

GREAT VALLEY RIPARIAN HABITATS AND THE NATIONAL REGISTRY OF NATURAL LANDMARKS¹

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Abstract: The National Registry of Natural Landmarks is a program established by the National Park Service that seeks to recognize nationally significant examples of the Nation's natural history. Nearly 100 Great Valley riparian sites were evaluated using Park Service criteria. Three sites illustrative of the range of this biotic theme were recommended to the National Park Service for designation as National Natural Landmarks.

The National Natural Landmark program recognizes nationally significant examples of ecological or geological features of the Nation's natural history. Since 1962 over 500 Landmarks have been designated by the Secretary of the Interior and listed by the National Park Service in the National Registry of Natural Landmarks.

The Landmark program is intended to encourage preservation of sites which illustrate the geological and ecological character of the United States, to enhance the educational and scientific value of these sites, to strengthen appreciation of natural history, and to foster public interest and concern for the conservation of the Nation's natural heritage (Federal Register 1975). The ultimate goal of this program is to ensure preservation of the vast majority of ecosystem types present in this country prior to the activities of European man so as to present an intact picture of our country in its pristine condition (Stebbins and Taylor 1973).

Until the 1980's, the primary method used to identify potential Landmark sites was through a series of studies of natural phenomena, or "themes", in each of Fenneman's (1928) 33 physiographic regions of the United States. Both biotic and geologic theme studies were completed. Each study resulted in a description of the major features of a region and an initial inventory of sites considered to be excellent examples of the themes found within the region. Sites were then evaluated in the field according to study-specific criteria and compared to other sites representing the same theme to determine which were most appropriate for designation as National Natural Landmarks. Although many excellent Landmark sites were identified through the regional theme studies, in some cases themes were too broad to allow meaningful comparison of sites. In other cases it was dif-

icult for evaluators to locate similar sites to make the required comparisons.

In the early 1980's the Western Region of the National Park Service began using a more systematic approach to the identification of potential Landmark sites: 1) regional themes were described: where necessary to encompass the diversity present within the natural region, smaller, recognizable assemblages of plants and animals which repeatedly occur within the theme were identified as subthemes to make site comparisons more feasible; 2) all known good sites of each subtheme were identified; 3) uniform criteria of national significance were applied to each site; and 4) site-specific reports were written for sites best meeting these criteria.

The purpose of this study was to research, classify, and describe the Great Valley Riparian Forest theme (including subthemes) of Fenneman's South Pacific Border Region, and to recommend sites illustrative of that theme as National Natural Landmarks. The study was part of a multi-state pilot project in which the Western Region of the National Park Service attempted to use state Natural Heritage Inventories as a source of background information and staff expertise in locating potential Landmark sites. These inventories originally were established by The Nature Conservancy to collect, manage, and use biological, ecological, and related information for conservation planning in an attempt to preserve the diversity of our natural heritage. The Natural Diversity Data Base, which is now part of the California Department of Fish and Game and maintains the California natural heritage inventory, was contracted to prepare a Landmark evaluation of the Great Valley Riparian Forest theme.

Landmark status is open to lands within the United States, Puerto Rico, the Virgin Islands, and the Pacific Trust Territories. Lands managed by the National Park Service are ineligible for Landmark recognition. To be considered for designation, a site must meet a set of criteria demonstrating that it has national significance. These criteria were used in evaluating all sites and in comparing their relative suitability for Landmark designation. They are summarized in tabular form.

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Phase I, Classification

Stebbins and Taylor's (1973) theme study treats all Great Valley riparian habitats as one "Special Ecosystem" which they called Riparian Woodland. Several classifications of such habitats have appeared since Stebbins and Taylor's theme study. These indicated a much broader range of habitat types than any one site possibly could possess. A classification by Jensen and Holstein (1983) was chosen as most appropriate for this study. They recognized three riparian forest units: Great Valley Cottonwood Riparian Forest, Great Valley Mixed Riparian Forest, and Great Valley Valley Oak Riparian Forest. These communities constitute the subthemes of this Landmark study.

There are surprisingly few data on the composition and structure of these forest types. These data, mostly in Sands (1977) and Warner and Hendrix (1985), and field work throughout the Great Valley indicated that these three subthemes could be generally described as follows:

Great Valley Cottonwood Riparian Forest Subtheme

This community of medium to tall (to 100 ft), broad-leaved winter-deciduous trees typically has well closed canopies that are densely stocked with Fremont cottonwood (*Populus fremontii* Wats.) and valley willow (*Salix gooddingii* Ball.). Understories of various other willow species are common. This subtheme encompasses early seral riparian forests in which the tree canopy has been closed long enough to inhibit establishment of sun-loving species but not long enough for shade-tolerant species to grow into the canopy. Disturbance by high flows occurs most years and appears to be an important factor in stand regeneration. Most stands are even aged, reflecting episodic reproduction of the shade-intolerant dominants.

Great Valley Mixed Riparian Forest Subtheme

Great Valley Mixed Riparian Forest also is a community of medium to tall (to 100 ft), broad-leaved winter-deciduous trees. The tree canopy is fairly well-closed and is composed of several species including Fremont cottonwood, sycamore (*Platanus racemosa* Nutt.), California black walnut (*Juglans hindsii* Jeps.), Goodding's willow (*Salix gooddingii* var. *variabilis* Ball.), red willow (*Salix laevigata* Bebb.), yellow willow (*Salix lasiandra* Benth.),

and box elder (*Acer negundo* var. *californicum* Torrey and Gray). These and other shade-tolerant shrub species such as Oregon ash (*Fraxinus latifolia* Benth.), and buttonbush (*Cephalanthus occidentalis* L.) form a dense understory. Lianas such as wild grape (*Vitis californicus* Benth.), virgin's bower (*Clematis ligusticifolia* Nutt. in T. & G.), and poison oak (*Toxicodendron diversilobum* Torrey and Gray) are conspicuous, giving the community an appearance popularly associated with tropical jungle. Great Valley Mixed Riparian Forests usually occupy sites that are farther from the active river channel or that are at somewhat higher elevations relative to the active channel; flooding on these higher sites is less frequent and less intense. Most stands are uneven-aged, reflecting the shade-tolerance of the dominant species and the longer recurrence intervals between major disturbances such as flooding, windthrow, or fire.

Great Valley Valley Oak Riparian Forest Subtheme

Great Valley Valley Oak Riparian Forest once occurred extensively along the highest parts of the floodplains where flood damage was least likely and least severe. Where it survives, this forest is dominated by the winter-deciduous valley oak (*Quercus lobata* Nee.). Canopies are moderately to densely closed and up to 100 feet tall. Individuals of sycamore and Oregon ash frequently are scattered in the canopy and sub canopy. Many valley oak stands have basal area distributions suggestive of episodic reproduction. Shrub canopies are best developed in light gaps caused by fire, flood, or windthrow. Wild grape is the only conspicuous liana, often smothering shrubby patches before being shaded out by the closing tree canopy. Canopy structure typically is less complex than that found in Great Valley Mixed Riparian Forest.

Phase II, Site Evaluation

The Natural Diversity Data Base inventory of Natural Communities provided a preliminary list of about 100 sites for the three subthemes studied. Sites were visited and field survey forms were filled out for each site with reference to the Park Service criteria in Table 1. In some cases the forests no longer existed because of type conversion to agriculture or urbanization. Sites which did not fit Park Service criteria for obvious reasons such as these were eliminated from further consideration as potential Landmarks.

Table 1. — Criteria for evaluating the national significance of proposed National Natural Landmarks

Primary Criteria

Illustrative Character — The site must be representative of the subtheme under study. The site has the species composition and physical features typical of that ecosystem. The site offers an exceptional opportunity to illustrate or interpret the natural history of the nation.

Present Condition — The site approximates an undisturbed natural environment. The site is essentially free from disturbances which detract from its natural character.

Secondary criteria

In comparing sites which have met these primary criteria a second set of criteria is used:

Diversity — In addition to its primary natural feature, the site contains high quality examples of other ecological and/or geological features. The presence of other native plant communities such as marshes, willow thickets, and grassy savannas, in addition to the forest community gave sites an advantage in meeting this criterion.

Rarity — The site provides high quality habitat for one or more rare, threatened, or endangered species, or contains a rare geological or ecological feature.

Value for science and education — The site is associated with a significant scientific discovery or concept, has a long-term history of on-site research, or offers unusual opportunities for interpretation and public education about the natural history of the particular subtheme.

For the 53 sites remaining, the evaluator interviewed as many people as possible who had knowledge of the site to gather information about land use history and condition. Contacts included farmers working in adjacent fields, ranchers, local landowners and managers, Department of Fish and Game unit biologists, Soil Conservation Service personnel, irrigation and levee district staff members, and local conservationists. From the site visits combined with these interviews, it proved possible to narrow the field to six to ten sites for each subtheme. This subset of sites was re-evaluated using the same Park Service criteria and, based on this improved knowledge, three sites emerged for recommendation as National Natural Landmarks:

- South Fork Kern River, Kern County: Great Valley Cottonwood Riparian Forest Subtheme
- Feather River, Sutter and Yuba Counties: Great Valley Mixed Riparian Forest Subtheme
- Cosumnes River, Sacramento County: Great Valley Valley Oak Riparian Forest Subtheme.

Phase III, Evaluation Report

The next phase of the recommendation process was to write a detailed evaluation of each of these three sites. Evaluations included location, boundaries, and size of the site as well as a thorough description of site's plant communities and animal habitats. We addressed the land use and present condition of the

site, any damage expected to occur from continuation of current management practices, and the effects of publicity should the site be designated as a National Natural Landmark. We provided maps of the site boundaries and land ownership details for each parcel within the proposed Landmark.

We evaluated each site's features in relation to the Park Service criteria and offered an opinion, based on our professional judgment, of whether or not the sites merited designation as National Natural Landmarks. We were able to find sites so representative of each subtheme that three were recommended for designation.

Management guidelines were prepared that detailed actions needed to ensure that significant features would not be damaged, altered by unnatural means, or destroyed. These suggestions did not carry the implication that the National Park Service would actually manage the site, but rather were suggestions the Park Service could provide to landowners to promote conservation of the area's integrity. We found that parts of all three areas already were under partial management for conservation of their natural values. Existing management plans were instructive for at least a portion of each area. Guidelines for those portions not currently such management were added.

South Fork Kern River

The South Fork Kern River, Kern County, supports the largest surviving example of the Great Valley Cottonwood Forest subtheme. The site is dominated by

Fremont's cottonwood, yellow willow, red willow, and valley willow with a dense understory of saplings of these species, abundant stinging nettle (*Urtica holosericea* Nutt.), and mulefat (*Baccharis viminea* DC.). There are several small marshes along natural sloughs and some stands of grassland on high ground within the forest. A number of sensitive birds are known to nest in this forest including about 25 percent of the California Yellow-billed Cuckoo (*Coccyzus americanus occidentalis* Ridgway) population.

We recommended 1856 hectares (4583 acres) along the South Fork for Landmark status designation. In addition to the largest surviving cottonwood forest, this site has a diversity of seral stages and a natural hydrograph which is unparalleled among the other surviving Cottonwood Forest sites. The site is owned by private parties, The Nature Conservancy, and the United States Army Corps of Engineers. Both the Conservancy and the Corps manage their holdings (about half of the acreage) for their natural values. Most of the privately owned parcels are used for cattle grazing.

Feather River

The Bobelaine-Lake O'Connor area along the lower Feather River supports the largest known surviving example of the Great Valley Mixed Riparian Forest subtheme. We recommended that 1502 hectares (3756 acres) be designated as Landmarks. Fremont cottonwood and sycamore dominate the diverse forest here, and the varied understory includes box elder, Oregon ash, California black walnut, and willows. The shrub layer is dense and diverse. Draperies of several liana species are impenetrable in some areas. Small stands of the Great Valley Valley Oak Riparian Forest and extensive willow thickets also are found within the recommended Landmark.

Several rare riparian-dependent animals use the area for roosting and breeding. These include the Federally listed Endangered Valley Elderberry Longhorn Beetle (*Desmocerous californicus dimorphous* Fisher), the California yellow-billed cuckoo, and Swainson's hawk (*Buteo swainsonii* Bonaparte). Both the cuckoo and the hawk are listed as Endangered under California law. There also is a large rookery of great blue herons (*Ardea herodias* L.) and great egrets (*Casmerodius albus* L.), and a thriving population of river otters (*Lutra canadensis* Schreber) and ringtail cats (*Bassariscus astutus* Lichenstein).

This area is of such high quality that most of it has already been acquired by the California Department of Fish and Game or the National Audubon Society for protection of natural values. Most privately owned parcels are used for cattle grazing or are idle.

Cosumnes River Area

This area consists of three tracts along the lower Cosumnes River near its confluence with the Mokelumne. We recommended expansion of a Landmark which was designated in 1976. Taken together, the three tracts recommended by this study are the largest known surviving example of the Great Valley Valley Oak Riparian Forest Subtheme (432 hectares, 1079 acres). All three sites are dominated by healthy, vigorously reproducing stands of valley oak. The sub canopy consists of young valley oaks, Oregon ash, buttonwillow, and box elder. Wild grape lianas are common. The tracts differ in species associated with the dominant valley oak reflecting their differing distances from the river channel. Some small sloughs and quiet backwaters support examples of freshwater marshes and small stands of the Great Valley Mixed Riparian Forest subtheme. Swainson's hawk (State-listed Threatened) and both lesser and greater sandhill cranes (*Grus canadensis canadensis* L. and *Grus canadensis tabida* Peters, also State-listed as Threatened) have significant roosting areas here.

Most of the area is privately owned and receives summer and fall cattle grazing; a small part is owned by The Nature Conservancy and forms the Cosumnes River Preserve. The Conservancy continues to expand its preserve as additional properties become available.

Registry

The evaluation report and all comments from land owners, managers and any other interested parties are reviewed by the National Park Service to determine which sites qualify for nomination to the Secretary of the Interior. If the Secretary agrees with the findings of the Park Service, the site is designated as a National Natural Landmark.

The National Park Service contacts each landowner to explain the Landmark Program and to invite the landowner to register his or her land as a National Natural Landmark. Registration constitutes a voluntary, non-binding agreement between the Secretary of the Interior and the landowner to preserve the significant natural features of the site. The landowner receives a certificate and bronze plaque indicating the site is a registered National Natural Landmark. The landowner does not relinquish any rights to the land and the agreement may be terminated by either party.

The National Natural Landmark Program was created administratively within the National Park Service. No legislation or administrative procedures afford specific protection to Landmarks. Official recognition is the only direct protection afforded. Landowners often find pride in owning a site recognized as being of national significance and may be less inclined to convert the land

to uses which would deprive the site of Landmark status (The Nature Conservancy 1975).

When sites are owned by public agencies, Landmark recognition may sway management decisions toward preservation of natural values and stimulate Co-operative Management Agreements between the agency holding title and agencies mandated to preserve natural resources, such as the California Department of Fish and Game.

For areas already under management for the preservation of natural values, such as portions of the three sites recommended by this study, Landmark designation commends the owners for their careful stewardship and increases public awareness. Such designation may enhance the availability of funds for acquisition when and if landowners within the recommended Landmark boundaries chose to sell their property.

One further indirect protection is pointed out by The Nature Conservancy (1975). Under the National Environmental Policy Act of 1969, Federal agencies undertaking major Federal actions must file statements detailing the effect of such actions on the environment. If proposed actions will have impact upon a National Natural Landmark, any adequate Environmental Impact Statement should note that fact and actions may be modified as a result.

In addition to instituting a more systematic approach, the National Park Service determined that the methods used in this pilot study were less costly, site by site, than Landmark identification and evaluation techniques that had been used in the past. Although not yet in use nationwide, the methods used in this pilot study are now accepted by the Park Service as a valid way to identify and evaluate sites for possible Landmark designation.

The project benefited the Natural Diversity Data Base by bringing to light several riparian stands which had not been included in the inventory previously and by providing more recent and complete information for all sites visited.

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