NATIONAL WETLANDS INVENTORY

DILLINGHAM FIELD SUMMARY REPORT

INTRODUCTION

Our goal was to ground truth the Dillingham area checking various photographic signatures and their corresponding field status. Field reconnaissance is necessary for accurate interpretation of aerial photography and collateral data. The Dillingham project includes the following 15' quad: A-7 and is covered by 8 photos.

Field Members

Barbara Schuster (Biologist, Aerial Photo Interpreter, Martel Laboratories, Inc.)
Jonathan Hall (USFWS, Regional Coordinator)

Field Dates

September 5, 1985: pontoon plane field check
September 6, 1985: automobile reconnaisance

Aerial Photography

Type: Color Infrared Transparencies Scale: 1:65,000
Dates: 7/80, 8/82, 8/83

Collateral Data

USGS Quadrangles
Exploratory Soil Survey of Alaska, USCS
Flora of Alaska by Eric Hulten, 1968, Stanford University Press
Description of the Ecoregions of the U.S. by Bailey, Robert G., 1980, US Department of Agriculture
Ecosystems of Alaska, USGS map

PHYSICAL CHARACTERISTICS

Dillingham is a fishing community located at the junction of the Nushagak and Wood Rivers. There is little topographical relief with alluvial deposits of silt and sand. Mineral soils are present as well as organic soils in depressions and riparian areas. There is some volcanic ash in thin layers. Principally, the area is composed of wet tundra vegetation of sedge, cottongrass, moss and lichens insulating a thick permafrost layer.

Another component of Dillingham's ecosystem is an upland forest of white spruce, birch, aspen and poplar occupying well drained soils of silty volcanic ash over gravel. Permafrost ususally does not extend into this are except in poorly drained black spruce forests. Outwash plains and morraines are the typical geology of the upland forests.

The mean temperature is 34.1°F with a low of 14.6°F in December and a high of 55.1°F in July. The annual precipitation of 25.76 inches includes the lowest rainfall in April with 1.16 inches and the highest in August with 3.99 inches.

The soil and climatic conditions make Dillingham a poor resource for cropland, cattle and sheep rangeland, or commercial forestry.

BIOLOGICAL CHARACTERISTICS

Estuarine

The estuarine system comprised less than 20% of the Dillingham map, either as permanent open water of the Nushagak River, part of the Wood River south of Belt Creek, or their associated irregularly flooded emergents. Classifications used were E1UBL and E2EM1P. The Nushagak and Wood Rivers are bordered by clay unconsolidated shores that are typically flooded on a regular basis, therefore tidal flats and shores are mapped as E2USN. The tidal range is approximately eight feet. Tidal flats will be transferred as they exist on the USGS topographical quadrangle in the cartographical stage of map production, however they are visible on the photography. The sloughs and some of the larger well-entrenched drainages dry up on a daily basis as the tide recedes. These were classified as E2SBN unless they were draining an inland water body that would prevent total dewatering. These channels are classified as E2USN. The vegetated class most affected by the tidal reach is the emergents growing on the banks of the major rivers and associated sloughs. These emergents were Carex lyngbyaei and levees of Calamagrostis canadensis. It characteristically has a bright orange or pink signature with the levees of Calamagrostis appearing shrublike in texture.

As we relied on some of the estuarine system to land the pontoon plane, we found it to be extremely difficult to ground truth some areas due to the nature of substrate on the river shore. Similar in physical characteristics to quicksand, the Wood River shore should only be negotiated at high tide.

Palustrine

Palustrine areas with a mixed class of emergents and scrub shrub is the predominant wetland vegetation of Dillingham. In the southeast corner of the quad there is a large area of freshwater vegetation that is tidally influenced on a seasonal basis and less frequently on a semipermanent basis. These plants are the same that are found in a non-tidal area and include Myrica gale, Potentilla palustris, Carex spp., Eriophorum augustifolium, Betula nana, Andromeda polifolia, Empetrum nigrum, Sphagnum, and some Salix spp. Due to the extent of the tide and the flatness of the topography, this area would be estuarine most likely if there was not so much freshwater influence on the area due to rivers and drainage off higher elevations. This signature typically is a greenish orange.

These are the wetland plants dominating the rolling saturated bogs that covered most of the map:

COMMON SPECIES:

Betula nana
Vaccinium uliginosum
V. vitusidae
V. oxycoccus
Empetrum nigrum
Rubrus chamaemorus
Ledum palustre decumbens
Andromeda polifolia
Carex spp.
Eriophorum augustifolium
Grasses
Myrica gale var tomentosa
Staghorn spp.
Cladonia rangiferina
Sphagnum spp.

LESS COMMON SPECIES:

Drosera rotundifolia
Chamaedaphne calyculata
Lupinus spp.
Salix reticulata
Salix spp.
Picea mariana
Betula papyrifera humilis
Alnus tenufolia

EXTREMELY WET AREAS:

Menyanthes trifolia
Triglophorum

These spongy hummocky bogs occupied hillsides and flat areas typifying a classic saturated water regime. In valleys and depressions, the vegetation formed floating mats of a strongly intertwined mass of roots, substrate, and plants that could support the weight of a person. This floating mat is usually classified as seasonal unless there is standing water above the mat and then as semipermanent. Cottongrass was usually found in these wetter areas. A dark green return on the photo was classified as PEM1F and a less dark green as PEM1C. Soils of saturated bogs tend to be brown with gray and iron red mottling. odd- indicate oxidation in an almost anaerobic soil

String bogs are a common feature in the landscape. The type of string bog is dependent upon the pattern of strands and flarks within it. The higher ground of scrub-shrub dominated wetland is a saturated string running through the lower flarks of semipermanent or sometimes seasonal floating mat of moss, sedge, grasses and shrubs. This signature can be one of a variety since it is a mix of thin, bright pink or orange lines within a dark green tone or it can be a more subtle green-orange tone.

An unusual wetland of dominating emergents and lichens was located on an elevated extension of an emergent, shrub dominated wetland. The soil was a mottled red-brown. Cladonia was abundant as well as Carex and some Salix reticulata among the typical bog plants. The lichens seemed to be the reason for the white return of the same area on the photograph. As long as these PEM1/ML2B wetlands are large enough to be differentiated from the PEM1/SS1B bogs then they are pulled out.

A spoil area which appeared to be dredged from Dillingham's boat harbor created a substrate rich in nutrients for plants to take advantage of. This spot was interesting because the vegetation was different from any observed elsewhere on this map and the soil was apparently undergoing a new process of mottling. Solidago was present in this wet site. The gray soil had a top layer of two inches of brown iron oxidized mottling. In the future, this layer will be likely to increase in thickness as this disturbed area succeeds ecologically. The photograph was dull orange with green patches due to the wetter smaller areas within.

Shrubs such as alder, willow and birch are congregated along rivers and in drainages. Floodplains are designated as PSS1/EM1C and some drainages are PSS1B. The orange textured signature is easily seen on the photo. In palustrine forested areas, black spruce is scattered about with lichens and typical bog plants. Large areas were classified as PF04B or PF04/SS1B. The trees are easily seen on the photograhy and the understory is grayish in color. The lichen is so abundant in some places that one large patch visible from the float plane was classified as PSS1/ML2B. The lichen's whiteness is an obvious indicator of its predominance. Scattered spruce were present also.

Palustrine open water systems were abundant along the streams due to the beaver activity. These range in size greatly, but many are not mapped due to the complexity of the map and the pond's small size. There are no manmade impoundments of open water, but some excavated borrow pits that are usually extremely small for mapping. Some ponds are taken over by Nuphar polysepalum or inhabited by Carex aquatilus. Yellow pond lily is characteristically a pink tone on all or part of the dark green of the pond's water and is labelled PAB3H unless in a lacustrine system it is L2AB3H. The emergent's signature is less of a color difference than a mottling of the dark green. Its label is PEM1H unless it is mixed with the aquatic bed, as it often was observed, its label is PEM1/AB3H.

Riverine

Wood River above the Belt Creek confluence is tidally influenced freshwater according to refuge officials. Due to extreme tide fluctuation we were unable to deplane in some areas where there was a quicksand-like unconsolidated shore on the river bank of Wood River. This is a regularly flooded system therefore classified R1USN with the river itself as R1UBV. The tidal reach extended inland grading into a lower perrenial river. Part of Squaw Creek was found to be E2USN due to the regular dewatering. Many rivers are not mapped due to their mapping complexity.

Lacustrine

Some lakes were vegetated with yellow pond lily as mentioned above and classified as L2AB3H. No manmade lakes were found. All unvegetated lakes were assumed limnetic and classified L1UBH. No subclasses are used on any unconsolidated bottom or unconsolidated shore.

IMAGERY, PRELIMINARY DELINEATIONS AND FIELD CHECKING..

Overall, the quality of aerial photography is very good. The resolution is high and tones are easily differentiated. Emulsion is slightly different from strip to strip but does not cause any photo interpretation problems. Six photographs were taken in August while two were taken in July; however, three different summers were sampled: 1980, 1982, and 1983. The only problem in interpretation this caused was near the town of Dillingham where changes in wetlands did occur in 2 years. Manmade influence on the area decreased the wetlands by building on them or draining them partially. A burn area was visible on one photo but not another and looks similar to a semipermanent emergent signature on the photo. Care must be taken in looking closely at the slightly blacker tone of the burn. Field investigation led us to generalize that the photography appeared much wetter than it actually was. Since we ground truthed in early September and photography was taken in months of higher precipitation, this could have contriubted to the discrepancy.

SUMMARY

Photo interpretation in Dillingham is not difficult due to the clear boundaries between most cover types. Care must be taken to give some areas a drier water regime than photography indicates.