MAPPING RIPARIAN AREAS / WETLANDS

ON THE

NEZ PERCE NATIONAL FOREST

A

COOPERATIVE APPROACH

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by

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INTRODUCTION

Riparian/wetland areas on the Nez Perce National Forest are recognized as one of the most productive and attractive of all habitats. The attention given these habitats is increasing at rapid rates. The riparian zone is recognized as a very important and valuable land type because it enhances the quality of adjacent aquatic habitats, provides a vegetated buffer against erosion and flooding, offers diverse and sometimes critical habitat for wildlife populations, attracts important recreational activities, and is aesthetically valuable.

Thus, riparian/wetland areas are an asset to society in their natural state. They provide numerous products for man's use (i.e. high yields of timber and forage on the Nez Perce), protect private property, and provide recreational and aesthetic appreciation opportunities.

Riparian/wetland areas on the Nez Perce NF are limited in extent. It's estimated that 4 to 6 percent of the Forest meets the Forest Service riparian area definition. Destruction or alteration of of these areas eliminates or minimizes their values. The general public receives the majority of benefits of these areas through flood and storm damage control, erosion control, water quality improvement and fish and wildlife resources. It is in the public's best interest to protect riparian/wetland areas to preserve these values for themselves and future generations.

PURPOSE

The Forest Service has a long standing policy to recognize the unique values of riparian areas (riparian ecosystems, aquatic ecosystems, wetlands, and floodplains) and to manage riparian areas in relation to various legally mandated requirements.

With the signing of Executive Order 11990- Protection of Wetlands, Federal agencies were directed to avoid to the extent possible, the long and short term adverse impacts associated with the destruction or modification of wetlands whenever there are practicable alternatives. Each agency is to provide leadership and to take actions necessary to minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.

Thus the Forest Service was presented with another management challenge to balance within its multiple use strategy. The Nez Perce National Forest decided to inventory all riparian areas on the Forest in order to facilitate management of forest activities potentially impacting riparian and wetland resources.

PLANNING THE INVENTORY

Some of the first problems to be addressed when planning the inventory were defining "riparian area", deciding on a classification scheme, methods of data collection and data display. The U.S. Fish and Wildlife Service's National Wetlands Inventory program was consulted for project guidance. Over that past ten years the objective of the National Wetland Inventory (NWI) has been to develop and distribute comprehensive information on the extent of the Nation's wetlands. Besides developing National statistics on the current status of wetland habitats and indicators of overall trends in wetland gains and losses, the NWI has disseminated highly detailed wetland maps for over half of the conterminous United States. It is intended that such wetland baseline information be used for making appropriate wetland resource decisions. The goals of the Nez Perce Riparian Inventory are essentially the same as the NWI with respect to wetland/riparian ecosystems and thus the cooperative effort to map the riparian resources of the Nez Perce began.

The Forest Service defines riparian areas as geographically delineated areas, with distinctive resource values and characteristics, that are comprised of the aquatic and riparian ecosystems, floodplains, and wetlands. They include all areas within a horizontal distance of 100 feet from the edge of perennial streams and other water bodies.

The U.S. Fish and Wildlife Service specifically defines wetlands as follows. "Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification wetlands must have one or more of the following attributes: 1) at least periodically, the land supports predominantly hydrophytes; 2) the substrate is predominantly undrained hydric soil; and 3) the substrate is nonsoil and is saturated with water or covered with shallow water at some time during the growing season of each year.

After careful study it was determined that the bulk of the riparian resources fell within the wetland definition used by the U.S. Fish and Wildlife Service's (FWS) "Classification of Wetlands and Deepwater Habitats of the United States" (Cowardin et al., 1979). Here was a technically sound and field tested classification system ready made for wetland resource mapping.

The classification system is hierarchical and based primarily on hydrologic conditions, soils and vegetation, but is also structured to include information on water regime, water chemistry and developmental modifications. It consists of five systems: Marine (open ocean and associated coastline); Estuarine (salt marshes and brackish tidal water); Lacustrine (lakes and deep ponds); Riverine (rivers, creeks, streams); and Palustrine (shallow ponds, marshes, swamps, bogs), and proceeds in a hierarchical manner through subsystem, class, and subclass.

While the system defines the physical and topographic limits of wetlands according to ecological characteristics, it remains flexible enough to describe wetlands on a National scale and assimilate changes in our understanding of wetlands.

It was decided that the Service classification system would be used to map not only water course associated wetlands but all riparian/wetland types on the Forest. The maps would then provide locations where water related special management may be required.

Interpretation of remotely sensed data was the only means to accurately determine the extent of riparian/wetland areas over the 2,218,040 acres included within the Nez Perce National Forest. Aerial photographs (true color, 1:24,000 scale stereo coverage) were available to the the Forest. The cooperative arrangement was struck when it was decided that the Nez Perce would fund the cost of the aerial photography, field reconnaissance, and aerial photointerpretation while the NWI would fund the cost of photointerpretation quality control, cartography and map reproduction.

AERIAL PHOTOINTERPRETATION AND MAP PRODUCTION

In preparation for field reconnaissance and aerial photointerpretation of wetland/riparian areas, the Nez Perce staff was trained in the Service classification system and photointerpretation mapping techniques by the NWI. Two field seasons were spent ground truthing the aerial photography, that is, relating photo signatures to field conditions. Riparian/wetland areas were identified on the aerial photos by stereoscopic analysis based on vegetation, visible hydrology and local geography. Within the limitations of the photo scale and quality, all riparian,wetland habitats were delineated and classified. It is important to remember that aerial photos reflect conditions at a specific time of year. In addition, there is a margin of error inherent in aerial photointerpretation. For instance, some small riparian/wetland areas or those obscured by canopy cover may be unintentionally omitted.

Once the aerial photos had been interpretated, they were shipped to the NWI for quality control review. The photos were reviewed for delineation and classification accuracy and for mapping consistency with other NWI wetland mapping efforts.

After any necessary corrections to the photos were completed, the photo delineations were transferred by means of zoom transfer scopes to U.S. Geological Survey 1:24,000 scale base maps. Only after numerous cartographic quality control procedures were the maps released as draft National Wetland Inventory maps. In the draft stage, maps undergo further review for future revisions. Ground review of selected draft maps indicates that the overall accuracy is high and the mapping conservative.

MAP DATA DISPLAY

The maps are published as standard "National Wetland Inventory" maps depicting standard NWI symbology and legend. The location and shape of riparian/wetland and deepwater habitats are represented on the map by polygons or in the case of very narrow habitats as linear features (see figure 1).

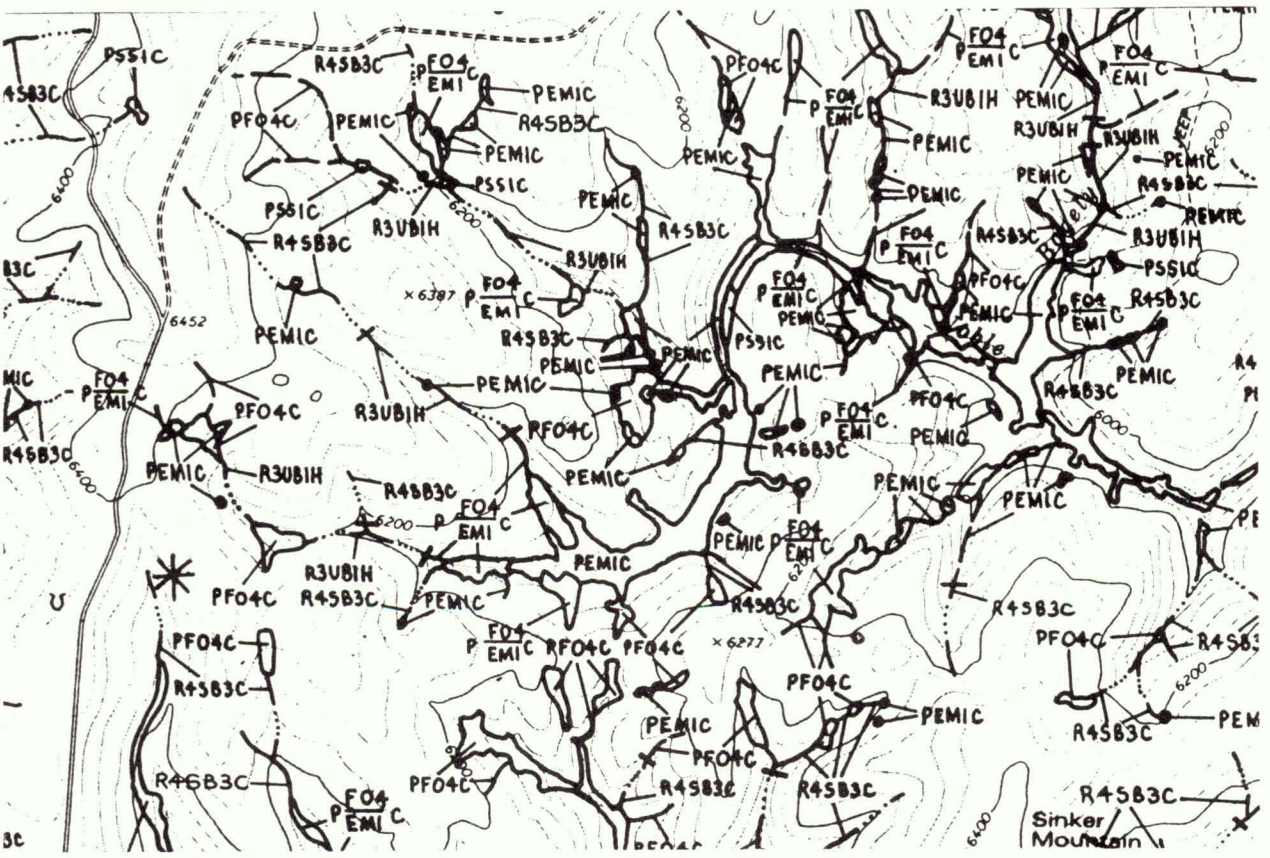

Figure 1. Polygon and linear wetlands from a portion of the Dixie, ID quadrangle.

Riparian/wetland classification data are displayed on maps as a series letters and numbers (a wetland classification code). The first character in a classification code is an upper case letter which represents the system. A number following the first letter identifies the subsystem. (Note. The Palustrine system has no subsystems.) Following the subsystem code is a two letter class code. A number following the class code indicates a subclass. If a water regime modifier is used, it is the last upper case letter in a code. Any lower case letters in a code represent other modifiers.

Examples

a. Classification to water regime:

R 3 UB 1 H

System: Riverine (stream or river)
Subsystem: Upper perennial
Class: Unconsolidated bottom
Subclass: Cobble-gravel
Water regime modifier: Permanently flooded

b. Mixed classes and subclasses:

PSS1/EM1C = Palustrine, Scrub Shrub, Broadleaved Deciduous (PSS1) mixed with Palustrine, Emergent, Persistent (PEM1) with the Seasonally Flooded water regime modifier (C).

Each code on the Nez Perce NWI maps is briefly explained below.

Streams and Rivers

R3 or R3UB1H: Rivers and perenial streams of any size with a predominantly cobble and gravel bottom. Extent of saturated conditions, flooding, and riparian vegetation on adjacent land is highly variable. "R3UB1H" is the complete label. "R3" is an abbreviated symbol used to simplify maps.

R4 or R4SB3C: Intermittent streams. Seasonal flow is sufficient to support some riparian vegetation. When flowing water is absent the site may be either dry or nearly saturated. "R4SB3C" is the complete label. "R4" is an abbreviated symbol used to simplify maps.

R3US1C: Seasonally exposed portions of stream channels, i.e. cobble and sand bars and beaches. Plant cover is less than 30 percent.

Vegetated Wetlands

PEM1C: Herbaceous wetlands. Sedge or forb seeps and wet meadows. Wet site sedges, forbs, ferns, or grasses are dominant. These sites are seasonally flooded or seasonally to perennially saturated.

PEM1F: Semipermanently flooded emergent wetlands. Marshy sites, usually associated with ponds or lakes. Sedges, cattails, or other emergent hydrophytes are partially submerged most of the growing season.

PEM1A: Briefly wet herbaceaous sites on floodplains or in depressions. They have a mixture of wetland and upland plants. Other characteristics are intermediate between wetland and upland sites.

PSS1C: Shrub wetlands. Shrub dominated seeps and shrub dominated annual floodplain sites. Shrub cover is $\geq$ 30 percent. Sites are seasonally flooded or seasonally to perennially saturated.

PSS1A: Briefly wet shrubby sites, usually on floodplains. Shrub cover is $\geq$ 30 percent. Vegetation and other characteristics are intermediate between wetland and upland sites.

PSS5F: Ponded sites with $\geq$ 30 percent cover of persistent, dead shrubs. A minor type observed only once.

PSS1/EM1C: Wetlands with $\geq$ 30 percent cover of both shrubs and wet site forbs, grasses, or sedges. This label is often used to describe a mosaic of PEM1C and PSS1C sites. Sites are seasonally flooded or seasonally to perennially saturated.

PSS1/EM1A: Briefly wet sites with $\geq$ 30 percent cover of both shrubs and forbs, ferns, grasses or sedges, usually on floodplains. Vegetation and other characteristics are intermediate between wetland an upland sites.

PFO4C: Forested seeps and seasonally flooded forested sites. Spruce or lodgepole pine is usually dominant. Coniferous tree cover is $\geq$ 30 percent.

PFO1C: Forested seeps and seasonally flooded sites with $\geq$ 30 percent cover of deciduous trees.

PFO4Hs AND PSS1/EM1Hs: Dredge spoils with ponded areas and $\geq$ 30 percent cover of coniferous trees or $\geq$ 30 percent cover of both shrubs and forbs, grasses, or sedges. Uncommon types.

PFO4A: Briefly wet forested sites, usually on floodplains. Coniferous tree cover is ≥ 30 percent. Vegetation and other characteristics are intermediate between wetland and upland sites.

PFO4/EM1C: Forested wetlands with ≥ 30 percent cover of wet site forbs, grasses, or sedges. These are either seeps or wet meadows similar to PEM1C units but with ≥ 30 percent cover of trees or mosaics of forested and herbaceous wetlands. They are seasonally flooded or seasonally to perennially saturated.

PFO4/EM1A: Briefly wet forested sites with ≥ 30 percent cover of forbs, grasses, or sedges, usually on floodplains. Vegetation and other characteristics are intermediate between wetland and upland sites.

PFO4/SS1C: Wetlands with ≥ 30 percent cover of both trees and shrubs, usually on floodplains. These are either forested wetlands with a shrub understory or mosaics of forested and shrub wetland sites. They are seasonally flooded or seasonally to perennially saturated.

PFO4/SS1A: Briefly wet forested sites with ≥ 30 percent shrub cover. Vegetation and other characteristics are intermediate between wetland and upland sites.

Lakes and Ponds

L1OWH: Lakes larger than 20 acres or with a low water depth ≥ 6.6 ft. (2m).

PUB3H: Perennial ponds.

PUB3Hx: Perennial ponds created by excavation.

PUB3Hs: Perennial ponds occurring in dredge spoils.

PUB3Hh: Perennial ponds created by dams or other impoundments.

PUS3C: Seasonal ponds.

PUS3Cx, PUS3Cs, PUS3Ch: Seasonal ponds created by excavation, dredging, or impoundment respectively.

PUB3F: Semipermanently flooded ponds.

Non-wetland Floodplain Sites.

One-hundred year floodplains fall within the Forest Service definition of riparian areas and include both wetland sites and irregularly flooded, drier sites. The irregularly flooded sites

generally lack wet site plants and hydric soils and do not meet the definition of wetlands used by the National Wetlands Inventory. Initially these sites were included in riparian area mapping, but the Fish and Wildlife Service found this incompatible with NWI mapping conventions during field review. Irregularly flooded sites occur on draft maps as units with symbols ending with "J" but they will be reevaluated and either deleted or reclassified in the final maps. Wetlands within floodplains will be retained on National Wetlands Inventory maps, which are the core of the riparian area inventory. Larger one hundred year floodplains including dry floodplains are also mapped on Forest Land Systems Inventory maps.

Uplands sites are indicated by an inverted omega, "U". These areas for the most part are not riparian though unmapped riparian sites may be present.

RESULTS

Everybody wins. The Nez Perce has riparian/wetland habitat maps, a useful tool for better management, at a reduced cost (approximately 2 cents/acre). The National Wetlands Inventory has increased map coverage within Idaho at a reduced cost. Anyone else with an interest in Nez Perce Forest wetland/riparian resources, i.e. hunters, fishermen, other recreations, has access to these maps either through the Nez Perce National Forest or the National Wetlands Inventory.

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