m.) in the Central States. The plains are notably flat, but there are occasional valleys, canyons, and buttes. In the northern section, badlands and isolated mountains break the continuity of the plains.

Climate:

The climate is a semiarid continental regime in which maximum rainfall comes in summer, but the total supply of moisture is low. Evaporation usually exceeds precipitation. The average annual

temperature is 45°F (8°C) throughout most of the region but can reach 60°F (15°C) in the south. Winters are cold and dry; the summers warm to hot. The frost free season is generally fewer than 100 days with precipitation being about 10 in. (250 mm.) at this latitude of the Short-grass Prairie Province.

Vegetation:

The Short-grass Prairie Province is a formation class of short grasses that are bunched and sparsely distributed (Bailey, 1980). Some trees and shrubs are scattered throughout the Prairie Province, and can be found in all covertypes ranging from semi-desert to woodland. In many areas ground cover is scarce, exposing soil to erosion by wind and water. Buffalo grass is a typical shortgrass prairie growth; sunflower and locoweed are typical plants.

Soils:

Soils in the Short-grass Prairie are generally chestnut brown and dominant pedogenic process is calcification (Bailey, 1980). Salinization of the soil is dominant in poorly drained sites. Soils are rich in bases as they contain a large amount of precipitated calcium carbonate. Humus content is small because vegetation is sparse.

BIOLOGICAL CHARACTERISTICS OF WETLAND HABITATS

Vegetation observed in wetland habitats were grouped according to system and water regime. Plant types identified were:

Palustrine temporary emergents:

Agropyron repens, quackgrass
Agropyron smithii, western wheatgrass
Hordeum jubatum, foxtail barley
Rumex spp., dock
Poa palustris, fowl bluegrass
Spartina pectinata, prairie cordgrass
Phalaris arundinacea, reed canarygrass
Juncus spp., rush

Palustrine seasonal emergents:

Spartina pectinata, prairie cordgrass
Beckmannia sysigachne, sloughgrass
Scolochloa festucacea, whitetop
Polygonum coccineum, marsh smartweed
Eleocharis spp., spikerush

Palustrine semipermanent emergents:

Typha spp., cattail
Scirpus acutus, hardstem bulrush

Palustrine temporary scrub shrub:

Salix spp., willow

Palustrine temporary forested:

Populus deltoides, cottonwood

Palustrine semipermanent aquatic bed:

Ranunculus spp., crowfoot
Ceratophyllum demersum, coontail
Lemna spp., common duckweed
Potamogeton spp., pondweed

Emergent and aquatic bed were the dominant covertypes seen. Field check sites were documented where problems existed; i.e., wetland areas that were not recognizable on the photo.

IMAGERY AND GROUND VERIFICATION

The NASA color infra-red emulsion is of high quality. There is no fading or areas of high spectral reflectance and resolution is

LITERATURE CITED

Bailey, R.G., 1978. Description of the Ecoregions of the United States. U.S. Dept. of Agriculture, Forest Service, 77 pp.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRue, 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Dept. of Interior, Fish and Wildlife Service, FWS/PBS-79/81, 103 pp.