
***SIGNIFICANCE IN ENVIRONMENTAL PROJECT PLANNING:
RESOURCE DOCUMENT***

by

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PREFACE

The work reported herein was conducted as part of the Evaluation of Environmental Investments Research Program (EEIRP). The EEIRP is sponsored by the Headquarters, U.S. Army Corps of Engineers (HQUSACE). It is jointly assigned to the U.S. Army Engineer Water Resources Support Center (WRSC), Institute for Water Resources (IWR) and the U.S. Army Engineer Waterways Experiment Station (WES), Environmental Laboratory (EL). Mr. William J. Hansen of IWR is the Program Manager and Mr. H. Roger Hamilton is the WES Manager. Technical Monitors during this study were Mr. John W. Bellinger and Mr. K. Brad Fowler, HQUSACE. The Field Review Group members that provide overall Program direction and their District or Division affiliation are: Mr. David Carney, New Orleans; Mr. Larry M. Kilgo, Lower Mississippi Valley; Mr. Richard Gorton, Omaha; Mr. Bruce D. Carlson, St. Paul; Mr. Glendon L. Coffee, Mobile; Ms. Susan E. Durden, Savannah; Mr. Scott Miner, San Francisco; Mr. Robert F. Scott, Fort Worth; Mr. Clifford J. Kidd, Baltimore; Mr. Edwin J. Woodruff, North Pacific; and Dr. Michael Passmore, Walla Walla.

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1. INTRODUCTION

1.1. PURPOSE

The purpose of this report is to provide guidance for identifying and describing resource significance in environmental project planning within the Corps of Engineers' Civil Works Program. The concept of resource significance is taking on a new meaning. In flood control and navigation projects, the environmental concerns were to avoid negative impacts on significant resources. If and when negative impacts did occur, they had to be mitigated. As a result, often the minimum was offered as mitigation for detrimental impacts. In today's planning environment, with environmental resources becoming the project purpose, the emphasis is shifting towards identifying all of the significant environmental resources in the study area and planning to enhance or restore those resources to some self-sustainable state. Given that some resources are more significant than others, and that there will never be adequate funding to address all environmental resource problems and opportunities, we are faced with developing a selection process for identifying the most significant environmental resources so that those can be addressed with available funding. This work unit within the Evaluation of Environmental Investments Research Program, attempts to define a method for identifying and prioritizing significant environmental resources.

A separate report, *Evaluation of Environmental Investments Procedures Manual: Resource Significance Protocol and Worksheet* (IWR Report 96-R-XX), presents the significance protocol developed to assist Corps planners in identifying and describing the significance of environmental resources. The purposes of the significance protocol are to:

- Establish the Federal interest in a proposed restoration project and a level of priority for the project at the national, regional, state, and local levels;
- Evaluate individual project plans;
- Communicate information to decision makers to support project justification; and
- Communicate information to decision makers to assist in allocating resources among different projects.

1.2. APPLICABILITY AND INTENDED AUDIENCE

This report was developed primarily to support planning and evaluation of environmental restoration projects. It applies to the restoration of ecosystems and their environmental resources under the Civil Works Program. Although not specifically developed for projects formulated under Section 1135, Water Resources Development Act of 1986 (WRDA 1986), as amended; Section 1103, WRDA 1986; or Section 204, WRDA 1992, field offices can develop significance arguments as outlined in this report when formulating plans under those authorities.

This report was developed primarily for use by Corps field planners at District Offices in formulating environmental restoration plans. It is intended to provide guidance on resources available to organize significance determinations and develop significance arguments. It should be most useful to individuals not having prior experience or little experience with Corps planning. For more experienced

Corps environmental planners, this report may spawn some new approaches to significance determinations that will be useful to decision makers.

1.3. DEFINITIONS

Terms associated with the identification and description of resource significance are defined in Appendix A.

1.4. INTEGRATION WITH NEPA DOCUMENTATION

The documentation and other requirements of the National Environmental Policy Act of 1969 (NEPA), as amended, apply to environmental restoration initiatives as they apply to traditional water resources development initiatives. Guidance for meeting NEPA requirements is found in ER 200-2-2 and the Council of Environmental Quality (CEQ) NEPA regulations (40 CFR Parts 1500-1508).¹ Because focusing on significant issues is required by NEPA regulations (40 CFR 1500.1(b), 1501.7(a) (2) and (3), and 1502.2(b)), the NEPA process is likely to provide useful information about resource significance. More specifically, NEPA regulations require that a process called "scoping" be used to identify the likely significant issues as well as the range of those issues. This scoping process is used to select the specific issue areas to be studied during an environmental review. Corps planners should integrate the process of identifying and describing resource significance with the NEPA scoping and documentation process. Integration with NEPA documentation and format for integrated reports is found in ER 1105-2-100.

1.5. COORDINATION WITH OTHER AGENCIES AND ORGANIZATIONS

In identifying and describing resource significance, Corps planners should seek the advice and cooperation of Federal and state resource agencies as well as interested nonprofit organizations and the public. Consultation with other agencies and organizations, experts, and the general public can be a valuable source of information on the importance of particular resources. The assistance of other agencies and organizations can be used in prioritizing the significance of resources from a national and regional perspective. Cooperation with other interested parties can also assist the planning team in achieving a comprehensive, holistic approach that considers aquatic (fresh water, marine, and estuarine), wetlands, and terrestrial ecosystems, and gives full consideration to all of the physical, chemical, and biological aspects of a site and its broader ecosystem or watershed context.

For Federally listed endangered and threatened species and designated critical habitat, special coordination and consultation with the Fish and Wildlife Service and National Marine Fisheries Service is required by Section 7 of the Endangered Species Act of 1973, as amended. Procedures for Section 7 coordination are provided in Chapter 7, Section VI, of ER 1105-2-100.

Finally, coordination is also important to ensure that a restoration plan is acceptable to Federal and state resource agencies. Such acceptability and evidence of broad-based public consensus and support for the plan can provide additional information to decision makers to support justification of a proposed project.

¹"Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act," 40 CFR Parts 1500-1508, Council on Environmental Quality, 29 November 1978.

1.6. IDENTIFICATION AND DESCRIPTION OF RESOURCE SIGNIFICANCE IN ENVIRONMENTAL PROJECT PLANNING

This section first reviews the concept of significance and then discusses institutional, public, and technical recognition as the three bases for determining and describing the significance of environmental resources. It presents general procedures for identifying and describing resource significance in environmental plan formulation and evaluation. In environmental project planning, resource significance is established by institutional, public, or technical recognition of the importance of environmental resources or attributes in the study area.

1.6.1. The Concept of Significance

In 1983, the U.S. Water Resources Council published the *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies* (P&G). The methodology in P&G is the analytical procedure currently used by the Corps of Engineers in evaluating alternative water resources projects. To be considered in plan formulation and evaluation, P&G requires that environmental resources be "significant." Significant environmental resources are defined as those that are institutionally, publicly, or technically recognized as important. As defined in P&G, the term "significant" means "likely to have a material bearing on the decision-making process."² In terms of environmental plan formulation and evaluation, the significance of environmental resources based on their non-monetary values may be established by institutional, public, or technical recognition of the importance of the environmental resources or attributes in the study area. Although the resource must be located geographically within the study area, its importance may be recognized outside the study area, especially when regionally, nationally, or internationally significant.

1.6.2. Significance Based on Institutional Recognition

Significance based on institutional recognition means that the importance of an environmental resource is acknowledged in the laws, adopted plans, and other policy statements of public agencies, tribes, or private groups. Sources of institutional recognition include:

- Public laws, executive orders, rules and regulations, treaties, and other policy statements of the Federal government. Table 7-3 in ER 1105-2-100 lists the Federal policies that should be considered in all studies as bases for identifying institutionally recognized significant resources. Other Federal policies should be considered as appropriate.
- Plans and constitutions, laws, directives, resolutions, gubernatorial directives, and other policy statements of states with jurisdiction in the planning area. State examples include water and air quality regulations; lists of rare, threatened, or endangered species; comprehensive fish and wildlife management plans; and state wetlands priority plans.
- Laws, plans, codes, ordinances, and other policy statements of regional and local public entities with jurisdiction in the planning area. Regional entities include river basin

²Water Resources Council, *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies*, (March 10, 1983), paragraph 3.2.1. Also see ER 1105-2-100, "Guidance for Conducting Civil Works Planning Studies," (December 28, 1990), p. 7-4. Also known as the "Planning Guidance Notebook," this guidance is currently under revision.

commissions, councils of government, and regional planning boards. Local entities include counties, districts, parishes, cities, towns, tribal governments and villages. Examples of their sources of institutional recognition are regional open space plans and local zoning ordinances.

- Charters, bylaws, and formal policy statements of private groups. Examples are a list prepared by the American Fisheries Society, Endangered Species Committee, entitled "Fishes of North America--Endangered, Threatened, or of Special Concern," and a species ranking system that supports the mission of The Nature Conservancy.

Chapter 2 provides guidance on how to identify the importance of an environmental resource based on institutional recognition. It focuses on providing examples of existing programs, established agency or organization processes, and readily available products that can assist in determining institutional significance.

1.6.3. Significance Based on Public Recognition

Significance based on public recognition means that some segment of the general public recognizes the importance of an environmental resource. Public recognition may take the form of controversy, support, conflict, or opposition and may be expressed formally (as in official letters) or informally. For environmental restoration projects, willingness to cost share (e.g., contributions to Federal or state resource agencies for restoration or conservation of a resource) or evidence of local public support (e.g., volunteer efforts to restore urban streams) are also indicators of public significance. Environmentally related customs and traditions should also be considered. Chapter 3 provides guidance on how to identify public recognition of the importance of an environmental resource.

Environmental resources recognized as important by the public may change over time as public preferences and perceptions change. In addition, the significance of a particular resource may differ among interested parties. Different interest groups (e.g., environmental organizations, recreation user groups, and fish and wildlife groups) may express differing values and concerns for the non-monetary values associated with environmental resources. Such differences should be documented, including the rationale used in selecting and developing arguments to describe public recognition of the significance of particular environmental resources.

Corps planners should invite the public to participate in the identification of environmental resources that are considered significant. The public's participation in this activity can be used to meet the scoping requirements of P&G and the NEPA regulations (40 CFR 1501.7) to avoid duplication of public involvement efforts.

1.6.4. Significance Based on Technical Recognition

Significance based on technical recognition means that the importance of an environmental resource is based on scientific or technical knowledge or judgement of critical resource characteristics. Examples are spawning areas for native fish in a channelized stream, summer roosting areas for bald eagles, and nesting areas for colonial shorebirds considered scarce due to loss of habitat.

A resource's technical significance may differ between geographic areas and depend on the perspective--local, regional, or national. Technical significance is also affected by the spatial scale used in a planning study. Typically, a watershed or larger context (e.g., ecosystem, landscape, ecoregion) is

required when considering the technical significance of environmental resources. Restoration projects should be related to environmental resources that are considered significant within an identified watershed or larger context. While it is recognized that virtually all species and habitats are important in an ecosystem context, limited funds and planning resources necessitate focusing on those considered significant in terms of justifying a Federal interest. Generally, technical recognition from a national or regional perspective provides more supportable data and arguments to establish the Federal interest in an environmental restoration project.

There are many scientific and technical criteria or concepts that may assist in determining and describing technical significance. Examples of criteria or concepts relevant to technical recognition are scarcity, representativeness, status and trends, connectivity, critical habitat, and biodiversity. Each is discussed in more detail in Chapter 4, which provides guidance on how to identify technical recognition of the importance of an environmental resource.

Scientific uncertainty and information gaps may become an issue in determining and describing technical significance. Planners can use sources of technical recognition based on established scientific and technical criteria, where such criteria are available, or sources that rely on best professional judgement of critical resource characteristics. However, all sources of technical recognition should be reviewed to determine the extent to which they are based on scientific input by the appropriate disciplines.

1.6.5. Multiple Recognition

In practice, resource significance may be recognized on more than one basis. For example, a specific bird species may be institutionally recognized (protected by Federal and state law), publicly recognized (of interest to the local community), and technically recognized (due to its scarcity nationwide or within a region). The planning process should identify and document all supportable bases of significance for the environmental resources or attributes in a study area.

1.7. ORGANIZATION OF REPORT

This report discusses the use of resource significance as a criterion that should be considered in environmental project planning and presents guidance on resources available to support use of the significance protocol for environmental project planning. Published separately as *Evaluation of Environmental Investments Procedures Manual: Resource Significance Protocol and Worksheet* (IWR Report 96-R-XX), the significance protocol was developed to assist Corps planners in identifying and describing resource significance when formulating environmental restoration plans.

Chapter 1 discusses the purpose and scope of this report. It also discusses institutional, public, and technical recognition as the three bases for determining and describing the significance of environmental resources.

Chapter 2 provides guidance on how to identify the importance of an environmental resource based on institutional recognition. It focuses on examples of existing programs, established agency or organization processes, and readily available products that can assist in determining institutional significance. In addition, examples of significance arguments are provided for selected programs for different types of resources. These example significance arguments are presented in exhibits throughout Chapter 2.

Chapter 3 offers guidance on how to identify public recognition of the importance of an environmental resource. It also provides examples of significance arguments for different forms of public recognition and different types of resources. In Chapter 3, the example significance arguments are presented in the final section of the chapter.

Chapter 4 provides guidance on how to identify technical recognition of the importance of an environmental resource. It focuses on examples of key criteria or concepts relevant to technical significance. This chapter also provides examples of significance arguments for different forms of technical recognition and different types of resources. The example significance arguments in Chapter 4 are presented in the final section of the chapter.

Finally, Chapter 5 presents recommendations for determining and describing resource significance in environmental plan formulation and evaluation.

2. INSTITUTIONAL SIGNIFICANCE

This chapter provides guidance on how to identify the importance of an environmental resource based on institutional recognition. It focuses on providing examples of existing programs, established agency or organization processes, and readily available products that can assist in determining institutional significance. In addition, examples of significance arguments are provided for selected programs for different types of resources.

Significance based on institutional recognition means that the importance of an environmental resource is acknowledged in the laws, adopted plans, and other policy statements of public agencies, tribes, or private groups. Section 1.6.2 presents examples of sources of institutional recognition at the national, regional, state, and local levels. More specific examples of existing programs that can assist in the identification and description of institutional significance at each level are summarized in the following subsections. The four main subsections are organized by level of institutional significance: national (2.1), regional (2.2), state (2.3), and local (2.4). The examples were selected to represent different types of programs that can serve as a basis for identifying institutionally significant resources using different sources of recognition.

It is important to realize that the programs summarized below are selected examples, not an all-inclusive listing, of the many existing programs that can serve as sources of institutional recognition to determine the significance of environmental resources. Corps planners can use these examples as a guide to collect and analyze information from other programs in determining the institutional significance of resources related to environmental restoration problems or opportunities. At the state level, in particular, it is likely that many other existing programs, established agency/organization processes, and readily available products exist that can assist in identifying and describing institutional significance.

Several sources are available that can provide information to identify possible sources of institutional recognition. Provided below are selected, readily available sources of useful information relevant to institutional recognition. These sources are:

- Government Institutes, Inc., Rockville, Maryland, publishes books on Federal and state environmental and natural resources laws and regulations (available at libraries);
- The Bureau of National Affairs, Inc., Washington, DC, publishes a looseleaf service with information on Federal and state environmental laws and regulations (available at libraries);
- LEXIS is an electronic database that provides information on statutes, executive orders, and regulations, which can be searched using key words (available at libraries);
- WESTLAW is an electronic database that contains Federal and state statutes, executive orders, regulations, and other information that can be searched using key words (available at libraries);
- "Environmental Review Guide for Operations" summarizes only those environmental laws and regulations related to Corps operating projects; and

- Internet Organizational Home Pages at all levels, Federal, state and other governmental agencies as well as private, nonprofit organizations.

2.1. NATIONAL/INTERNATIONAL

This section provides examples of programs that can assist in identifying and describing sources of institutional recognition at the national or international level. Programs, processes, or products associated with public agencies (2.1.1) and private, nonprofit organizations (2.1.2) are summarized below. The range of examples that were selected also address different types of resources (i.e., wetlands, rivers, lakes, and estuaries or marine areas).

2.1.1. Public Agencies

This section provides examples of programs associated with public agencies that can assist in identifying and describing sources of institutional recognition at the national or international level. It is organized by programs that deal with species (2.1.1.1), wetlands (2.1.1.2), rivers (2.1.1.3), lakes (2.1.1.4), estuaries and marine areas (2.1.1.5), and other relevant programs (2.1.1.6).

2.1.1.1. Species

Endangered Species Act of 1973, as amended

Since 1620, more than 500 species, subspecies, and varieties of American plants and animals have become extinct. Habitat degradation, environmental pollution, exploitation, and the introduction of exotic organisms have endangered other plants and animals. In 1973, the Endangered Species Act (ESA) was enacted to "provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved." The ESA made it "the policy of Congress that all Federal departments and agencies shall seek to conserve endangered and threatened species and shall use their authorities in furtherance of the purposes of this Act." This legislation demonstrates the significance of endangered species of fish, wildlife, and plants which are determined as being "of aesthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people."

The keystone of the ESA is the listing process required under Section 4 of the Act. The ESA entrusts the listing process to either the Secretary of Interior or the Secretary of Commerce, depending upon the particular species that is endangered or threatened. The Secretaries exercise their powers under the Act through two government agencies, the U.S. Fish and Wildlife Service (FWS) for Interior and the National Marine Fisheries Service (NMFS) for Commerce. In recent years, Congress has expanded the Act to include more life forms. The FWS has identified more than 3,000 species as candidates for eventual designation on the endangered species list, however, the FWS has only been able to complete 50 listings a year on average. In the Federal Listing of Species which the FWS and NMFS develop, species are listed as threatened or endangered, depending on their risk of extinction:

- An endangered species is any species at risk of extinction in all or a significant portion of its range, and
- A threatened species is one that is likely to become endangered in the foreseeable future in all or a significant portion of its range.

The ESA affords essentially the same degree of protection to threatened and endangered species. These definitions and associated criteria can be found in the ESA in Section 3 under "Definitions" and Section 4 under "Determination of Endangered Species and Threatened Species." Copies of the ESA are available from the FWS, Ecological Services Department, Endangered Species Division, at (703) 358-2171.

In the 1980s, Congress became concerned with the protection of proposed-to-be-listed species, thus the FWS published another list detailing species that the agency is actively reviewing for inclusion on the Federal Listing of Species. NMFS also has a list of species for listing consideration that is categorized much like the FWS list. These species are categorized as candidate, proposed, or sensitive, as defined below:

- Candidate species are those plant and animal species that, in the opinion of the FWS or NMFS, may qualify for listing as endangered or threatened.
- Proposed species are any plant and animal species that are proposed by the FWS or NMFS in a Federal Register notice to be listed as endangered or threatened.
- Sensitive species are those plant and animal species identified by a Regional Forester or a Bureau of Land Management (BLM) State Director for which population viability is a concern. This would be evidenced either by significant current or predicted downward trends in population numbers or density or significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution.

These definitions were formulated by both agencies and can be found in 50 CFR Part 424.

The ESA as a Source of Institutional Significance

In some cases, environmental resources may be considered by law as highly significant. Species listed as endangered or threatened under the Endangered Species Act of 1973, as amended, are considered highly significant regardless of their role within the ecosystem of a study area. Under the ESA, the Secretary of Interior may also designate the "critical habitat" for a listed species which is defined to include areas essential for the conservation of the species. Thus, the ESA provides institutional recognition not only for the endangered plant or animal, but also for its habitat.

When using the ESA as a source demonstrating the institutional significance of the native species and habitat associated with a proposed restoration project, planners should analyze information related to current species status, designated critical habitat, and recovery plans.

Current Species Status

Current species status is the status, population level/distribution (if known), and vulnerability to threats of a species. This includes the date on which the species was placed on the Federal Listing of Species, which can be acquired by contacting the FWS or NMFS and requesting "Title 50 - Wildlife and Fisheries, Part 17 - Endangered and Threatened Wildlife and Plants" (also found at 50 CFR 17.11 & 17.12). This information can also be accessed by using the Federal Register - Final Rule that lists individual endangered or threatened species, their biological background, the reasons for which they are endangered or threatened, a review of public comments from the proposed rule, where the species is listed, and what provisions are made for it.

Current species status helps Corps planners identify whether an animal or plant species associated with a restoration project is recognized as a Federally listed endangered or threatened species. It can be used as a source of institutional recognition in a number of ways. First, the status of a species as endangered or threatened demonstrates that the law recognizes this species as highly significant. If a proposed restoration project supported the recovery potential of such species, it would additionally highlight the significance of the environmental resources associated with the project, as discussed further below.

Critical Habitat

Under 50 CFR Part 424, critical habitat is defined as "(1) the specific areas within the geographical area currently occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (ii) that may require special management considerations or protection, and (2) specific areas outside the geographic area occupied by a species at the time it is listed upon a determination by the Secretary that such areas are essential for the conservation of the species." When listing a new species, critical habitat is specified to "the maximum extent prudent." Critical habitat designations are made on the basis of the best scientific data available after taking into consideration the probable economic and other impacts.

Critical habitat designations can be found in the Federal Register - Final Rule for individual species and in the Federal Listing of Species. Critical habitat could include any portion of a listed species' present habitat, as well as additional areas for reasonable population expansion. Designation of critical habitat indicates that the geographic area where an animal or plant species lives is also vulnerable to threats. If the study area for a proposed restoration project contains designated critical habitat, this provides further recognition of the institutional significance of the resource.

Recovery Plans

Recovery plans delineate reasonable actions required to recover and/or protect listed species. Plans are published by the FWS and NMFS and can be obtained by contacting these agencies. The FWS plans are composed of three parts: 1) recovery priorities, 2) recovery objectives and criteria, and 3) recovery tasks or actions.

Recovery priorities indicate which species are considered to have a high or low degree of threat and recovery potential. A ranking system of 1C to 18C is used, with 1C being a species that has a high degree of threat and recovery potential, decreasing in level to 18C. Table 2-1 presents the section of the FWS' Species Priority System that addresses "High Degree of Threat." The original table also includes sections for "Moderate Degree of Threat" and "Low Degree of Threat." If the recovery plan indicates a high priority within the Species Priority System, institutional significance for the species or resource in question is further supported.

Table 2-1. U.S. Fish and Wildlife Service’s Species Priority System

Degree of threat	Recovery potential	Taxonomy	Priority	Conflict (C)
High	High	Monotypic genus	1	1C 1
	High	Species	2	2C 2
	High	Subspecies	3	3C 3
	Low	Monotypic genus	4	4C 4
	Low	Species	5	5C 5
	Low	Subspecies	6	6C 6

Recovery objectives and criteria are clearly stated in quantitative terms. The recovery planning team chooses between delisting, downlisting, or protection of the existing populations of the species, either for a specific period of time or for the foreseeable future. The recovery criteria typically state the number and arrangement of viable populations of the species, the protection and management procedures needed, and what major threats should be resolved. These criteria are used to assess progress toward the recovery objective.

Finally, recovery tasks or actions are contained in a numbered list of the major steps necessary to satisfy the recovery criteria and objectives. Task priorities are established using three levels. Priority 1 represents an action that must be taken to prevent extinction or to prevent the species from declining irreversibly in the foreseeable future. Priority 2 represents an action that must be taken to prevent a significant decline in species population/habitat quality, or some other significant negative impact short of extinction. Priority 3 represents all other actions necessary to meet the recovery objectives. Each task is described and assigned to one or more responsible agencies.

If the proposed restoration project supports priority tasks or the recovery objectives and criteria in a recovery plan, then evidence of institutional significance is once again provided for the species or resource. If the Army Corps of Engineers is one of the responsible agencies identified in a recovery plan, this could be further support for institutional recognition of the significance of a species associated with a proposed restoration project.

Exhibit 2-1. Example Significance Argument Based on the Endangered Species Act

This example provides an illustration of an institutional significance argument using the Endangered Species Act of 1973, as amended. In this example, a hypothetical river system is used to describe how a Corps restoration project could be related to the recovery of a species listed as threatened under the Act.

West Tributary of the Novak River

The proposed restoration project for Section 2 of the West Tributary is located in one of the historic ranges of the redspot chub, the tributaries of the Novak River watershed. The redspot chub is a small freshwater fish that used to live in 12 tributary systems in five states (Alabama, Georgia, North Carolina, Tennessee, and Virginia). It now lives in only four systems in three states (North Carolina, Tennessee, and Virginia). The redspot chub was listed as threatened under the Endangered Species Act of 1973, as amended, on September 17, 1980. According to the FWS, the redspot chub population has gradually declined since its listing and the species seems heading for extinction. Because restoring the channelized Section 2 will improve habitat conditions and reduce water temperatures, the proposed restoration project is expected to support FWS plans for recovery of redspot chub populations in the tributaries of the Novak River.

The recovery plan developed by the FWS for the redspot chub ranks the species as Priority 2 (i.e., a species with a high degree of threat and a high recovery potential) under the FWS Species Priority System. Recovery objectives for the redspot chub outlined in the plan include a goal of restoring the species to a significant portion of its historic range and removing it from the Federal List of Endangered and Threatened Wildlife and Plants. As stated in the recovery plan, the species will be considered recovered after existing populations in the four tributary systems and two additional populations established in two other tributary systems are stable over a 10-year period. The reintroduction of two additional redspot chub populations in two tributary systems is identified by the FWS as a Priority 1 task for achieving the plan's recovery objectives. The FWS defines a Priority 1 task as an action that must be taken to prevent extinction or to prevent the species from declining irreversibly in the foreseeable future. The recovery plan identifies the tributaries of the Novak River watershed as one of the preferred areas for reintroducing the redspot chub to its historic range.

The Federal listing of the redspot chub as a threatened species demonstrates that this species is recognized by Federal law as highly significant. Identification of the tributaries of the Novak River watershed in the FWS recovery plan as a preferred area for establishing additional populations of the chub also provides strong evidence of the institutional significance of the West Tributary of the Novak River.

GAP Analysis Program

The GAP Analysis Program is a national effort to supplement heritage-style inventories by proactive, ecosystem-level approaches (also see section on The Nature Conservancy's Natural Heritage Programs). The program began in 1988 and was originally administered by the FWS, however, in 1993 the National Biological Service (NBS) assumed responsibility for GAP Analysis. GAP Analyses are now conducted in about 30 states and carried out through Cooperative Research Units and cooperating state

and Federal agencies and universities. Gap Analysis is an assessment of representation of vegetation types and species in protected areas, using satellite imagery, ancillary data on vegetation, wildlife-habitat association models, and geographic information systems (GIS) mapping. Gaps in the representation of species, ecosystems, and hot spots of species richness are selected as priorities for protection.

Gap Analysis comprises six components: 1) vegetation mapping, 2) species range mapping, 3) species richness mapping, 4) aquatic, wetland, and rare species determination, 5) land ownership and management status, and 6) gap detection. The vegetation maps, species range maps, species richness maps, aquatic, wetland, and rare species information, and land ownership and management status are then compiled to form a coarse filter through which the "gaps in biodiversity" can be identified. This information, consisting of satellite imagery, maps, and lists of species can be accessed through:

National Biological Service
U.S. Department of the Interior
1849 C Street, NW (MS3070)
Washington, DC 20240
(202) 482-3048

NBS gathers, analyzes, and disseminates biological information about America's natural resources. The NBS was established by a Secretarial Order issued in September 1993 and became operational on November 11, 1993, when Congress passed and President Clinton signed into law the FY 1994 Interior Appropriations Act. Although not yet specifically authorized by Congress, GAP Analysis information from NBS can also be used as evidence of institutional recognition of environmental resources associated with Corps restoration projects.

GAP Analyses projects in Oregon, Arizona, California, Tennessee, Nevada, and numerous other states in the country also support this national program and have information regarding vegetation, species range, and species richness maps, as well as documentation of aquatic, wetland, and rare species, land and ownership status, and any gaps in biodiversity that have been identified. In addition, GAP has made tremendous progress in integrating with Heritage programs at the state and national level, thus providing another source for requesting biodiversity information that could be used as evidence of institutional recognition of the significance of a resource. GAP Analysis information also provides scientific or technical recognition of significance for environmental resources associated with Corps restoration projects (see Chapter 4).

U.S. Fish and Wildlife Service, Office of Migratory Bird Management--Species Lists

The FWS' "High Priority Waterfowl Species List" represents waterfowl that are below population management objectives and are habitat-limited to varying degrees. The FWS' Office of Migratory Bird Management reviews this list annually. A "Priority Waterfowl Species List" also exists which represents species at or above population management objectives and habitat-limited to varying degrees. This list is also reviewed annually by the Office of Migratory Bird Management. These two lists are subsets of the Office of Migratory Bird Management's general species list and were created as an administrative tool to facilitate the wetland selection process and inform the public of high-priority species in wetland conservation.

The FWS' "Migratory Nongame Birds of Management Concern in the United States List" is updated every five years (last updated in 1992) and is a subset of the FWS' "Migratory Nongame Birds of National Concern in the United States List." It identifies birds exhibiting documented or apparent

population declines, small or restricted populations, or dependence on restricted or vulnerable habitat. A "Special Attention Nongame Migratory Bird Species List" also exists which includes shorebirds identified by the Wetlands for America shorebird program, as well as neotropical migrants that are dependent on wetlands for all or part of their life cycle. These lists were also created as an administrative tool to facilitate the wetland selection process in the North American Wetlands Conservation Act Grant Program. The Grant Program was authorized by the 1988 Mitchell Amendment of the Fish and Wildlife Conservation Act of 1980.

All of these lists can be used as evidence of institutional recognition for the significance of the waterfowl species and migratory nongame birds included in the lists. Corps restoration projects associated with these species, therefore, are related to institutionally significant environmental resources. For more information regarding these lists and to receive their most current editions, contact:

U.S. Fish and Wildlife Service
Office of Migratory Bird Management
Arlington Square Building, Room 110
4401 North Fairfax Drive
Arlington, VA 22203
(703) 358-1714

***Additional Examples:** Environmental resources often attain their status of significance through direct naming or association in public laws and regulations. As an argument is developed for relative significance or level of significance, it may be important to identify all sources of recognition, including some history of the listing (e.g., the Bald Eagle has been a protected species since 1940. The laws listed below could provide added support to a significance argument should the resource be covered by one or more of these laws and referenced as such.*

Anadromous Fish Conservation Act of 1965. This Act provides for the conservation, development, and enhancement within the United States of the anadromous fishery resources, in the Great Lakes and otherwise, subject to depletion from water resources developments and other causes. It also specifically applies to anadromous fishery resources subject to conservation commitments made by the United States by international agreements. Hence, the Act and associated treaties can provide institutional recognition of the significance of anadromous fish species and habitat.

Bald Eagle Protection Act of 1940. This Act provides institutional recognition of the significance of bald and golden eagles through explicit provisions to protect these species. Under the Act, it is unlawful to take, possess, sell, purchase, barter, offer to sell, purchase, or barter, transport, export, or import, at any time or in any manner, any bald or golden eagles. It is illegal to commit the prohibited actions on these birds whether they are alive or dead. Furthermore, the Act also prohibits taking, removing, or destroying the birds' parts, nests, or eggs, as well as collecting their feathers.

Fish and Wildlife Conservation Act of 1956. Through provisions of this Act, all Federal departments and agencies are encouraged to utilize their statutory and administrative authority to conserve and to promote conservation of nongame fish and wildlife and their habitats.

Fish and Wildlife Coordination Act of 1958. This Act directs that wildlife conservation be given equal consideration and be coordinated with other features of water resources development programs. It requires that possible damage to fish and wildlife resources, from work planned in navigable waters and drainage,

be assessed and that measures be adopted for preventing such losses or damages as well as for development and improvement of wildlife and fisheries resources.

Marine Mammal Protection Act of 1972. Under this Act, Congress established a moratorium on the taking and importation of marine mammals with exception for scientific research, allowable incidental taking, exemptions for subsistence activities by Alaskan natives, and hardship exemptions.

Migratory Bird Conservation Act of 1929, and associated treaties. The Act prohibits the hunting, taking, killing, possession, and transport of migratory birds as unlawful as well as their interstate and international trade. The Act also provides for arrests, searches, and seizures for enforcement purposes.

Migratory Bird Treaty Act of 1918. This Act forbids killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior.

Sikes Act of 1974, as amended. This Act authorizes the Secretary of Defense to enter into cooperative agreements with states, local governments, nongovernmental organizations, and individuals to provide for the maintenance and improvement of natural resources on, or to benefit natural and historic research on, Department of Defense installations. These cooperative agreements provide for the Secretary of Defense and other parties to the agreement to contribute funds on a matching basis to defray the cost of programs, projects, and activities under the agreement; or to furnish services on a matching basis to carry out such programs, projects, and activities.

Water Resources Development Act of 1986, Section 906(b). This section authorizes the Corps of Engineers to "mitigate damages to fish and wildlife resulting from any water resources project." It also allows for mitigation for project damages in the past, present, and future.

U.S. Fish and Wildlife Service, Concept Plans for Waterfowl Habitat Preservation. Concept plans were developed in the early to mid 1980s as part of the FWS' acquisition strategy where 33 geographical areas for waterfowl habitat acquisition were identified nationwide. In 1985, the FWS replaced these 33 categories with a new 10-year waterfowl habitat acquisition plan which gave priority to 11 areas nationwide. In 1986, concept plans for these areas and new waterfowl habitat acquisition plans became the basis for forming the North American Waterfowl Management Plan and have, accordingly, not been updated in over 10 years. The concept plan information, however, is included in the North American Waterfowl Management Plan joint venture plans, excluding some of the extremely scientific and technical information. Each of seven FWS regional offices created a concept plan, but the documents were never published for public use.

2.1.1.2. Wetlands

North American Waterfowl Management Plan

Established in 1986, the North American Waterfowl Management Plan (NAWMP) is an international plan to reverse the downward trend in waterfowl populations by identifying, protecting, and improving priority waterfowl habitats across the North American continent. The overall goal of NAWMP is to protect, restore, and enhance wetland habitat and return waterfowl populations to levels observed in the 1970s. The continental approach of NAWMP facilitated development of a 15-year framework for international cooperation between the countries of the United States, Canada, and Mexico. Specific goals set forth in the NAWMP for the 15-year period from 1986 to 2000 include:

- To achieve a continental breeding duck population of 62 million birds resulting in a fall flight of 100 million ducks,
- To maintain a continental wintering goose population of 6 million birds,
- To maintain a continental wintering swan population of 152,000 birds,
- To protect a minimum of 6 million acres of quality waterfowl habitat with about 3.7 million acres in Canada and 2.2 million in the United States, and
- To improve over 4 million acres of waterfowl habitat (assumed to be a subset of the 6 million protected acres).

The NAWMP is implemented by the North American Waterfowl Management Plan Committee, which has six members appointed by the Director General of the Canadian Wildlife Service, six members appointed by the Director of the FWS, and one member appointed by the National Institute of Ecology to represent Mexico. The six U.S. representatives include two representatives from the FWS and four state representatives from the United States. The North American Waterfowl and Wetlands Office of the FWS represents the government of the United States by administering the NAWMP and coordinating efforts with the other two partner countries. Information regarding NAWMP can be requested by contacting:

North American Waterfowl and Wetlands Office
 U.S. Fish and Wildlife Service
 Arlington Square Building, Room 340
 4401 North Fairfax Drive
 Arlington, VA 22203
 (703) 358-1784

The NAWMP identifies waterfowl habitat areas of major concern in the United States and Canada. It also identifies national priorities regarding waterfowl habitat and provides institutional and technical recognition of the significance of specific priority waterfowl habitat areas.

Waterfowl Habitat Areas

Based on their importance to waterfowl breeding and wintering habitats, the NAWMP identifies 34 waterfowl habitat areas of major concern in the United States and Canada. Five of the 34 areas are identified as priority habitat areas (or ranges) and thus targeted as areas to begin implementation of the NAWMP. These five areas are the Lower Mississippi River Delta and Gulf Coast, Prairie Potholes and Parklands, Middle-Upper Atlantic Coast, the Central Valley, and the Lower Great Lakes-St. Lawrence Basin. The five priority habitat areas became the first eight joint ventures (Atlantic Coast, Central Valley, Gulf Coast, Lower Great Lakes/St. Lawrence Basin, Lower Mississippi Valley, and Prairie Pothole joint ventures in the United States; and Eastern Habitat and Prairie Habitat joint ventures in Canada). The remaining waterfowl habitat areas of major concern in the United States are Playa Lakes, Northern Great Plains, Intermountain West, Southwestern Florida, Peace-Athabasca Delta, San Francisco Bay, Klamath Basin, Middle-Upper Pacific Coast, Sandhills and Rainwater Basin, Upper Mississippi River and Northern Lakes, Izembek Lagoon, Upper Alaska Peninsula, Yukon-Kuskokwim Delta, Upper Cook Inlet, Copper River Delta, Yukon Flats, Teshekpuk Lake, and Old Crow Flats. Another 11 areas are in Canada.

Within the five priority waterfowl habitat areas, partnerships are formed called "joint ventures." A joint venture is a partnership between public/private entities that is established because of common waterfowl management and habitat conservation objectives pertaining to a particular physiographic region. Currently, there are 12 active habitat joint ventures in the United States and Canada and two population joint ventures (Arctic Goose Joint Venture and Black Duck Joint Venture). In addition to the first eight joint ventures listed above, there are also the Pacific Coast, Rainwater Basin, Playa Lakes, and Upper Mississippi Valley joint ventures. The joint ventures are usually composed of state, local, provincial, and Federal agencies, corporations, conservation groups, and individuals. These joint ventures serve as the principal mechanism to implement NAWMP goals and objectives on a regional basis. Each joint venture's activities are administered by a Joint Venture Management Board, which constitutes representatives of partners in the joint venture. These partners can combine staff resources, funding, and influence to accomplish collectively projects that could not be done separately. Joint Venture Implementation Plans outline specific joint venture habitat objectives, identify priority habitats, and specify priority projects within the joint venture area.

Authorization for the NAWMP and Its Institutional Significance

Authorization for the NAWMP came in 1986 when the U.S. Secretary of the Interior and the Minister of the Environment for Canada signed the North American Waterfowl Management Plan. Mexico became a full partner in the NAWMP with the 1993 update. Congressional recognition of the NAWMP comes from the North American Wetlands Conservation Act of 1989. Department of the Army support to the NAWMP is set forth in an agreement signed with the Department of the Interior in 1989.

The NAWMP can be used to indicate national priorities for the protection, restoration, and management of waterfowl habitat and provide both institutional and technical recognition of the significance of specific habitat areas. The different components of the NAWMP can be considered to impose a relative order of significance. In general, the International Agreement with Canada and the Cooperative Agreement between the Corps and the FWS concerning NAWMP provide institutional recognition of the significance of waterfowl habitats. The NAWMP identifies 34 waterfowl habitat areas of major concern in the United States and Canada and further identifies five as priority habitat areas. Restoration projects under consideration in these habitat areas, therefore, could potentially be related to institutionally recognized resources which are very significant. The joint ventures, yet another opportunity for establishing institutional significance, indicate habitat areas that are highly valued from a national and regional perspective. Corps restoration projects associated with specific joint venture habitat objectives, identified priority habitats, and specified priority projects in a joint venture implementation plan can also derive institutional significance from this source. Lastly, the species related to these habitats can be viewed as institutionally significant since their ecosystems are perceived as worthy of conservation by the NAWMP.

Exhibit 2-2. Example Significance Argument Based on the North American Waterfowl Management Plan

This example illustrates how the relationship between a wetland restoration project and a joint venture plan developed under the NAWMP can help establish the institutional significance of a wetland area that functions as breeding habitat for migratory waterfowl.

Needham Wetlands in the Lower Valley Region

The Needham wetlands are located in the Lower Valley Region, which was designated as a priority waterfowl habitat area in the Lakes Region Joint Venture Implementation Plan because of its importance as a breeding habitat for various types of migratory waterfowl. Degradation of wetland habitat in the Lower Valley Region is the primary cause of decline in the abundance of mallards, pintails, and blue-winged teal, which are all species of concern. Approved in 1990 under the NAWMP, the Lakes Region Joint Venture is located in one of the NAWMP's waterfowl habitat areas of major concern. State A is a partner in the Lakes Region Joint Venture, along with two other states, B and C. One of the goals for State A under the Lakes Region Joint Venture Implementation Plan is permanently protecting or enhancing 75,000 acres of habitat with a 3:1 upland to wetland ratio on public land over a 15-year period. Accomplishing State A's portion of Lakes Region Joint Venture will contribute to the NAWMP population goal by adding 200,000 waterfowl, including 50,000 pintails and 100,000 mallards to State A's average spring breeding population, thereby increasing the state's fall flight contribution by 300,000 waterfowl by the year 2005.

Because the Needham wetlands are within a joint venture area approved under the NAWMP and, moreover, located within a waterfowl habitat area of major concern designated under the NAWMP, their institutional significance is recognized from both a national and international perspective. Additionally, the Needham wetlands exist within a priority habitat area designated in the Lakes Region Joint Venture Implementation Plan, which recognizes their institutional significance from a regional perspective. Restoration of the Needham wetlands will support one of the Plan's habitat goals, namely, to manage existing or newly acquired public lands and waters to increase waterfowl production and migration habitat and other wetland values. Institutional significance is further supported because these wetlands and the Lower Valley Region also serve as habitat for three species of concern.

National Wetlands Priority Conservation Plan

Under the Emergency Wetlands Resources Act of 1986, Congress found that wetlands are nationally significant resources and authorized the National Wetlands Priority Conservation Plan (NWPCP) to specify the types and locations of wetlands that should be given priority with respect to Federal and state acquisition. The NWPCP was prepared by the FWS on behalf of the U.S. Department of Interior (USDI) in response to Section 301 of the Act and provides a process by which decision makers can focus their acquisition efforts on the Nation's more important, scarce and vulnerable wetlands. The primary purpose of the NWPCP is to assist Federal and state agencies in making wetland acquisition decisions when Land and Water Conservation Fund appropriations are used. It can also be used by the private sector, and local, state, and Federal agencies to assist in identifying wetlands warranting priority consideration for protection, management, restoration and/or enhancement using nonacquisition measures. Information regarding the NWPCP can be requested by calling or writing:

U.S. Fish and Wildlife Service
Division of Habitat Conservation
1849 C Street NW, Mail Stop 400-ARLSQ
Washington, DC 20240
(703) 358-2201

The NWPCP uses wetlands assessment criteria based on scientific or technical knowledge to evaluate three factors specified in Section 301(c) of the Act: historic wetland losses, threat of future wetland losses, and wetland functions and values. Wetlands assessment criteria have been established for each of these major categories to assist Federal and state decision makers in determining which types and locations of wetlands warrant priority attention for acquisition. The three threshold criteria are wetland loss (i.e., wetland types that are rare or have declined within an ecoregion), wetland threats (i.e., wetlands subject to identifiable threat of loss or degradation), and wetland functions and values (i.e., wetlands with important and diverse functions and values and/or especially high or special value for specific wetland functions). At a minimum, proposed wetland acquisition projects should be selected based on evaluation according to all three factors. The NWPCP contains only threshold criteria for each factor. Users who need to rank various wetlands must develop a weighted scoring system taking into account the priorities and needs of the agency considering acquisition. A single weighted scoring system was intentionally avoided because it could not serve all the differing applications of the NWPCP by various users.

Identification of priority wetland types under the NWPCP could be used by Corps planners as a source of institutional significance of specific wetland areas at the national, regional, or state level related to Corps studies. If a Corps restoration project would affect one of the three wetlands criteria in a positive manner (decrease wetland loss, remove wetland threats, or preserve wetland functions and values), then planners could use the NWPCP as institutional support for the significance of these resources. In addition, because scientific and technical criteria are used in the prioritization process, the NWPCP could be used to indicate the technical significance of specific wetland areas or wetland types (see Chapter 4).

Wetlands of International Importance

The Convention on Wetlands of International Importance especially as Waterfowl Habitat, or the Ramsar Convention, is an intergovernmental treaty that provides a framework for international cooperation for the conservation of wetland habitats. The Convention went into effect in 1975, however, the U.S. only became a member in 1986 when the treaty was ratified by Congress. Its major objectives are to prevent the loss of wetlands and to ensure their conservation. To achieve its goals, the Convention places general obligations on its member countries relating to the conservation of wetlands within their boundaries, and special obligations pertaining to wetlands that have been designated in a "List of Wetlands of International Importance." Under the Convention, "Wetlands of International Importance" are defined as areas that are characteristic of a regional wetland type, contain rare species, maintain regional diversity, or support a minimum of 20,000 waterfowl.

Under the Ramsar Convention, member countries meet every three years to discuss progress in wetlands conservation, review the status of sites on the List, hear reports from international organizations, and make decisions on the functioning of the Convention. More than 70 countries, from all areas of the world, are now parties to the Convention. Between conferences, a Standing Committee, which consists of representatives from nine member countries, takes care of interim activities. The independent Ramsar Bureau, which is located in Gland, Switzerland, works in cooperation with the International Union for the Conservation of Nature and Natural Resources and the International Waterfowl and Wetlands Research

Bureau. The Ramsar Bureau provides a permanent structure for administrative, scientific, and technical support.

The List of Wetlands of International Importance is the part of the Ramsar Convention that has made the greatest impact on wetlands conservation. Placing an area on the "Ramsar List" has had considerable influence on the conservation of the area and on public recognition of the global importance of the site. Currently, member countries have collectively designated several hundred sites covering more than 88 million acres. In the United States, the FWS is responsible for implementation of the Convention. There are currently 11 U.S. wetlands designated by the Ramsar Convention. These wetlands can provide a high-priority list to help Corps planners geographically identify large-scale ecosystems. For more information on the List of Wetlands of International Importance or the Ramsar Convention, contact:

The Office of International Affairs
860 Arlington Square
U.S. Fish and Wildlife Service
Washington, DC 20240
Phone: (703) 358-1754

Additional Examples:

Coastal Wetlands Planning, Protection, and Restoration Act of 1990 (Section 305), National Coastal Wetlands Conservation Grant Program. Administered by the FWS, the primary goal of the grant program authorized under the Act is to acquire, restore, enhance, or manage coastal wetlands with quantifiable results or benefits for the long-term conservation of coastal wetlands, and the hydrology, water quality, and fish and wildlife dependent on them. Projects are funded through a cost-share agreement between states and the Federal government. Corps restoration projects located nearby coastal wetlands projects approved by the National Coastal Wetlands Conservation Grant Program and contributing to the achievement of the program's goals could be considered institutionally significant.

Executive Order No. 11990 of May 1977 (Protection of Wetlands). This executive order directs Federal agencies to provide leadership in minimizing the destruction, loss, or degradation of wetlands.

Food Security Act of 1985 (Swampbuster provision), amended by the Food, Agriculture, Conservation and Trade Act of 1990. The Swampbuster provision denies Federal farm program benefits to producers who planted an agricultural commodity on wetlands that were converted after December 23, 1985. The Food, Agriculture, Conservation, and Trade Act of 1990 strengthened Swampbuster by making violators ineligible for farm program benefits for that year and subsequent years.

Wetlands Reserve Program. The Wetlands Reserve Program (WRP) is a voluntary program that provides owners of eligible land the opportunity to offer an easement for purchase by the U.S. Department of Agriculture (USDA) and to receive cost-share assistance for the restoration and protection of wetlands on their property. The WRP is authorized in selected states for each WRP sign-up. States are chosen for the WRP due to their geographic diversity and potential to benefit from the program. Eligibility and acceptance into the program is determined by scoring the potential effectiveness of wetland restoration and the importance of environmental resource issues associated with the specific area. Corps planners could use this program to identify important wetland areas on private lands nearby proposed restoration projects.

North American Wetlands Conservation Act of 1989, North American Wetlands Conservation Act Grant Program. Established to encourage partnership efforts among government agencies and other interested parties, this program encourages conservation of North American wetland ecosystems and

waterfowl and the other migratory birds and fish and wildlife that depend on such habitats. The Act created the North American Wetlands Conservation Council which recommends wetlands conservation projects to the Migratory Bird Conservation Commission (MBCC). The MBCC approves funding for the North American Wetlands Conservation Act Grant Program, which was created to achieve the objectives of the Act, namely to: 1) protect, enhance, restore, and manage an appropriate distribution and diversity of wetland ecosystems and other habitats for migratory birds and other fish and wildlife in North America; 2) maintain current or improved distributions of migratory bird populations; and 3) sustain an abundance of waterfowl and other migratory birds consistent with the goals of the NAWMP and the international obligations contained in migratory bird treaties and conventions and other agreements with Canada, Mexico, and other countries.

Water Resources Development Act of 1986, Section 906(d). This section stipulates that any proposal for the authorization of a water resources project must contain: 1) a recommendation with a specific plan to mitigate fish and wildlife losses created by such a project or 2) a determination by the Secretary of the Army that the project will have negligible adverse impact on fish and wildlife. In addition, specific mitigation plans shall ensure that impacts to bottomland hardwood forests are mitigated in-kind, to the extent possible. Thus, bottomland hardwoods are recognized by law as being highly significant, to the extent that they must be replaced in-kind, as part of mitigation.

Water Resources Development Act of 1990, Section 307(a). This Section established, as part of the Corps of Engineers water resources development program, an interim goal of no overall net loss of the Nation's remaining wetlands base, as defined by acreage and function, and a long-term goal to increase the quality and quantity of the Nation's wetlands, as defined by acreage and function. The Act authorizes the Secretary of the Army, in consultation with the EPA, the FWS, and other Federal agencies, to develop a wetlands action plan to achieve the goals established by this Section.

2.1.1.3. Rivers

Wild and Scenic Rivers Act of 1968--Nationwide Rivers Inventory

With the passage of the Wild and Scenic Rivers Act of 1968, Congress called for preparation and maintenance of a continuing inventory and evaluation of the outdoor recreation needs and resources of the United States and the identification of potential wild, scenic, and recreational river areas within the Nation. In partial fulfillment of these mandates, the National Park Service prepared the Nationwide Rivers Inventory (NRI), which compiled comprehensive, consistent data on the Nation's significant free-flowing rivers that may qualify as wild, scenic, or recreational rivers. All rivers and river segments 25 miles or longer within the coterminous United States were evaluated using a prioritization process based primarily on scientific or technical knowledge and judgment of the outstanding natural and cultural characteristics of the river and its immediate environment. Through the inventory process, approximately 61,700 river miles involving 1,524 river segments were identified in the 1982 NRI as probably possessing sufficient natural or cultural attributes to qualify for the National Wild and Scenic Rivers System. This is just under two percent of the total river miles in the United States. The National Park Service added 1,007 additional river segments to the NRI in 1993.

The list which results from the inventory process is a useful guide of the Nation's river resources that could be used as a source of institutional recognition of the significance of these resources. The list is updated periodically and is now published in database form on three diskettes. Interested parties can order copies of the diskettes or request information on a specific river or state and have that information sent to them. By December 1995, the National Park Service hopes to have the NRI on CD ROM. It will

also be posted on computerized information bulletin boards. Corps restoration projects related to rivers or river segments listed in the NRI could use this evidence of a national priority to preserve important river resources as support for their planning study. For information on the NRI and the most current list of river segments, contact:

National Park Service
Recreation Resources Assistance Division
P.O. Box 37127
Washington, DC 20013-7127
(202) 343-3780

Wild and Scenic Rivers Act of 1968--National Wild and Scenic Rivers System

The National Wild and Scenic Rivers System established a method for providing Federal protection for certain of the Nation's remaining free-flowing rivers to preserve them and their immediate environments for the use and enjoyment of present and future generations. Rivers are included in the system so that they may benefit from the protective management and control of development provided by the Wild and Scenic Rivers Act. Rivers or river segments are designated based on professional judgment of whether a river and its immediate environment possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values. Designated rivers are classified as wild, scenic, or recreational rivers based on their degree of naturalness.

The National Wild and Scenic Rivers System represents some of the best examples of the Nation's free-flowing rivers. The 150 river segments (as of December 1994) within the system receive protection under Federal law and are managed by one of the following agencies: BLM, FWS, Forest Service, and National Park Service. The list is included in both the NRI (see above) and the Outstanding Rivers List (prepared by American Rivers, a nonprofit organization). The Wild and Scenic Rivers System indicates the highest priorities for protection strategies dealing with riverine systems. Rivers can be added to the System in two ways. The first method is by an act of Congress. Congress can designate a river directly or it can authorize a river for study as a potential wild, scenic, or recreational river. If a study is conducted, designation of the river for the system is decided based upon the results. The second method for inclusion of a river in the national system is through the authority granted to the Secretary of the Interior in Section 2(a)(ii) of the Act. In this case, upon application by the Governor of the state where the river is located, the Secretary can either designate a river as a wild, scenic, or recreational river provided that the river has also received such a designation in the state system.

Landowners, citizens, the local Forest Service, National Park Service, and BLM all play an active role in implementing the National Wild and Scenic Rivers System. This cooperative partnership could be useful to Corps planners as they gather information regarding river segments that may be related to their planning studies. The National Wild and Scenic Rivers System is another example of institutional recognition of the significance of environmental resources, riverine systems, in particular. Corps planning studies associated with such resources could use the System as evidence of institutional significance for river segments designated as wild, scenic, or recreational. For more information regarding this program and a list of the rivers included in it, please contact:

National Park Service
Park Planning and Protection Division
P.O. Box 37127
Washington, DC 20013-7127

Additional Examples:

Executive Order No. 11988 of May 1977 (Floodplain Management). This executive order requires each Federal agency to take action to minimize and avoid where possible the long and short-term adverse effects of occupying and modifying flood plains.

2.1.1.4. Lakes

Clean Water Act (Section 314)--Clean Lakes Program

Under the Clean Lakes Program, authorized under Section 314 of the Clean Water Act, the U.S. Environmental Protection Agency (EPA) offers financial assistance to states through four funding mechanisms or cooperative agreements: State/Tribal Lake Water Quality Assessments, Diagnostic/Feasibility Studies, Restoration/Implementation Projects, and Post-restoration Monitoring Studies. Through these agreements, the program then helps states and local communities learn how to manage their own lake problems. Since the 1970s, the Clean Lakes Program has funded more than 400 projects, making an impact on some 500 lakes in 49 states and one territory. The program also provides support to Indian tribes needing assistance with lake restoration and protection--19 tribal lands have been assisted thus far. The program is based on four principles: local involvement and commitment, state management, matching funds, and good science. Recently, through EPA's "Clean Lakes Strategy--New Directions for the Future," better integration of the Clean Lakes Program with non-point source efforts, water quality management, permitting, and other ecosystem protection efforts is being implemented.

The program requires that each state identify and classify according to eutrophic condition all publicly owned lakes; describe procedures, processes, and methods to control sources of pollution; describe methods and procedures to restore the quality of the lakes; provide methods and procedures for mitigating the harmful effects of high acidity in the lakes; list and describe those publicly owned lakes for which uses are known to be impaired; and assess the status and trends of the water quality of the lakes in the state. These requirements, coupled with the helpful tools that have been produced by the Clean Lakes Program, could have applicability for Corps planning studies. For example, some of the Program's technical/guidance documents, bioassessment protocols/biocriteria, and tracking systems could be useful to Corps planners for the identification of highly significant lake resources that are nearby Corps projects. Information on the program and a list of current projects could be requested from state or local organizations working with it by contacting:

Clean Lakes Program
c/o The Terrene Institute
1717 K Street, NW, Suite 801
Washington, DC 20006
(202) 833-8317

2.1.1.5. Estuaries and Marine Areas

National Estuary Program

The National Estuary Program is administered by the U.S. EPA. The program was authorized by Section 320 of the Water Quality Act of 1987 to identify nationally significant estuaries threatened by

pollution, development, or overuse and to convene Management Conferences to develop Comprehensive Conservation and Management Plans (CCMPs) to ensure their ecological integrity. The overall goals of the National Estuary Program are protection and improvement of water quality and enhancement of living resources.

For an estuary to become part of the National Estuary Program, it must first be nominated by a state governor. The Governor must show that the proposed body of water is nationally significant and meets given EPA criteria requirements. After the EPA Administrator reviews the nomination and selects the estuary for the National Estuary Program, the Administrator convenes a Management Conference to oversee estuary activities. The Management Conference consists of the EPA Administrator (or designee); representatives of other Federal, state, and local government agencies as well as any appropriate interstate or regional entities; and representatives of affected industries, educational institutions, and the general public. For each estuary, the Management Conference identifies and ranks the most important environmental problems based on scientific and technical information. This information is then used to formulate the CCMP and its action plans. For further information about the National Estuary Program, contact:

United States Environmental Protection Agency
Office of Wetlands, Oceans, and Watersheds
Oceans and Coastal Protection Division
Coastal Management Branch
401 M Street SW (WH556F)
Washington, DC 20460
(202) 260-6502

Currently, there are 21 estuaries of national significance in the National Estuary Program. These 21 estuaries and important living resources and their habitats identified in the CCMPs could be used to provide institutional as well as technical recognition of the significance of specific estuarine areas. Restoration projects under consideration in areas where these estuaries are located could be related to these institutionally recognized significant resources. The CCMPs are yet another opportunity for establishing the institutional significance of estuarine areas associated with Corps restoration projects. The species and habitats related to these estuarine areas could be viewed as institutionally significant in cases where important living resources are identified as worthy of conservation or preservation by a CCMP.

Exhibit 2-3. Example Significance Argument Based on the National Estuary Program

This example provides an illustration of an institutional significance argument for a hypothetical restoration project using EPA's National Estuary Program.

Bacon Estuary

The proposed Coastal Wetland Restoration Project is located within the boundaries of the Bacon National Estuary Program study area, which supports the institutional significance of the environmental resources associated with the project. In 1992, Bacon Estuary was designated as an estuary of national significance under the National Estuary Program authorized under Section 320 of the Clean Water Act. Wetlands restoration and protection of important estuarine habitat areas for native fish and wildlife species are identified as priority actions in the Comprehensive Conservation and Management Plan (CCMP) developed for Bacon Estuary. The proposed project would support both of these goals as well as the overall goals of the National Estuary Program, which are protection and improvement of water quality and enhancement of living resources. In addition, the important estuarine habitat areas designated in the CCMP are identified as valuable and unique aquatic ecosystems found exclusively in the Bacon Estuary. By identifying these areas as important and unique resources, the CCMP provides further evidence of their institutional significance from a regional and national perspective.

National Marine Sanctuary Program

The National Marine Sanctuary Program (NMSP) is administered by the National Oceanic and Atmospheric Administration (NOAA), Department of Commerce. The program was authorized by Title 3 of the Marine Protection, Research, and Sanctuaries Act of 1972, as amended. The regulations for the national marine sanctuary designation process are published at 15 CFR Part 922. The program was established to respond to the growing awareness of the intrinsic environmental and cultural value of coastal waters. To date, the program is the only Federal program designed to comprehensively protect the Nation's marine areas through identification, designation, and management of significant marine and Great Lakes waters. The designation of marine sanctuaries is based on the need to preserve, and where necessary, restore their historical, recreational, conservation, ecological, cultural, and/or aesthetic values. The highest priority for all designated sanctuaries is long-term protection. Protection for designated sanctuaries is obtained through management programs tailored to meet the needs of individual sites. Sanctuary status facilitates proper management by managing selected areas as complete ecosystems instead of regulating just specific activities or protecting only certain resources.

A National Marine Sanctuary may be designated by Congress or by being selected to become an Active Candidate by the Site Evaluation List (SEL) process. In either case, an environmental impact statement and management plan must be prepared for each site. After these steps are completed, and with the approval of Congress and the Governor of the given state (for sites that include state waters), the site is designated a National Marine Sanctuary by the Secretary of Commerce. For further information regarding the NMSP, contact:

Sanctuaries and Reserves Division
Office of Ocean and Coastal Resources Management

National Ocean Service, NOAA
U.S. Department of Commerce
1305 East West Highway, Building 4, 12th Floor
Silver Spring, MD 20910
(301) 713-3125

Currently, 13 sites have been designated as National Marine Sanctuaries. The locations of these 13 sanctuaries represent a number of marine environments, from near shore coral reefs to open ocean to benthic ecosystems. NMSP has begun to re-evaluate the SEL and new sites will be considered for evaluation. The use of the existing SEL, which currently has 24 sites, could prove beneficial to the Corps by providing a means of tracking and targeting specific marine environmental resources deemed significant as active candidates for possible designation as a National Marine Sanctuary. The 13 sites already designated as National Marine Sanctuaries are examples of specific resources with high natural and/or cultural resource values and are, therefore, institutionally significant. Any Corps restoration projects associated with these important marine resources would gain support through this institutional recognition of resource significance.

National Estuarine Research Reserve System

The National Estuarine Research Reserve System (NERRS) is administered by NOAA in close coordination with the National Marine Sanctuary Program. The program was authorized by Section 315 of the Coastal Zone Management Act of 1972, as amended, and it operates under final regulations published on July 15, 1993 (58 FR 38215). NERRS recognizes the need to protect coastal resources from pollution and the pressure of development. Currently, more than 430,000 acres of estuarine waters, marshes, shorelines and adjacent uplands have been protected for research and education, which represent the designation of 22 reserves in 18 states and Puerto Rico. As the program expands, new sites are being considered. Each reserve that is designated adds to the network of diverse environments represented by NERRS, forming a network that provides a profile of the Nation's estuaries. For more information about the NERRS, contact:

Sanctuaries and Reserves Division
Office of Ocean and Coastal Resource Management
National Ocean Service, NOAA
1305 East West Highway, Building 4, 12th Floor
Silver Spring, MD 20910
(301) 713-3145

The 22 reserves designated under NERRS are examples of specific resources with high ecological values that represent a variety of ecosystem types in different biogeographic regions or subregions. Any Corps restoration projects associated with these reserves could gain support from this evidence of institutional recognition of estuarine resource significance.

2.1.1.6. Other Relevant Programs

National Wildlife Refuge System

The National Wildlife Refuge System is a collection of lands and waters managed by the FWS that was begun in 1903 when President Theodore Roosevelt established the Pelican Island Refuge in Florida. There are five classifications of land and areas within the National Wildlife Refuge System: National

Wildlife Refuges, Waterfowl Production Areas, Coordination Areas, Wilderness Areas, and Migratory Waterfowl Refuges on a Federal Water Resource Project Area. The National Wildlife Refuges are any areas of the National Wildlife Refuge System, except Coordination Areas. The Waterfowl Production Areas are any wetland or pothole areas acquired pursuant to the Migratory Bird Hunting and Conservation Stamp Act and administered as part of the National Wildlife Refuge System. The Coordination Areas are any areas administered as part of the National Wildlife Refuge System managed by the states under cooperative agreements between the FWS and one or more State Fish and Wildlife Agencies. The Wilderness Areas are FWS lands designated by Congress to be managed as a unit of the National Wilderness Preservation System, in accordance with the terms of the Wilderness Act of 1964. Migratory Waterfowl Refuges on a Federal Water Resource Project Area are Federal lands managed by the FWS to mitigate a Federal water resource project for the benefit of migratory waterfowl (and other wildlife) under the Fish and Wildlife Coordination Act of 1934, as amended. The National Wildlife Refuge System includes such diverse geographic areas as maritime islands, coastal and inland wetlands, grasslands and range, and desert oases.

Refuges for the System are selected by an Act of Congress, special legislation, a published plan, or a continuation of a pre-existing refuge. As of September 1994, there were 505 National Wildlife Refuge areas encompassing 89,270,666.67 acres. The System spans from Alaska to Florida and includes islands in the Caribbean and central Pacific. Individual refuges range in size from less than one acre to nearly 20 million acres. The Refuges are incorporated in the annual report listing all lands under control of the FWS. It has information regarding states, refuges, how the refuge was established, whether or not the refuge was purchased or leased, and the total acreage. As of September 1994, there were also 180 Waterfowl Production Areas representing 2,187,647.25 acres and 50 Coordination Areas representing 317,322.13 acres. The National Wildlife Refuge System is evidence of institutional recognition of the significance of the refuges and wildlife habitats it protects. Corps restoration projects associated with refuges can also be considered institutionally significant through their support of a refuge's wildlife management goals. For more information regarding the program and for a list of refuges, contact:

U.S. Fish and Wildlife Service
Division of Refuges
4401 N. Fairfax Drive, Mail Stop 670-ARLSQ
Arlington, VA 22203
(703) 358-2043

Additional Examples:

Coastal Barrier Resources Act, as amended by the Coastal Barrier Improvement Act of 1990. This Act establishes a policy that coastal barriers and their associated inlets, waterways, and wetlands resources are to be protected by restricting Federal expenditures which have the effect of encouraging development of coastal barriers.

Coastal Zone Management Act of 1972, as amended. Under this Act, Congress established a national policy and authorized a national program for the management, beneficial use, protection and development of the land and water resources of the Nation's coastal zones, and for other purposes.

Estuary Protection Act of 1968. This Act authorized a study and inventory of the Nation's estuaries for the purposes of protection, conservation, and restoration in the interest of balancing their value as a natural resource and further growth and development.

National Ocean Pollution Planning Act of 1978. By authorizing a comprehensive five-year plan for Federal ocean pollution research and development and monitoring programs, the Act encouraged planning for, coordination of, and dissemination of information with respect to such programs within the Federal government.

Biosphere Reserves. The United Nations Educational, Scientific, and Cultural Organization (UNESCO) designates these protected areas dedicated to helping discover solutions to environmental ills such as tropical deforestation, desertification, atmospheric pollution, and the "greenhouse effect." The designation is made on the basis of nominations submitted by over 110 nations participating in UNESCO's Man and the Biosphere Program. Biosphere reserves are part of an international network designed to conserve the diversity and integrity of representative natural ecosystems in the world's major biogeographical provinces, furnish large areas for environmental baseline studies and research, and offer educational study opportunities.

Federal Land Policy and Management Act of 1976 (Section 202)--Areas of Critical Environmental Concern (ACECs on BLM lands). These designations highlight areas where special management attention is needed to protect and prevent irreparable damage to important historic, cultural, and scenic values, fish, or wildlife resources or other natural systems or processes; or to protect human health and safety from natural hazards. The Federal Land Policy and Management Act (FLPMA) of 1976 provides for ACEC designation and establishes a national policy for the protection of public land areas of critical environmental concern. Section 202(c)(3) of the FLPMA mandates that BLM give priority to the designation and protection of ACECs in the development and revision of land use plans. There are currently 525 ACECs designated, which represent 8,703,701 acres.

Historic Sites Act of 1935--National Natural Landmarks Program, National Registry of Natural Landmarks. The National Natural Landmarks (NNL) Program, created in 1962, established a national policy to preserve for public use, historic sites, buildings, and objects of national significance for the inspiration and benefit of the American people. It is administered by the U.S. Department of the Interior's National Park Service. All NNLs are published in both the Federal Register and the National Registry of Natural Landmarks. Currently, 587 sites have been designated as NNLs and are listed in the National Registry of Natural Landmarks.

National Park Service Organic Act of 1916. This Act established the National Park System which includes national parks, national monuments, national preserves, national seashores, and national lakeshores.

2.1.2. Private/Nonprofit Organizations

There are numerous private/nonprofit organizations operating in the United States and internationally whose sole purpose for existing is to protect and enhance certain environmental resources or species. Many of these organization maintain species lists and data bases which can be helpful in identifying resources and supporting significance arguments. The following pages provide examples of programs associated with private, nonprofit organizations that can assist in identifying and describing sources of institutional recognition at the national or international level.

The Nature Conservancy

The Nature Conservancy (TNC), a nonprofit organization based in Arlington, Virginia, coordinates the Natural Heritage Programs (NHPs) and Conservation Data Centers (CDCs) which are continually

updated, computer-assisted inventories of the biological and ecological features and biodiversity preservation of the county or region in which they are located. They are designed to assist in conservation planning, natural resource management, environmental impact assessment, and planning for sustainable development.

A global and state ranking system for species and plant communities was developed by TNC for use by NHPs to rank the elements of natural diversity. Using this system, species are ranked in relative order of their wide-range or global importance (i.e., global element ranks), and on their relative importance within a specific state (i.e., state element ranks). These ranks are provided by TNC to NHPs and CDCs to assist them in their programs. The ranks are used to develop several site ratings, as listed below:

- Biodiversity significance rating (i.e., the significance of occurrences of elements, any community elements, or concentrations of elements at a site from the standpoint of biodiversity),
- Protection urgency rating (i.e., urgency for legal, political, or administrative measures to minimize adverse impacts to element occurrences at a site), and
- Management urgency rating (i.e., urgency for management intervention to prevent loss or degradation of element occurrences or to maintain the current quality of element occurrences).

Information on the CDCs and NHPs can be found by calling or writing TNC and requesting the document entitled "Natural Heritage Program and Conservation Data Center Network." This document and additional facts supporting institutional recognition of resources can also be requested through the regional and state programs that most states have. Information can be obtained from:

The Nature Conservancy
1815 North Lynn Street
Arlington, VA 22209
(703) 841-5300

The sections below list the three highest rankings in the global, state, and biodiversity categories, since these assignments would lend the most institutional significance to the resources in question for a proposed restoration project.

Global Element Ranks

Taxa are ranked in relative order of their wide-range or global importance. Estimating global ranks is done in the following way. First, element ranking occurs. The estimated number of occurrences and the estimated overall abundance is calculated. For each of these factors, typical numerical scales are provided. The abundance scale is adjusted in view of an element's life history. Secondary ranking factors, population, range trends, threats, range size, ecological fragility, and similar considerations, can shift the element ranking up or down. Thus, a ranking of G1 indicates that animal and plant species are extremely rare in occurrence and overall abundance. Furthermore, the ranking demonstrates that the species in question is vulnerable to extinction because of some or all of the secondary ranking factors. The ranking scale goes from G1 to G5 and then continues with GH, GU, and GX. The ranking decreases in importance regarding the fragility of a species as the numbers increase. GH signifies that the species was of historical occurrence in the range. GU indicates that the species is possibly in peril range-wide, but that more

information is needed. Lastly, GX shows that the species is believed to be extinct throughout its range with virtually no likelihood that it will be rediscovered. Listed below are TNC's definitions of ranks G1 to G3. The global ranks can be used as evidence of institutional recognition of the significance of resources associated with Corps restoration projects. Rankings of G1 to G3 are evidence that a species is highly valued by TNC's ranking system and is worthy of preservation or conservation.

- G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor of its biology making it especially vulnerable to extinction. [Critically imperiled throughout its range.]
- G2 = Imperiled globally because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of other factors demonstrably making it very vulnerable to extinction throughout its range. [Imperiled throughout its range.]
- G3 = Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (e.g., a single western state, a physiographic region in the east) or because of other factors making it vulnerable to extinction throughout its range (20 to 100 occurrences). [Rare or uncommon.]

State Element Ranks

The state ranks operate similarly to the global ranks in their function and purpose, except that they rank taxa in relative order of their importance within a specific state. Thus, a ranking of S1 indicates that a species is critically imperiled in the state because of extreme rarity or vulnerability factors. The ranking system goes from 1 to 5, with S5 being a demonstrably secure species. The system also includes rankings such as SE, SH, and SU. They are defined similarly to the global rankings, except for SE which indicates an exotic species established in a state. Listed below are TNC's definitions of ranks S1 to S3. The state ranks are also indicators of institutional recognition of resource significance and can be used by the Corps in planning studies for restoration projects.

- S1 = Critically imperiled in the state because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor of its biology making it especially vulnerable to extirpation from the state. [Critically imperiled in the state.]
- S2 = Imperiled in the state because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of other factors demonstrably making it very vulnerable to extirpation from the state. [Imperiled in the state.]
- S3 = Rare in the state (on the order of 20+ occurrences). [Rare or uncommon in state.]

Biodiversity Significance Rating

The Biodiversity Network element ranking system is not designed to replace Federal or state endangered species lists, but rather to exist in parallel with them and to support them. The system does so by recording information separately at each geographic level. This information (computerized element global, national, and subnational rank records) can be used to provide concise, easily retrievable, and quickly updated documentation on species at a site. Provided below is a short list of selected site rankings:

- B1 = Outstanding significance, generally of a "last of the least" type, such as the only known occurrence of any element, the best of A-ranked occurrences of G1 elements, or an outstanding concentration of high-ranked occurrences of G1 or G2 elements. The site should be viable and defensible for elements and ecological processes contained.
- B2 = High significance, often of a "best of the rest" type, such as other than the best occurrences of G1 elements, the most outstanding occurrences of any G2 or G3 community elements, or concentrations of better occurrences (G4 or G5) of S1 elements.
- B3 = Moderate significance, such as at least C-ranked occurrences of G2 or G3 elements, A-ranked occurrences of (G4 or G5) S1 elements, B-ranked occurrences of any community element, or concentrations of better occurrences (G4 or G5) of S2 elements.

Conservation Data Centers (CDCs)

Information assembled and managed by CDCs focuses on ecosystems and species, and their biology, habitats, locations, conservation status, and management needs; managed areas such as National Parks, Forest Reserves, and watersheds; and on data sources. Each CDC compiles information from existing sources such as scientific literature, knowledgeable people, and museum collections. The local staff also directs and conducts field inventories of species and natural communities of special concern, or may be contacted for biological assessments of specific sites. Each field study and report benefits from earlier work in the same area and, through the network, related information gathered at other times and places supplements the local effort. Central network databases are supported through cooperative agreements with academic and scientific institutions. Each CDC uses the Biological and Conservation Data System as the basis for its operation. This system was developed and has been refined by TNC since 1974. The information is managed in more than 30 interrelated computer files, supported by extensive map and manual files and a library. A trained staff of biologists, natural resource specialists, and data managers interprets the data for use in local conservation and development planning, natural resource management, and environmental impact assessment. The CDC's integrated biological and land use information is used to identify critical areas in need of protection and to establish conservation priorities on a regional, national, and global basis. This information could also be used as a source of institutional significance in Corps planning studies, since the biological and ecological information the CDCs collect are used in national, state, and regional conservation efforts.

Exhibit 2-4. Example Significance Argument Based on The Nature Conservancy

This example illustrates how the ranking systems developed by The Nature Conservancy can help establish the institutional significance of a species associated with a restoration project. Also, in this example, the technical significance of this species would be supported by its rarity and restricted range which makes it vulnerable to extinction.

Middle Channel of the Tates Creek Watershed

The Bluegrass shiner is a rare fish found only in a restricted range which makes it vulnerable to extinction. The Bluegrass shiner is distinctly representative of Tates Creek watershed because it is a local variation of the shovel-nosed shiner genus. In prehistoric times, the Bluegrass shiner was cut off from other communities of shovel-nosed shiners, evolved several distinct traits, and is only located in this watershed. Biological studies indicate that populations of Bluegrass shiner gradually declined throughout the watershed and the last specimen was found in the Middle Channel over 30 years ago, however, it is not immediately threatened with extinction in the watershed. The proposed stream restoration project is expected to correct silt and sedimentation problems that have degraded in-stream habitat in the Middle Channel. Improving the quality of in-stream habitat should restore conditions supporting spawning of the Bluegrass shiner by improving substrate quality, restoring channels and pools, re-establishing submerged aquatic vegetation, and encouraging recolonization by benthic invertebrates.

The State Natural Heritage Program has recognized the significance of the Bluegrass shiner through the ranking system developed by The Nature Conservancy (TNC), a national, nonprofit organization with a mission to preserve plants, animals, and natural communities that represent the diversity of life. The State Natural Heritage Program has assigned the Bluegrass shiner a global element rank of G3 (rare or uncommon). According to TNC, species with a global element rank of G1 to G3 are biologically qualified for listing as endangered or threatened, subject to analysis of the degree of threat. In addition, the State Natural Heritage Program has assigned the Bluegrass shiner a state element rank of S3 (rare or uncommon within the state). Based on these rankings, the State Natural Heritage Program recognizes the Bluegrass shiner as a locally distinct variation that is rare statewide and is working for the protection or restoration of aquatic habitat within the state essential for the conservation and survival of this species. In addition, TNC's national headquarters has joined forces with several other national nonprofit organizations to acquire key habitat parcels in the Tates Creek watershed to protect the Bluegrass shiner. The species rankings and recognition of the Bluegrass shiner as part of the preservation mission of TNC and the State Natural Heritage Program strongly support the institutional significance of this species at both national and regional levels.

The Nature Conservancy Preserves

TNC also purchases significant natural areas that need protection. To date, TNC and its members have been responsible for the protection of more than 6.3 million acres in all 50 states and in Canada. While some Conservancy-acquired areas are transferred for management to other conservation groups, both public and private, TNC manages more than 1,600 preserves--the largest private system of nature sanctuaries in the world. Information collected and maintained by CDCs and NHPs plays an important role in the efforts of TNC and other agencies and organizations to identify these significant natural areas and

set priorities for their acquisition and protection. These private preserves, as well as TNC's list of properties targeted for purchase, can be used to identify institutionally recognized significant resources.

Last Great Places

Last Great Places is a new TNC program that identifies large-scale ecosystems that are in need of increased protection efforts. These sites are made up of core preservation areas and buffer areas of compatible and sustainable development. The program combines science, creative action, and effective partnerships to construct models of how to save large self-sustaining natural systems. Currently, there are 12 ecologically significant sites, eight in the United States and four in Latin America. The eight U.S. sites are in California, Oklahoma, the Florida Keys, Ohio, Arizona, New Mexico, Texas, Virginia, and New York. Last Great Places sites can be used by Corps planners to identify large-scale ecosystems that are considered nationally and internationally significant.

American Fisheries Society, Endangered Species Committee, "Fishes of North America--Endangered, Threatened, or of Special Concern" List

In 1989, the Endangered Species Committee of the American Fisheries Society (AFS) published a list of native freshwater fish taxa that are recognized as rare or imperiled (endangered, threatened, or of special concern) by fisheries professionals. The AFS list includes 364 North American freshwater fish species and subspecies that are recognized as imperiled, which comprises about one-third of North American native freshwater fishes. The AFS list can be found in the following publication: Williams, J.E., J.E. Johnson, D.A. Hendrickson, S. Contreras-Balderas, J.D. Williams, M. Navarro-Mendoza, D.E. McAllister, and J.E. Deacon. 1989. "Fishes of North America Endangered, Threatened, or of Special Concern: 1989." *Fisheries* (Bethesda) 14(6): 2-20.

Additional Examples:

National Audubon Society Blue List of Species. This list serves as an "early warning system" for birds. The Blue List of Species works with the *American Birds* publication to solicit opinions from the birding, academic, and wildlife management communities on how to improve the nomination, data gathering, listing, and verification processes for potential Blue List species. The inventory, last published in 1986, is currently being revised and updated by the National Biological Service and FWS and has been renamed the "Species of Concern List." The latest edition is available through FWS and can be obtained by calling (703) 358-1821.

National Audubon Society Sanctuary Program. The Society identifies important resources and supports the long-term protection of plants and animals, especially threatened or endangered species, through the buying, leasing, or patrolling of selected areas. For a list of sanctuaries and refuges, contact: National Audubon Society, Sanctuary Department, 93 West Cornwall Road, Sharon, CT 06069; (203) 364-0048.

Western Hemisphere Shorebird Reserve Network. The Western Hemisphere Shorebird Reserve Network (WHSRN) is a major program of Wetlands for the Americas, a nonprofit organization working exclusively to conserve wetlands in the Western Hemisphere. It continues to work on behalf of migrating shorebirds by bringing new wetland habitat into the Network. WHSRN identifies and brings international recognition to areas of high shorebird concentrations, and is working towards curbing major population decline. Four categories of sites exist: Hemispheric, International, Regional, and Endangered Species Registries. The WHSRN currently includes 24 sites in seven countries, protecting 30 million shorebirds and over 12 million

acres of wetlands. For more information, contact: Wetlands for the Americas, P.O. Box 1770, 81 Stage Point Road, Manomet, MA 02345; (508) 224-6521.

2.2. REGIONAL

This section provides examples of programs that can assist in identifying and describing sources of institutional recognition at the regional level. Programs, processes, or products associated with public agencies (2.2.1) and private, nonprofit organizations (2.2.2) are summarized below. The range of examples that were selected also deal with different types of resources (i.e., wetlands, rivers, lakes, and estuaries or marine areas).

2.2.1. Public Agencies

Programs developed by public agencies at the Federal, state and local level can assist in identifying and describing sources of institutional recognition at the regional level. This section provides examples of such programs and is organized by wetlands (2.2.1.1), rivers (2.2.1.2), lakes (2.2.1.3), and estuaries and marine areas (2.2.1.4).

2.2.1.1. Wetlands

Coastal Wetlands Planning, Protection, and Restoration Act of 1990--Annual Coastal Wetlands Restoration Plan and Priority Project List

Section 303(a) of the Coastal Wetlands Planning, Protection, and Restoration Act of 1990 established a Federal-state task force to prepare a list of projects to provide for long-term conservation of wetlands in coastal Louisiana, in order of priority, based on cost effectiveness and the quality of those wetlands. This "Priority Project List" is to be prepared each year for 10 years and transmitted to Congress. Around \$30 million in Federal funds is authorized annually for coastal wetlands restoration projects on the Priority Project List. The State of Louisiana Department of Natural Resources contributes at least 25 percent to the total cost of a project, with the Federal government paying at most 75 percent. The State of Louisiana is a full voting member of the Federal-state task force except for selection of the Priority Project List. In addition, the state may not serve as a "lead" task force member for implementing wetland projects on this list, but is a cosponsor for all projects because of its 25 percent cost-share.

The Federal-state task force consists of the Secretary of the Army, the EPA Administrator, the Governor of the State of Louisiana, and the secretaries of the Department of Interior, Agriculture, and Commerce. It established a Technical Committee to review proposed projects and to make recommendations to the Federal-state task force. The Technical Committee comprises Louisiana's Executive Assistant of Coastal Activities and representatives of the NMFS, EPA, FWS, the Natural Resources Conservation Service, and the Corps of Engineers.

Coastal wetland restoration initiatives in the State of Louisiana originated in 1981 with the passage of Act 41 to restore, preserve, and enhance the state's coastal wetlands. This independent state effort also formed a state task force to submit annual plans to the state legislature for approval and implementation of coastal wetland restoration projects using state resources and funding. In addition, projects from Louisiana's Annual State Coastal Wetlands Conservation and Restoration Plan are reviewed by the Federal-state task force to develop the Priority Project List. Approximately one-third of the Coastal Wetlands Planning, Protection, and Restoration Act's Federal projects approved each year are from the state restoration plan. Proposed projects are ultimately selected by unanimous vote of the Federal

representatives of the Federal-state task force. Prioritization of these proposed projects is based on cost effectiveness and wetland quality, using a time-value and Wetland Value Assessment analysis, respectively. These two parameters are used to determine a cost per Average Annual Habitat Unit, which is used as the primary ranking criterion for projects. The final Priority Project List, however, is not a simple compendium of the most cost-effective coastal wetland restoration projects. Projects are also ranked by secondary criteria such as type of project and geographic location.

Because the prioritization process considers wetland quality and regionally important projects and associated wetland areas, the coastal wetland restoration projects listed by the Federal-state task force on the annual Priority Project List can be used by Corps planners to identify coastal wetland areas of regional significance. These projects and wetland areas are identified under an initiative authorized by Federal law, thus they are also nationally valued and the Coastal Wetlands Planning, Protection, and Restoration Act can be used as evidence of institutional recognition of significance. For more information regarding projects and other activities implemented under the Act, contact:

U.S. Army Engineer District
P.O. Box 60267
New Orleans, LA 70160
(504) 862-1486

Additional Examples:

Emergency Wetlands Resources Act of 1986--Service Regional Wetland Concept Plans. These Plans are developed by each Regional Office of the FWS to implement the National Wetlands Priority Conservation Plan, in coordination with state fish and wildlife agencies and other state and Federal agencies. They include lists of wetland sites warranting priority for acquisition. The Regional Offices are responsible for evaluating prospective wetlands using specific threshold criteria to provide national consistency. In addition, they update the Regional Wetland Concept Plans as needed and when new high priority wetlands are identified.

2.2.1.2. Rivers

Northwest Power Act of 1980--Protected Areas Program (Pacific Northwest Rivers Study/Hydropower Assessment Study)

In 1983, the Northwest Power Planning Council and the Bonneville Power Administration (BPA) began extensive cooperative studies of existing fish and wildlife habitat in the Columbia River Basin and analyses of alternative means of protection. The Council was authorized by the Northwest Power Act of 1980 to develop a program to "protect, mitigate, and enhance fish and wildlife, including related spawning grounds and habitat" that had been affected by hydroelectric development in the area. In 1988, the Council concluded from these studies that certain river reaches in the region should be designated as "protected areas," where hydroelectric development would have unacceptable risk of loss to fish and wildlife species of concern, their productive capacity, or their habitat.

The Protected Areas Program is a major regional policy initiative that prohibits new hydroelectric power development in critical fish and wildlife habitat. Protected Area designations are updated on a regular basis as new information becomes available and are based on data collected during the Pacific Northwest Rivers Study/Hydropower Assessment Study (PNWRS/HAS), now maintained as the Northwest Environmental Data Base (NED). The data collected were structured from an assessment process that

incorporated professional judgment with the objective data collection process. The result of PNWRS was a determination by resource experts of the relative significance of each river segment for each resource category. The PNWRS inventoried and evaluated a wide variety of environmental factors associated with the 350,000 miles of rivers that flow through Washington, Montana, Idaho, and Oregon. These reaches are now protected from new hydroelectric power development based on the presence of critical fish and wildlife habitat.

NED is the repository for regional rivers data. The NED contains assessments of the significance of the region's rivers for use in the Council's Protected Areas Program, system planning for anadromous fish, and BPA's regional hydropower supply estimates. Since completion of the PNWRS/HAS in 1986, data have been structured under NED into regional and state-specific computerized information systems. Each state has prepared and now maintains a Rivers Information System accessible to the public. These systems are compiled into personal computer (PC), menu-driven user access systems. The software that comes with the data enables users to easily locate any river in the region, traverse upstream or downstream or up a tributary, and view summary data describing that river reach. Information updates are transmitted from the states to the regional system biannually. Source data are maintained at the state level to assure accuracy and ties to other state data collection efforts. Data are currently available for over 34,000 distinct river reaches, covering some 135,000 miles of streams throughout the region.

Corps planners can use the PNWRS/HAS and the Protected Areas Program as sources of institutional significance for planning projects associated with resources listed in the Protected Areas Program or detailed in the NED. They are also valuable sources of information regarding environmental resources and can be used to assess the significance of rivers, habitats, fish, and wildlife in the Pacific Northwest region. For more information regarding NED and the Protected Areas Program, contact:

Northwest Power Planning Council
851 SW 6th Avenue, Suite 1100
Portland, OR 97204
(503) 222-5161

U.S. Department of Energy
Bonneville Power Administration
P.O. Box 3621
Portland, OR 97208
(503) 230-3969

Water Resources Development Act of 1986 (Section 1103), as amended--Upper Mississippi River System Environmental Management Program

Under Section 1103 of the Water Resources Development Act of 1986, the Upper Mississippi River System is recognized as unique due to its multiple resource functions, such as a wildlife refuge, commercial navigation system, and significant recreational resource. The purpose of the Upper Mississippi River System Environmental Management Program (UMRS-EMP), authorized by Section 1103, is to ensure coordinated development and enhancement of the Upper Mississippi River System. The UMRS-EMP was designed to protect and balance the resource functions of the Upper Mississippi River Basin as well as to guide future management of the 1,300-mile river system. One element of the program, habitat rehabilitation and enhancement, includes projects with the objective of preserving, protecting, and restoring the wide array of diverse biological resources associated with the river system. This is accomplished by constructing habitat measures that address environmental problems such as sedimentation of productive backwater habitats. The program is administered by the U.S. Army Corps of Engineers and implemented with assistance from the U.S. Department of the Interior and the five states of the Upper Mississippi River Basin Association (Illinois, Iowa, Minnesota, Missouri, and Wisconsin).

2.2.1.3. Lakes

1972 Great Lakes Water Quality Agreement Between the U.S. and Canada, Great Lakes Critical Programs Act of 1990--Great Lakes Program

The Great Lakes Program, now considered a model for solving environmental problems that emphasizes an ecosystem approach, began in 1970 as a cooperative effort between the United States and Canada to reduce eutrophication problems resulting from excessive phosphorous discharges into the Great Lakes. Since 1972, activities conducted under the program have fulfilled the Great Lakes Water Quality Agreement (GLWQA) between the United States and Canada. The Great Lakes Program initially focused its efforts on the problems associated with pollution from individual, identifiable point sources such as major municipal treatment plants. Later, the focus switched to nonpoint sources of pollution and funding projects with individual farmers. After adopting measures to control both point and nonpoint sources of nutrients, the Great Lakes Program began to focus on abating pollution caused by nonpoint sources of toxins.

In the Great Lakes Basin, U.S. and Canadian governments, user groups, and organizations are using a cooperative management approach to address the area's environmental problems. This approach includes shared decision making and mutual accountability. In each of the Basin's 43 Areas of Concern (AOCs), which are designated by the International Joint Commission, representatives from Federal, state, and provincial governments and citizens interested in restoring the local environment are forming partnerships to develop Remedial Action Plans (RAPs).

The RAP process was created by a 1985 recommendation of the Water Quality Board of the International Joint Commission and codified in the 1987 amendments to the GLWQA. A RAP is being developed for each of the 43 AOCs in the Great Lakes basin using a locally designed ecosystem approach with a public partnership process. Federal, provincial, and state governments provide leadership and resources to facilitate the process. RAPs are prepared and implemented in three stages: 1) definition of the problem; 2) selection of remedial and regulatory measures, and 3) evaluation of the restoration of the area. The RAPs use an "ecosystem approach," which emphasizes the interrelationships between the living organisms of the AOC, including people and all the interacting elements of the water, air, and land in the drainage basins that surround the AOC. The Great Lakes states are responsible for writing and implementing RAPs for the AOCs within their boundaries. The states have Federally delegated authority to conduct programs and receive Federal grant money to assist in many phases of RAP implementation. Each state has its own legislative authorities and funds to finance its pollution abatement efforts.

In addition to RAPs, Lakewide Management Plans (LaMPs) are required by the GLWQA. These LaMPs are intended to provide a process for coordinating and prioritizing activities designed to reduce loadings of "critical pollutants," which are defined for each lake. The emphasis is on identifying the major sources of these pollutants and concentrating regulatory efforts where they will have the most impact.

The Water Quality Act of 1987 established a statutory mandate for the Great Lakes National Program Office, providing an institutional source of recognition of the significance of lake resources associated with the Great Lakes Program. Congress also passed the Great Lakes Critical Programs Act of 1990 to incorporate into domestic law the commitments made by the U.S. in the GLWQA and to establish deadlines for critical Great Lakes programs, including RAPs and LaMPs. Thus, the Corps can use this program as evidence that the five Great Lakes are nationally and internationally recognized as significant resources. In addition, Corps restoration projects that help RAPs and LaMPs achieve their objectives

involve significant resources because of their association with a regionally important resource plan. For more information on the Great Lakes Program, contact:

Great Lakes National Program Office
230 South Dearborn Street
Chicago, IL 60604
(312) 353-2117

2.2.1.4. Estuaries and Marine Areas

Coastal America Partnership (Regional Implementation Teams)

The Coastal America Partnership was initiated in 1991 as an interagency initiative to address coastal living resources problems and management issues. The Federal partners are the Department of Agriculture, Department of the Air Force, Department of the Army, Department of Commerce, Department of Energy, Department of Housing and Urban Development, Department of the Interior, Department of the Navy, Department of Transportation, Environmental Protection Agency, and The Executive Office of the President. Coastal America facilitates cooperation among Federal programs and integrates Federal actions with state, local, and nongovernmental efforts. The Partnership advocates activities designed to produce demonstrable environmental and programmatic results in short-term and long-term environmental improvements in three areas of concern: loss and degradation of habitat, pollution from nonpoint sources, and contaminated sediments. Coastal America projects serve as models for effective management of coastal living resources, with activities carried out at national, regional, and watershed levels.

Under the Coastal America initiative, prioritization occurs at the regional level through interagency Regional Implementation Teams (RITs) representing the nine Coastal America regions: Northeast, Southeast, Mid-Atlantic, Gulf of Mexico, Northwest, Southwest, Great Lakes, Alaska, and the Pacific Islands. These regions develop a working list of priority projects for which they will establish interagency partnerships. To establish Coastal America priorities for each region, RITs meet on a regular basis to develop an overall regional strategy that considers both state and local goals. By sharing project information, project plans, and program changes, RITs can learn of potential projects and identify opportunities for collaborative action. Proposed projects are given initial priority if they: 1) are action-oriented, with a focus on habitat loss and degradation, nonpoint source pollution, or contaminated sediments; 2) are multi-agency, including at least three Federal partners and one non-Federal participant; and 3) include education/outreach and monitoring components. Further prioritization occurs based on the goals and objectives of a specific region. Project concepts endorsed by RITs are placed on a working list of projects for priority funding and partner contributions are solicited. At the local level, partnership teams have pooled financial resources, technical expertise, and legislative authorities to implement projects no agency could accomplish alone.

Corps planners can use the Coastal America Partnership as a source of institutional recognition of coastal resources since the program is supported by numerous Federal partners. The RITs also serve as sources of information on coastal resources that are highly significant at a regional level. In addition, proposed Corps restoration projects associated with resources that are related to achievement of the RIT's goals could be considered institutionally significant because of this relationship. For more information regarding the Coastal America Partnership, contact:

Coastal America

1305 East-West Highway
Building 4, Room 11141, SSMC4
Silver Spring, MD 20910
(301) 713-3160

Exhibit 2-5. Example of Significance Argument Based on the Coastal America Partnership

This example provides an illustration of an institutional significance argument for a hypothetical wetland restoration project related to the Coastal America Partnership.

Bing Salt Marsh

The interagency Regional Implementation Team (RIT) for Coastal America's Northeast Region has identified proposed priority projects in its regional strategy to address habitat restoration, nonpoint source pollution, and contaminated sediments in coastal wetland areas. To develop the list of priority projects, the RIT conducted site visits to 10 salt marshes (approximately 500 acres) along the coast to evaluate opportunities for restoration of coastal marshes cut off from natural tidal influence by infrastructure. Bing Salt Marsh in State C is the site of one of the RIT's proposed priority projects. Through interagency cooperation and intergovernmental partnerships, this wetland restoration project would restore approximately 130 acres of salt marsh by re-establishing marsh elevations and normal tidal flooding that has been impacted by dredging and construction. Because the interagency RIT established its list of priority sites through the participation of a wide range of Federal agencies, recognition of the Bing Salt Marsh as a priority site under the regional strategy for the Northeast Region supports its institutional significance at both the national and regional levels. The significance of wetland resources in Bing Salt Marsh is also recognized at the state level by the participation of several state agencies (Department of Environmental Protection and Department of Transportation) as well as several state chapters of nonprofit organizations in developing the RIT's regional strategy.

Chesapeake Bay Program

The Chesapeake Bay Program began as a Federal research study and was mandated by Congress as a Federal-state partnership in 1977. In 1980, the legislatures of Virginia and Maryland established the Chesapeake Bay Commission to coordinate interstate planning and programs to protect and restore the Bay. The first Chesapeake Bay Agreement, which was signed in 1983 by Virginia, Maryland, Pennsylvania, the District of Columbia, the EPA, and the Chesapeake Bay Commission, was a formal commitment to a basin-wide approach to restoring the Bay. The second Chesapeake Bay Agreement, signed in December 1987 by Virginia, Maryland, Pennsylvania, the District of Columbia, EPA, and the Chesapeake Bay Commission far exceeded the 1983 Agreement. The 1987 Agreement lists specific goals, objectives, and 29 priority commitments in six categories: living resources; water quality; population growth and development; public information, education and participation; public access; and governance.

The Water Quality Act of 1987 added Section 117 to the Clean Water Act and provided for the collection and distribution of information pertaining to the environmental quality of the Chesapeake Bay; the coordination of Federal and state efforts to improve the water quality of the Bay; the determination of

the impact of sediment deposition in the Bay and the identification of its source; and the determination of the impact of natural and man-induced environmental changes on the living resources of the Bay. Several laws have been enacted in the states involved in the Agreement to meet its priority commitments. These laws have resulted in the identification of significant resource areas, information that could be useful for Corps planning studies associated with resources in these areas.

The Chesapeake Bay Agreements, the Chesapeake Bay Program which was created by these Agreements, and Section 117 of the Clean Water Act, are evidence of institutional recognition of the significance of water and land resources in the Chesapeake Bay area. For more information regarding the 1987 and 1983 Chesapeake Bay Agreements or the Program, contact:

Chesapeake Bay Program
410 Severn Avenue, Suite 109
Annapolis, MD 21403
(410) 267-0061

Gulf of Mexico Program

The Gulf of Mexico Program was established under the leadership of the EPA in August of 1988 in response to signs of serious long-term environmental damage throughout the Gulf of Mexico coastal and marine ecosystem. Through the Program, a high-level agreement was negotiated with 12 Federal agencies and the five Gulf states that establishes a framework for action to address the Gulf's environmental problems. The Gulf of Mexico Program includes the Gulf Ecological Management Sites (GEMS) project. The GEMS project identifies unique and important areas throughout the Gulf that need to be managed or protected to maintain their essential qualities. Proposed Corps restoration projects associated with areas identified in the GEMS project can use this designation as a unique and important environmental resource as a source of institutional significance.

2.2.2. Private/Nonprofit Organizations

This section provides an example of a program associated with a private, nonprofit organization that can assist in identifying and describing sources of institutional recognition at the regional level.

American Rivers--Outstanding Rivers List

The Outstanding Rivers List (ORL) is a comprehensive list of rivers in the United States that possess outstanding ecological, recreational, cultural, or scenic attributes. It is a compilation of the rivers across the country that have some outstanding public value worthy of protection and is used to assign priorities to conservation efforts in order to protect rivers and their adjoining landscapes. American Rivers created the ORL for several reasons. First, it is a tool to aid river conservationists in identifying rivers that should be conservation priorities. Second, the ORL helps government decision makers identify important ecological, recreational, cultural, or scenic attributes of rivers that may be adversely affected by development activities. Finally, the ORL is an educational tool to help document the challenge that lies ahead for river conservation.

The ORL is a list of lists. American Rivers collected every available, authoritative list that identifies rivers within the United States that have some outstanding, ecological, recreational, cultural, or scenic attribute. The ORL contains some 15,000 river segments totaling approximately 300,000 river miles. It incorporates the NRI, many state-level lists, and the Protected Areas Program. The ORL is no more

definitive or complete than the lists from which it is derived. The difference in river assessments has made data collection difficult. American Rivers does, however, periodically revise the ORL as more and better data are generated by Federal, state, and local agencies and by nonprofit organizations. The first edition of ORL was published in November 1988. The second edition is based on new and corrected information available through October 1990. The list includes all 50 states and is available on a state-by-state basis. Corps projects associated with river segments listed in the ORL can utilize the list as a source of institutional recognition of the significance of these riverine resources. For more information regarding the ORL, contact:

American Rivers
801 Pennsylvania Avenue SE, Suite 400
Washington, DC 20003
(202) 547-6900

2.3. STATE

This section provides examples of programs that can assist in identifying and describing sources of institutional recognition at the state level. Programs, processes, or products associated with public agencies (2.3.1) and private, nonprofit organizations (2.3.2) are summarized below. The range of examples that were selected also deal with different types of resources (i.e., wetlands, rivers, lakes, and estuaries or marine areas).

2.3.1. Public Agencies

This section provides examples of programs associated with public agencies that can assist in identifying and describing sources of institutional recognition at the state level. It is organized by programs that address species and habitat (2.3.1.1), wetlands (2.3.1.2), rivers (2.3.1.3), lakes (2.3.1.4), and estuaries and marine areas (2.3.1.5).

2.3.1.1. Species and Habitat

State Natural Heritage Programs

Natural Heritage Programs (NHPs) are continually updated, computer-assisted inventories of biological and ecological features and biodiversity preservation of the county or region in which they are located. NHPs are designed to assist in conservation planning, natural resource management, environmental impact assessment, and planning for sustainable development. There are currently 56 NHPs in the United States, including state programs and national parks. Each data center is established within a local institution, usually as part of a government agency responsible for natural resource management and protection. The individual centers are under local control and staffed by local scientists and conservationists but also work within a network coordinated by TNC.

Each data center uses the Biological and Conservation Data System as the basis for its operation, a system developed and refined by The Nature Conservancy since 1974. The information is managed in more than 30 interrelated computer files, supported by extensive map and manual files and a library. Information assembled and managed by data centers focuses on: ecosystems and species, their biology, habitats, locations, conservation status and management needs; managed areas such as national parks, forest reserves, and watersheds; and data sources. Each data center compiles information from existing sources such as scientific literature, knowledgeable people, and museum collections. The local staff also

directs and conducts field inventories of species and natural communities of special concern, or may be contracted for biological assessments of specific sites. Each study and report benefits from earlier work in the same area and, through the network, related information gathered at other times and places multiplies the local effort. Central network databases are supported through cooperative agreements with academic and scientific institutions. For a list of NHPs, including contact information for individual NHPs, contact:

Science Division
The Nature Conservancy
1815 N. Lynn Street
Arlington, VA 22209
(703) 841-5354

The NHPs have many types of information that could be useful to the Corps, including files and lists of significant ecosystems and species, habitats, and conservation status. This information can provide Corps planners with specific knowledge of the species and other environmental resources related to Corps planning studies. It can also help identify species and habitats associated with proposed restoration projects that are institutionally recognized as significant on the state level. As an example, the North Dakota Natural Heritage Program is summarized below to demonstrate the type of information that is available from NHPs.

North Dakota Natural Heritage Program

The North Dakota Natural Heritage Program's comprehensive inventory of the state's ecological resources provides a continuous process for identifying valuable natural areas and setting land protection priorities. Through use of an integrated data management system, information on the status and distribution of exemplary natural communities, rare and endangered plant and animal species, and unique geological features is collected and stored. The data is organized and accessible through map, manual, and computer files and is indexed by several criteria, including location, plant community type, species name, endangerment status, and land ownership. The program is authorized by the North Dakota Nature Preserves Act, which mandates the responsibility of establishing a nature preserves program to the North Dakota Parks and Recreation Department. The North Dakota Natural Heritage Program has identified and inventoried 152 plant species and 102 animal species that are endangered, threatened, rare, or declining in North Dakota. In addition, a classification of 34 aquatic and terrestrial natural communities was prepared for a database of ecological information.

State Nature Preserves Programs

In certain states, nature preserve programs establish a system of nature preserves and provide for their protection. The programs also collect and disseminate information regarding the preserves, such as inventories classifying the natural areas in a state. In addition, the programs may provide information regarding the state's natural areas, their boundaries and features, and their ecological quality. For more information on these state programs, contact the Department of Conservation or Natural Resources in the state of interest. The following programs, the Illinois Natural Areas Acquisition Program and the Illinois Natural Areas Inventory, demonstrate the kind of information that Corps planners can expect to find in state nature preserves programs.

Illinois Natural Areas Acquisition Program and Illinois Natural Areas Inventory

The Illinois Natural Areas Preservation Act, the Open Space Lands Acquisition and Development Act, and the Real Estate Transfer Tax Act helped establish the Illinois Natural Areas Acquisition Program

and the Illinois Natural Areas Inventory. The goal of the Illinois Natural Areas Acquisition Program, administered by the Illinois Department of Conservation (DOC), is the acquisition of natural areas--areas of land and water that closely reflect presettlement conditions or have unique natural qualities. The Illinois Natural Areas Inventory was developed to find, evaluate, describe, and classify natural areas for the Illinois DOC. In the Illinois Inventory, there are seven categories of natural areas: ecological areas, endangered species habitats, relict species habitats, geologic areas, natural study areas, unique natural areas, and aquatic areas. In addition, acreage, degree of disturbance, ownership and preservation status, natural area boundaries and features, natural community classifications, and natural quality classifications (i.e., a measure of evidence of disturbance to a natural community) are also considered when categorizing the natural areas in the state.

As of March 1993, 10 natural areas totaling over 1,796 acres had been acquired by the Illinois DOC through the Illinois Natural Areas Acquisition Program and the Illinois Natural Areas Inventory. These programs are making a concentrated effort to protect the remaining one percent of wetlands in Illinois. Corps planners can use state nature preserves programs, like the Illinois Program and Inventory, to identify significant natural areas associated with proposed restoration projects.

Exhibit 2-6. Example Significance Argument Based on a State Natural Areas Inventory

The Sligo wetland is a significant natural area that was identified by the State Biological Inventory as a Category I Ecological Area. It was later acquired by the State Department of Natural Resources to be protected as part of the State Nature Preserves System. The northern section of Sligo Wetland is threatened by erosion from upstream channelization that has resulted in sediment deposition and degradation of downstream habitat. Designation of the Sligo wetland as an important natural area within the state and its protection under the State Nature Preserves Program demonstrates its institutional significance at the state level.

State Endangered Species Programs

Generally, states do not have Endangered Species Acts and there is no national mandate to maintain a list of endangered or threatened species in the states. Some states (e.g., Mississippi, Massachusetts, Florida, and Maryland) have state Endangered Species Acts and, thus, maintain endangered and threatened species lists. These state endangered species programs can provide Corps planners with lists of species of state significance that may be associated with a Corps planning study. The following examples of Massachusetts' and Florida's endangered species programs illustrate the kind of information planners can request from these programs and also demonstrate sources of institutional recognition of resource significance present at the state level. Other states which may not have an Endangered Species Act, may maintain lists and priorities that could also be helpful to Corps planners in identifying species of concern.

Massachusetts Endangered Species Program

The Massachusetts Endangered Species Program is mandated by the Massachusetts Endangered Species Act of 1990. The Act prohibits the "taking of any rare plants and animals listed as endangered, threatened, or of special concern unless specifically permitted for scientific, educational, or propagation purposes." The Act also protects "significant habitats which can be designated for endangered or

threatened species populations after a public hearing process." Once designated and delineated, alterations of "significant habitat" will, in most cases, require a permit from the Division of Fisheries and Wildlife. Lastly, the Act specifies that the state keep a "Rare Species List" in which all state-listed species are listed within the Massachusetts Endangered Species Act Regulations. The Massachusetts List of Endangered, Threatened, and Special Concern Species, the Massachusetts Endangered Species Act, and the Massachusetts Endangered Species Act Regulations are all available upon request from the state's Division of Fisheries and Wildlife. The regulations, in particular, thoroughly describe the Act's general provisions, the provisions for designation of significant habitat as well as the alteration of significant habitat, and the "Rare Species List."

Florida Endangered Species Program

The state lists of animals for Florida are administered and organized through the Florida Game and Fresh Water Commission (GFC) and are categorized as endangered, threatened, and of special concern. The state lists of plants are categorized into endangered, threatened, and commercially exploited and are administered and maintained by the Florida Department of Agriculture and Consumer Services. Florida has an extensive list of state legislation that deals with the protection of endangered or threatened species. The Wildlife Code of the State of Florida, the Rules of the Department of Natural Resources, the Florida Endangered and Threatened Species Act of 1977, the Endangered and Threatened Species Protection Act, and the Preservation of Native Flora Act play an active role in maintaining Florida's unique distribution of flora and fauna. In addition, the Florida Panther Protection Act, the Florida Manatee Sanctuary Act, the Marine Turtles Protection Act, the Alligators/Crocodile Protection Act, and the Marine Corals and Sea Fans Protection Act attempt to protect these specific species from depletion and extinction. Information about Florida's lists can be requested directly from the biologists working at the GFC to protect endangered species. Two documents entitled "Legal Accommodation of Florida's Endangered Species" and "Official Lists of Endangered and Potentially Endangered Fauna and Flora in Florida" are also available for public request and use. "Official Lists of Endangered and Potentially Endangered Fauna and Flora in Florida" is particularly useful because it consolidates the state and Federal lists of endangered and threatened species. Information from these two documents can help Corps planners identify species of state and national significance that are associated with Corps restoration projects.

State Critical Area Programs

State critical area programs are regional resource management strategies developed to coordinate the actions of local governments and state agencies on land use and natural resource management issues. These programs can help Corps planners identify significant environmental resources that are nearby Corps planning projects. The following example of the Maryland Chesapeake Bay Critical Areas Program illustrates the kind of information available from the state critical area programs. The Massachusetts Areas of Critical Environmental Concern and the Maine Critical Area Program are two additional examples of specific state critical area programs that may provide useful information to Corps planners.

Maryland Chesapeake Bay Critical Areas Program

In Maryland, the Chesapeake Bay Critical Area Protection Act established the Chesapeake Bay Critical Area Commission in 1984. The Commission is an independent agency of Maryland state government and was created to coordinate state and local government actions to preserve natural resources of the Bay. The 1984 law generally defined the "critical area" as the water of the Bay, land under the Bay, and upland within 1,000 feet of tidal waters of the Bay. The law also required the Commission to develop criteria for local jurisdictions to use in creating local critical area protection programs.

The management strategy promulgated by the Commission has three major themes: land use management, conservation of ecosystem function and diversity, and state-local government coordination. The strategy requires that all local jurisdictions have inventories or maps of the following resources: agricultural land, nontidal wetlands, tidal wetlands, forest resources, sand and gravel resources, tributary streams, known threatened and endangered species as well as the habitats of species deemed "in need of conservation under state law, watersheds of anadromous fish spawning streams, specific plant and wildlife habitats, steep slopes, and soils with development constraints." The strategy also demands that local jurisdictions must classify the land in the critical area into one of three categories: intensely developed areas, limited development areas, and resource conservation areas. The information developed at the state and local level to implement the management strategy requirements of the Chesapeake Bay Critical Areas Program can help Corps planners identify important critical areas and environmental resources nearby proposed restoration projects.

2.3.1.2. Wetlands

State Wetlands Priority Plans

State Wetlands Priority Plans were developed as a state component consistent with the National Wetlands Priority Conservation Plan (NWPCP). These plans address wetland protection strategies and provide wetland acquisition goals, objectives, and strategies. The Nebraska Wetlands Priority Plan, as described below, is an example of the kind of information available from State Wetlands Priority Plans.

Nebraska Wetlands Priority Plan

The Nebraska Wetlands Priority Plan was developed by the Nebraska Game and Parks Commission as a wetlands component to be included in Nebraska's 1991-1995 State Comprehensive Outdoor Recreation Plan (SCORP) consistent with the NWPCP. Under Federal law, specifically Section 303 of the Emergency Wetlands Resources Act of 1986, a wetland component must be included in SCORP documents and must be consistent with the NWPCP developed by the U.S. Department of the Interior. The Nebraska Wetlands Priority Plan identifies wetland sites that meet specified threshold criteria and qualify for acquisition consideration under provisions of the NWPCP. The Plan recognizes the important outdoor recreation resource that Nebraska wetlands provide, addresses wetland protection strategies, and provides wetland acquisition goals, objectives and strategies. The Plan also outlines specific actions to protect, enhance, or restore Nebraska wetlands.

In Nebraska, the NWPCP wetland assessment criteria were modified and supplemented, where deemed appropriate, to meet Nebraska wetland assessment needs. The three threshold criteria used to determine which wetland sites are suitable for acquisition are: 1) wetland loss, 2) wetland threats, and 3) wetland functions and values. Based on these criteria, a simplified priority ranking system was developed to rank wetland sites in Nebraska that qualify for acquisition consideration under provisions of the NWPCP. The ranking system allows the comparison of each wetland site's known overall values to those of other wetland sites. Six wetland complexes in Nebraska have adequate documentation to meet requirements for acquisition consideration under the NWPCP and each are considered to have a high priority for acquisition under the Nebraska Wetlands Priority Plan. Appendices in the Nebraska Wetlands Priority Plan identify wetland sites that are known to meet the criteria required by the NWPCP. These appendices, coupled with the Plan's other wetland-specific information, could be used by Corps planners in identifying significant wetlands associated with proposed restoration projects.

Exhibit 2-7. Example Significance Argument Based on a State Wetlands Priority Conservation Plan

Several wetland sites in the Gibson River Basin, which are identified by the State Wetlands Priority Conservation Plan as high priority for acquisition, are located in the study area for the proposed restoration project. The wetland sites are recognized by the State Wetlands Priority Conservation Plan as being of international importance to wildlife. The significance of these wetland sites is also demonstrated by the fact that they are identified as wetlands that meet threshold criteria and qualify for acquisition under provisions of the State Wetlands Priority Conservation Plan. The Gibson River Basin provides critical spring staging and migration habitat for waterfowl, shorebirds, and wading birds. The proposed hydrological modifications to restore waterways in the Gibson River Basin are supported by the State Department of Natural Resources to protect these wetland sites from drainage during low flow periods. Reducing drainage during low flows will protect their function and value as habitat for waterfowl and other birds and provide food and shelter to other wildlife.

State Wetlands Protection Programs

State wetlands protection programs attempt to assess wetland functions, potential conditions of sensitivity to adverse impacts, enhancement potential, and aesthetics. These programs develop a set of criteria for evaluating wetlands to determine the level of protection the state must afford them in the face of economic development. The following example of the North Carolina Wetland Rating System illustrates the kind of information Corps planners can find through state wetlands protection programs. Other examples of similar rating systems include the New York State Freshwater Wetlands Classification System and the Oregon Freshwater Wetland Assessment Methodology. Corps planners can use the state wetlands protection programs and their rating systems to identify wetlands of state significance related to restoration planning studies and proposed projects.

North Carolina Wetland Rating System

The North Carolina Wetland Rating System is primarily used by the North Carolina Department of Environment, Health and Natural Resources, Division of Environmental Management, as a tool for making decisions regarding Section 401 Water Quality Certifications in freshwater wetlands. It is also used for evaluating wetlands for acquisition and restoration as well as mitigation banks. This new system was started to create more consistent evaluations of wetlands. The North Carolina Wetland Rating System rates wetlands according to the following 10 values and functions: water storage, bank/shoreline stabilization, pollutant removal, sensitive watershed, travel corridor, special ecological attributes, wildlife habitat, aquatic life value, recreation/education, and economic value.

2.3.1.3. Rivers

State Wild and Scenic Rivers Programs

State wild and scenic rivers programs represent state efforts to carefully utilize and preserve rivers and their related resources. The wild and scenic rivers programs specifically focus on a river's aesthetic and natural qualities, but also emphasize the importance of preserving these natural resources for wildlife and future generations. The programs make inventories of wild and scenic rivers through a prioritization

process. This process, as well as the information that results from it, can be used by Corps planners to identify significant rivers and river segments associated with proposed restoration projects. The Michigan Natural Rivers Program and the South Carolina Scenic Rivers Program, which are summarized below, demonstrate the kind of information Corps planners can expect from state wild and scenic rivers programs.

Corps planners can also use the River Federation as a clearinghouse for information on significant riverine resources. The Federation has information on which states have river programs, the state government agencies and officials who administer these programs, and a map specifying the location of all state river programs. For more information, contact:

River Federation
The National Association for State
and Local River Conservation Programs
8630 Fenton Street, Suite 910
Silver Spring, MD 20910
(301) 589-9454

Michigan Natural Rivers Program

The goal of the Michigan Natural Rivers Program, as administered by the Michigan Department of Natural Resources, Land and Water Management Division, is to establish a system of designated rivers for the purpose of preserving, protecting, and enhancing these river environments in a natural state for the continued use and enjoyment of present and future generations. The Natural Rivers Act (Act No. 231 of the Public Acts of 1970) charges the Natural Resources Commission with the responsibility for developing a system of wild, scenic, and recreational rivers in Michigan. The Act does not clearly define the extent or nature of such a system, but does provide for the designation of rivers to preserve and enhance their fish, wildlife, boating, scenic, aesthetic, flood plain, ecologic, historic, and recreational values and uses; and maintain existing free-flowing conditions.

A criteria point system was devised to assist in evaluating individual rivers and river segments. The results of examining a river utilizing the criteria indicate rivers that possess outstanding values and are in the greatest need of protection. The rivers are evaluated on three basic concerns: 1) the values of the resource in light of the objectives and purposes of the Natural Rivers Act and the quality of the river user's experience; 2) the threats to the resource that might destroy or alter those values; and 3) the anticipated workability of natural rivers protection, including local attitudes and institutions that could detract from the purposes of the Natural Rivers Act. As of March 1993, there were 14 Designated State Natural Rivers and 25 Proposed State Natural Rivers under the Michigan Natural Rivers Program. Information such as the Michigan Natural Rivers Program's designation of State Natural Rivers as well as the Proposed State Natural Rivers can be used by Corps planners to identify significant rivers associated with Corps restoration projects.

South Carolina Scenic Rivers Program

In South Carolina, the Scenic Rivers Act requires that the Water Resources Commission shall "formulate comprehensive water and related land use plans for the three classes of scenic rivers," which are "natural," "scenic," and "recreational" rivers. Based on the different physical attributes of river corridors, three sets of management guidelines were developed that outline the management frameworks for the three classes of scenic rivers. Each set of guidelines prescribes unique restrictions of river use and development corresponding to each class of river. The purposes of these management guidelines are to:

protect the scenic, aesthetic, historic, and ecological values of a designated scenic river corridor; provide for consistent management practices within each class of river in conformance with the purposes of the Scenic Rivers Act; and assure that the management of each river or river segment would not result in that area falling into a less restrictive river class. The following factors are considered when evaluating the eligibility of a proposed river for South Carolina's Scenic Rivers Program: scenic, recreational, geologic, botanical, fish/wildlife, historic/cultural, water quality, stream flow, and length. Other criteria are applied to determine a river's appropriate classification as natural, scenic, or recreational. The inventory developed for the rivers assessment and the three classes of rivers established by the South Carolina Scenic Rivers Act can be used by the Corps to identify rivers of state significance associated with or located nearby proposed restoration projects.

Exhibit 2-8. Example Significance Argument Based on a State Rivers Program

The proposed restoration project is located downstream of the Upper Spectacular River, which is designated as a "Natural River" by the State Natural Rivers Program and protected under the State Natural Rivers Act. The Upper Spectacular River was nominated for the program because of its biological value as spawning habitat for the Greenbellied Bass, an anadromous fish, and because of its pristine water quality and scenic value. The institutional significance of the Upper Spectacular River is demonstrated by its designation as a Natural River and the protection afforded to it by state law. The Greenbellied Bass population in the Upper Spectacular River is currently well below historical levels. Removal of obstructions to fish passage at several locations in the lower tributaries of the Spectacular River will create clearer passage from the river's mainstem section and increase available spawning habitat for the Greenbellied Bass.

Other State River Programs

In addition to the state wild and scenic rivers programs, other state river programs focus on the protection, enhancement, restoration, and preservation of rivers and riparian areas. These programs do not focus specifically on the preservation of rivers for their wild and scenic qualities, but on their protection for both economic and natural resource reasons. For more information on state river programs, contact the River Federation (see above) or the appropriate state natural resources or environmental protection agency in the state of interest.

Florida Save Our Rivers Program

Florida's Save Our Rivers Program (SOR) is administered by the state's five regional Water Management Districts, which are responsible for acquiring critical water resource lands under the program. The South Florida Water Management District developed a prioritization process for selecting areas for the SOR program. A similar process is used by the other four districts. The criteria for the selection process are divided into two categories: water values and natural resource values. The water values category considers management, supply, and conservation and protection of water resources. The natural resources values category considers manageability, habitat diversity, species diversity, connectedness, rarity, vulnerability, and nature-oriented human use.

Since the inception of the SOR program in 1981, Florida's Water Management Districts have acquired nearly 500,000 acres of land for about \$400 million to protect environmentally sensitive land and vital aquifer recharge areas. In addition, these lands are managed to provide recreational opportunities for millions of Florida residents and visitors. Corps planners could identify riverine resources of regional and state significance by contacting programs like Florida's SOR program.

California Riparian Habitat Conservation Program

The goal of the California Riparian Habitat Conservation Program (CRHCP) is to protect, preserve, restore, and enhance riparian habitat throughout California. The California Riparian Habitat Conservation Act established the CRHCP Program with a mission to coordinate and track riparian habitat protection on a statewide basis. Under CRHCP, the California Department of Fish and Game (DFG) is developing a statewide riparian habitat inventory and assessment. Once the inventory is complete, DFG will use this information to identify critical riparian habitat in the state and develop priorities for the protection, enhancement, or restoration of significant riparian habitat. Until the inventory and assessment process is complete, the California Wildlife Conservation Board (WCB) and DFG have developed a prioritization process to evaluate proposed projects against specific criteria selected to identify ecologically significant projects and with respect to the goals of the CRHCP. Projects for the CRHCP are evaluated on the following criteria: threat to natural community and related species, demonstrable product/outcome, natural community-based evaluation, management options, watershed-based scope, joint-venture, and innovative techniques/approach.

CRHCP's main activities are to: assess the current amount and status of riparian habitat throughout the state; identify those areas which are critical to the maintenance of California's riparian ecosystem; identify those areas which are in imminent danger of destruction or significant degradation; prioritize protection needs based on the significance of the site and potential loss or degradation of habitat; develop and fund project-specific strategies to protect, enhance, or restore significant riparian habitat; develop, administer, and fund a grants program for riparian habitat conservation; and provide a focal point for the coordination of riparian habitat conservation efforts statewide. CRHCP's focus is on major rivers, and the program tries to respond to associated significant areas where a threat exists. Corps planners can use programs like CRHCP to request information on critical riparian habitats within a state. In addition, the California Riparian Habitat Conservation Act, and other state acts similar to it, can provide institutional recognition of the significance of a state's riparian habitat.

2.3.1.4. Lakes

State Lake Programs

State lake programs often develop a database of information for the state's lakes. Typically, these programs are established to identify lakes that are priorities for protection and to implement lake management and protection strategies. Such programs often receive funding from the EPA's Clean Lakes Program to support such activities. The Maine Wildlands Lake Assessment illustrates the type of information Corps planners can expect to find from state lake programs. Such data can be used by planners to identify lake resources and areas that have been recognized as significant at the state level. In addition, as of August 1995, the North American Lake Management Society, a clearinghouse for information on significant lake resources, will provide lists of lake programs and protected lakes, as well as contact names for these programs. For more information, contact:

North American Lake Management Society

P.O. Box 5443
Madison, WI 53705
(608) 233-2836

Maine Wildlands Lake Assessment

The objectives of the Maine Wildlands Lake Assessment Program, as administered by the Maine Department of Conservation and Land Use Regulation Commission (LURC), are to develop a systematic base of natural resource and land/water use information for lakes within LURC jurisdiction, including the identification of all lakes that have exceptional natural values. Specifically, the Assessment was designed to identify lakes that are priorities for protection and lakes that are most suitable for development.

The Maine Wildlands Lake Assessment Program includes the following types of information: a computerized lake information system that specifies the lake name and location identifiers, natural value assessment findings, and baseline physical and limnological information; draft and final lists of relatively inaccessible and undeveloped lakes with exceptional natural values; draft and final lists of lakes most suitable for development; and a final report describing methods, summarizing findings, and identifying management alternatives. The Maine program uses a prioritization process for assessing the significance of lakes that is based primarily on the use of scientific and technical information. Based on methods presented in the Maine Wildland Lakes Assessment Work Plan, information on fisheries, scenic quality, botanic features, physical resources, wildlife, shoreline character, and cultural resources was collected by the Maine Program in its assessment process.

Less than 100 lakes were identified as having multiple outstanding natural resource values that also are inaccessible and undeveloped, which is a small subset out of approximately 1,000 classified lakes. Relatively inaccessible and undeveloped lakes with high natural resource values are considered the highest priority for protection. Information on natural value assessment findings for all lakes under LURC jurisdiction is maintained in a computer database. This information, coupled with the program's other products, can be used by Corps planners to identify significant lake areas associated with Corps restoration projects.

2.3.1.5. Estuaries and Marine Areas

State Coastal Zone Management Programs

The Coastal Zone Management Act of 1972 (CZMA) authorized the first national program to promote the protection and wise use of coastal resources. Through voluntary coastal management programs, states and territories address the objectives of the CZMA, including protection of natural resources, wise development in coastal areas, enhanced access to the coasts, and improved coordination of government activities. Through the use of land use plans, regulation of both state and Federal coastal activities, and advocacy measures, the programs work to achieve these objectives. The New York State Coastal Management Program and the Mississippi Coastal Program demonstrate some of the information that is available from state programs developed under CZMA and illustrate how Corps planners can utilize such information in planning studies. In addition, the California State Coastal Conservancy Resource Enhancement Program is another type of state coastal program, which is not related to CZMA, but provides useful information for identifying significant resources.

New York State Coastal Management Program

The New York State Coastal Management Program (CMP), administered by the Department of State, Division of Coastal Resources and Waterfront Revitalization, is established pursuant to the CZMA and the State Waterfront Revitalization and Coastal Resources Act. These acts call for the coordinated, comprehensive, and full exercise of governmental authority over land and water uses in the coastal zone for the purpose of preserving and using coastal resources in a manner that balances natural resource protection and the need to accommodate economic development. Under CMP, the New York State Department of Environmental Conservation (DEC) has developed a protocol to determine the significance of coastal habitats to implement the Significant Coastal Fish and Wildlife Habitats Program. This program was created to identify and rate the most significant coastal habitats in the New York area, since many habitats were being degraded or lost. The identification and rating of significant habitats is a rigorous procedure that lessens the subjectivity of the evaluation process. The method consists of a quantitative rating system for coastal habitats in terms of their support of fish and wildlife species, preservation of endangered or threatened species, the frequency of occurrence, human use, and likelihood of replacement. Habitats that receive a score above a threshold value are recommended by the DEC for designation by the Secretary of State as Significant Coastal Habitat. Each habitat designated as significant becomes part of the Significant Fish and Wildlife Habitats Program and is then mapped and described in a habitat narrative. The designation of Significant Coastal Habitat can be used by Corps planners to identify coastal areas recognized as institutionally significant.

Mississippi Coastal Program

The Mississippi Coastal Program is administered by the Mississippi Department of Wildlife, Fisheries and Parks, and the Bureau of Marine Resources. The Program's main goal is to provide for economic development without losing the biological diversity or natural beauty of the coastal wetlands and ecosystems in the area. To this end, Areas of Particular Concern (APCs) and Special Management Areas (SMAs) are identified by the program using systematic selection criteria. These criteria not only evaluate the scarcity and vulnerability of the proposed APC or SMA, but also assess the natural productivity and habitat of the area, its recreational value, and its economic value. Nineteen coastal estuarine areas, which represent a total of 35,413 acres, were identified in January 1993 as the most significant remaining estuarine areas along the coast of the Gulf of Mexico in the state of Mississippi. These areas and similar information in other state programs can be used by the Corps to identify coastal resources of state significance.

California State Coastal Conservancy Resource Enhancement Program

The California State Coastal Conservancy Resource Enhancement Program seeks to correct impacts to or the loss of scenic or natural values through sound resource management, resolve environmental impacts and issues caused by adjacent land use activities, relocate or redesign improper or inefficient improvements, preserve threatened habitat or unique coastal resources, restore altered or degraded coastal resources, and create new coastal wetlands and habitat programs. The program achieves these objectives through the use of Conservancy funds, staff resources and expertise, and the cooperation of public agencies and nonprofit organizations.

The Conservancy prioritizes Resource Enhancement Program grant applications by using the following criteria regarding the project: design excellence, cost effectiveness, significance, scope, usefulness as a model for future enhancement projects, support from other parties to contribute to successful project implementation and long-term viability, project management, urgency, readiness to act, and comprehensiveness. The Conservancy's use of significance as one of its program criteria could be useful to Corps planners, since the importance of the ecological, aesthetic and/or recreational value of the

project is already factored into the project selection process. The other criteria are also intended to permit measurement of each project's strengths in comparison with other proposals, to ensure that the projects funded will meet the goals of the state's Coastal Act. Corps planners can use state programs like the California Coastal Conservancy's Resource Enhancement Program to identify projects and natural areas that are recognized as significant through the program's prioritization process.

Exhibit 2-9. Example Significance Argument Based on a State Coastal Management Program

The Shabman wetlands, a 25-acre coastal wetland area located 20 miles north of the town of Wells, was identified as a "Significant Coastal Habitat" under the State Coastal Management Program. Through this designation, the Shabman wetlands are protected under the State Coastal Resources Act. The Shabman wetland exemplifies a wetland type that is not commonly found in the state and is home to several threatened species of wading birds. Designation of the Shabman wetlands as a Significant Coastal Habitat, under the State Coastal Resources Act, demonstrates that the resource is valued by the state and, hence, is institutionally significant. Restoration of another 75 acres of moderately degraded coastal wetland habitat along this section of the state's coastline will help protect the Shabman wetlands from loss or degradation by stabilizing the shoreline and creating additional wetland vegetation to serve as a buffer against shoreline erosion.

2.3.2. Private/Nonprofit Organizations

State Chapters of The Nature Conservancy

TNC purchases significant natural areas in need of protection and currently manages more than 1,600 private nature preserves in all 50 states and Canada. These preserves can be used by Corps planners to identify natural areas deemed significant for protection. To request a list of the preserves in a state, contact the state chapter of TNC in the state of interest. There is no master list of preserves across the country available for public use.

State Chapters of Ducks Unlimited--MARSH Program

The objective of the Matching Aid to Restore States Habitat (MARSH) program, administered by Ducks Unlimited (DU), is to compliment the on-going habitat programs in Canada and Mexico through the development, restoration, maintenance, and preservation of waterfowl/wetland habitat in the United States and to create a positive fund-raising atmosphere through the acquisition and enhancement of waterfowl/wetland habitat within each of the 50 states. This reimbursement program provides matching funds and grants to public and private agencies and organizations within each state. Approximately 100 projects are completed annually, depending upon the amount of funding available in each state. The MARSH program often supports state agency initiatives; thus, program activities vary substantially. MARSH project proposals are accepted by program coordinators in three DU regional offices (Bismarck, North Dakota; Sacramento, California; and Jackson, Mississippi) and two program offices (Bedford, New Hampshire and Eagan, Minnesota). They are evaluated on biological soundness, support of the North American Waterfowl Management Plan, benefits beyond waterfowl habitat protection and enhancement,

ratio of cost to benefit, endorsement of DU state volunteers, and amount of funds in the respective state MARSH account. Corps planners can use DU's MARSH Program to identify important waterfowl/wetland habitat in the state where Corps planning studies are being conducted. For general information on the program, contact:

Ducks Unlimited
One Waterfowl Way
Memphis, TN 38120-2351
(901) 758-3825

2.4. LOCAL

This section provides examples of types of sources of institutional significance at the local level for public agencies (2.4.1) and private, nonprofit organizations (2.4.2). The examples selected for public sources of recognition are: local zoning ordinances or codes, critical area planning criteria, comprehensive master plans, and habitat conservation plans. Local land trusts are included as an illustration of possible local sources of recognition from private, nonprofit organizations. An example significance argument is presented for both public and private sources.

2.4.1. Public Agencies

This section discusses different ways towns, municipalities, and counties can use laws, regulations, or plans, for example, through local land use controls, to recognize the significance of environmental resources. Because land use controls are a local responsibility, local action can be extremely effective in promoting the conservation or preservation of important environmental resources. Localities can enact new regulations or amend existing land use controls to include environmental protection goals and even tailor a regulatory program to meet the specific environmental needs of the community. Regulations typically take the form of zoning or subdivision controls or a combination of both. Local laws and regulations can provide substantial protection for environmental resources if adequately enforced. Selected examples of local sources of institutional recognition are discussed below:

- ***Zoning Ordinances.*** Zoning ordinances are the most common type of local land use regulation. These regulations are adopted as part of a comprehensive zoning ordinance or as a special ordinance (see below). Zoning ordinances or codes typically outline permitted and prohibited uses for specified land types or areas and may provide a map showing zoning designations or land type boundaries.
- ***Wetland Ordinances/Regulations.*** Special bylaws or ordinances, such as wetlands ordinances, are found in some localities. They may be adopted pursuant to special state wetland protection statutes or statutes authorizing local control of grading and filling or floodplain management. Special bylaws or ordinances typically contain written text setting forth permitted, prohibited, and special permit uses. Wetlands may be defined by description or with reference to a map.
- ***Shoreline Ordinances/Regulations.*** Shoreline ordinances and regulations are similar to wetland ordinances and regulations, except they target defined shoreline areas.
- ***Critical Area Planning Criteria.*** In general, critical area criteria are minimum standards established by the state for local jurisdictions and are typically intended as a guide for

landowners. Applications for development projects on private lands in designated critical areas may be subject to special review and comment.

- ***Master Plans.*** Master Plans take into account the location and type of activities taking place on the land and the design and type of physical structures and facilities serving these activities. This planning process is designed to enable a locality to plan for construction and development, while the private use of land is controlled by zoning ordinances and subdivision controls enacted in compliance with the plan.
- ***Habitat Conservation Plans (HCP).*** These plans are typically used as a mechanism to resolve conflicts between development and the protection of environmental resources. HCPs are developed in cases where proposed development threatens a resource that local residents feel is important. HCP committees usually comprise representatives from the real estate and development communities, the environmental community, local governments, and state and Federal resource agencies.

Exhibit 2-10. Example Significance Argument for the Shoreline of Nature Town

The study area for the proposed restoration project for South Bay includes 15 miles of undeveloped shoreline and wetland areas contained within the incorporated boundaries of Nature Town. Nature Town has imposed stringent zoning regulations for 5 miles of shoreline and zoned 30 acres as protected wetlands that cannot be developed in any way. Other stringent zoning requirements limit building density, tree-cutting, grading, filling, dredging, and road construction for the remaining 10 miles of shoreline. By adopting zoning requirements that limit or prohibit development in these shoreline and wetland areas, Nature Town has recognized these areas as highly significant resources for the local population.

2.4.2. Private/Nonprofit Organizations

In addition to public laws and regulations, private, nonprofit organizations or groups can play an important role in helping to establish the institutional significance of certain environmental resources. This section discusses local land trusts to illustrate possible local sources from private, nonprofit organizations and provides an example significance argument based on land trusts.

Local land trusts are private, nonprofit, tax-exempt charitable corporations that have been created in a particular region to protect land and related water resources. Ecological areas (wildlife habitat and natural areas), open spaces (visual buffers and scenic sites), and recreational land (trail corridors, river accesses, and fishing areas) are the most commonly protected types of land. Land protected by local land trusts is not necessarily wild or totally undeveloped, but has been preserved for biological, economic, productive, aesthetic, spiritual, or educational reasons.

**Exhibit 2-11. Example Significance Argument
for the South Fork of the Rainbow River**

The proposed restoration project for the South Fork of the Rainbow River is located near 2,000 acres of land managed by the Rainbow River Land Trust. Incorporated in 1990 through the efforts of local citizens, the land trust has worked to purchase 2,000 acres of creek bottomlands, open meadows, and forested slopes in the area. The institutional significance at the local level of resources in the South Fork of the Rainbow River and the surrounding area is demonstrated by the incorporation of this land trust to support the efforts of local citizens to protect the environmental resources of the area.

3. PUBLIC SIGNIFICANCE

This chapter provides guidance on how to identify public recognition of the importance of an environmental resource. It also provides examples of significance arguments for different forms of public recognition and different types of resources.

3.1. DEFINITION OF PUBLIC RECOGNITION

Significance based on public recognition means that some segment of the general public recognizes the importance of an environmental resource. Public recognition is evidenced by people engaged in activities that reflect an interest in or concern for a particular resource. Such activities may involve membership in an organization, financial contributions to resource-related efforts, provision of volunteer labor, and correspondence regarding the importance of a resource.

3.2. FORMS OF PUBLIC RECOGNITION

The public expresses its recognition of resource significance in many forms that can be identified using organizational and activity-related characteristics. Such characteristics include whether significance is expressed by a formally organized group, informal group, or individuals. Groups may be identified as national, regional, state, or local in organization and/or focus of their activities. Groups or individuals may dedicate their efforts to a single resource or to many resources and may engage in activities that are user-, conservation-, or management-based. These characteristics are discussed in more detail below.

Groups may be formal and organized or informal and ad hoc. Typically, formal and organized groups can be identified by name and by membership (which may or may not involve a fee). Formal groups often are incorporated as nonprofit organizations and generally have paid staff. Such organizations may collect donations in addition to membership fees and may fund some activities with public or private grants. Informal groups generally can be identified by name, but are not incorporated. Informal groups also may not have official members, although a listing of participants may exist. In general, the broader a group's geographic focus--local, sub-state, state, regional, national--the more likely it will be formal and organized.

A group may be large or small and it may organize activities attended by several dozen or several hundred, irrespective of its size. Group activities may focus on a single resource or multiple resources, such as a river, a type of fish, a specific watershed, or many different ecosystems. Activities reflecting significance may be user-based, such as fishing, hiking, bird watching, and camping. They also may be conservation- or management-based (such as wetlands restoration projects, posting signs for no wake zones, and planting seedlings) as well as long-term preservation, protection, and stewardship activities (such as those conducted by The Nature Conservancy or the National Audubon Society). Activities may occur frequently, such as once a month, or less frequently, such as once a year. Planning may be proactive; for example, an organization might schedule activities and projects on an annual basis or may conduct ad hoc activities, for example, depending upon a phone network to notify participants. Projects may be carried out by volunteers or contracted to private firms.

The level of organization and the types of activities conducted determine, in part, the types of information available from groups that may be relevant to the Corps in identifying public significance. Examples of potentially relevant information include number of members, amount of grant dollars used,

number and type of activities and projects, cost of each activity or project, and organizational publications. Most formal groups will have such information readily available, while many ad hoc groups may not keep such information or may require some time to assemble the information.

Another form of public recognition of the importance of a resource is the role of a resource in the public's customs and traditions. Some communities may hold events that are associated with a resource and reflect its importance to the community. Annual festivals, fairs, and seasonal celebrations are examples of such events. Integration of a resource into a public's culture is particularly relevant with respect to Native American Indian tribes. For example, many tribal ceremonies in the Pacific Northwest revolve around salmon runs. Several tribes have not held such ceremonies in recent years due to the decline and disappearance of numerous runs. The absence of these ceremonies can have a profound effect on the spiritual health of a tribe. Unlike most communities, many tribes have traditionally depended on environmental resources as a primary source of basic needs, rather than for recreational, scenic, or commercial value.

The public also expresses recognition of the importance of resources through individual action (as distinct from the actions of individuals in a group). Examples of individual recognition include, but are not limited to: letter writing to public officials or elected representatives; volunteering in efforts to protect or restore resources; publication of articles or op-ed pieces in newspapers, magazines, and newsletters; financial and in-kind contributions for resource protection; and attendance at meetings, hearings, and other forums at which resource issues are discussed.

The public significance of a resource may change over time, as an observed increase, decrease, or a more general ebb and flow. To avoid under- or overestimation of public significance, it is important to take a historical perspective when identifying public recognition. Investigation of past public recognition may be guided by the rate at which resource degradation has occurred. In cases where decline has been slow and steady, current expressions of recognition are probably accurate and sufficient for purposes of identifying public recognition. In cases where degradation has existed for some time but remained unaddressed, or where it has occurred quickly and full effects are not yet apparent, it may be necessary to conduct some outreach to identify any parties that recognize the resource as important. On the other hand, quick degradation of a resource may mobilize public opinion and interest in the resource and may even lead to controversy.

3.3. MEANS OF IDENTIFYING PUBLIC RECOGNITION

Any expression of public recognition will likely relate directly to the nature of the project under consideration, providing clues for identification. For example, in a project involving a river that flows through two states, public recognition by state or regional groups might be expected. In a project involving a relatively small area of wetlands, public recognition by local groups or the local or state chapter of a national organization might be expected. In comparing levels of public significance across projects, it is important to realize that the source of recognition will often reflect the scope of the project.

Three primary means of identifying activities reflecting public recognition of a resource exist:

- 1) ***Self-identification*** occurs where organizations or individuals contact the Corps or the planning team to describe their interest in or concern for a resource and their activities related to the resource;

- 2) ***Third-party identification*** occurs where individuals or agencies and organizations inform the Corps or the planning team of other individuals or organizations' recognition of a resource either voluntarily or upon request from the Corps for such information; and
- 3) ***Staff identification*** occurs where Corps staff identify public recognition by using a wide range of techniques including intuitive/experiential information; existing lists of groups and individuals (e.g., grant recipients); historical analysis; review of relevant directories, journals, newsletters, and other publications; and direct contact and interviewing potentially interested parties.

It is expected that many groups and individuals engaged in activities that reflect public recognition will self-identify during the project scoping and planning process. Through the Corps' existing public information and outreach efforts, people will become informed of the potential project and be afforded opportunity for comment and involvement. In general, the mechanisms selected to inform the public will determine who self-identifies. For example, notices in the Federal Register will likely elicit responses from national and regional groups, but maybe not from state or local groups. Therefore, the public information/outreach process should take advantage of several different means of notice placement to facilitate self-identification.

Additionally, it may be useful to specify in public notices that letters detailing interest, support, and past, current, and planned involvement with the resource are requested and will become an important part of the planning process. In this manner, the Corps can inform the public that the Corps is interested in public activities related to the resource in question and will collect information regarding such activities. Such outreach may be particularly important to identify support for a particular resource's significance because public notices sometimes generate more responses reflecting opposition than support, even when supporters far outnumber opponents.

Coordination between planners and public information specialists and the District Public Affairs Office may be necessary to integrate the search for public significance and documentation thereof into the public involvement process described in ER 1105-2-100 (28 Dec 90). Integrating the effort for determining public recognition with the public involvement process should facilitate third-party identification of groups and individuals that recognize a resource as significant. A specific request may be made in notices, at meetings, or at hearings for attendees to identify other interested parties and describe their specific interest and/or involvement with a resource if known.

A well-planned and coordinated public information/involvement process should identify most, if not all, of the organizations and individuals that recognize the significance of a resource and should be a cost-effective means of doing so. Nonetheless, staff identification may occasionally be necessary. For example, staff may follow up third-party identifications to request information from the identified organization. In cases where the public information/involvement process does not identify the type or number of organizations expected to recognize the resource, it may be necessary to conduct additional outreach to verify lack of public recognition or determine where such recognition exists. In addition to working with the Public Affairs Office and other interested parties to conduct such outreach, several directories of groups involved in environmental issues exist that may be helpful (e.g., the National Wildlife Federation's Annual Conservation Directory and the River Conservation Directory published by the National Park Service and American Rivers). As mentioned above, groups may be less likely to self-identify or identify others where Corps projects are in fact well supported, or in cases where recognition is not formally organized.

Listed below are specific information items that may be relevant to developing a public significance argument. The relevance and availability of each depends on the nature of the proposed project and the type of group(s) or individuals expressing recognition.

- Annual reports;
- Budgets;
- Completed/planned project lists;
- Activity lists/descriptions/summaries;
- Calendars/schedules;
- Membership lists;
- Mission statements;
- Political interest;
- Organizational publications;
- Letters written to the Corps;
- Corps interview notes with key people;
- Pictures and graphics; and
- Second-source articles/citations about a group and its activities.

3.4. EXAMPLES OF SIGNIFICANCE ARGUMENTS FOR PUBLIC RECOGNITION

This section provides several illustrations of significance arguments for public recognition. The examples identify the organization or group of individuals expressing public recognition of significance and detail activities that are evidence of public recognition. The examples also describe the groups' or individuals' past and current history, including mission, purpose, membership, financial resources, and involvement with the resource. Some examples use actual resources and groups, others represent composites from numerous real cases and use fictitious names. The examples are organized according to the significance level--national, regional, state, or local--reflected by the form of public recognition.

3.4.1. National

- The efforts of the national nonprofit organization, American Rivers, is evidence of the Roy River's public significance. Founded in 1973 to preserve rivers in the United States, American Rivers currently has an annual operating budget of over \$1.5 million and over 14,000 members. For over 10 years, American Rivers has coordinated local organizations, the state environmental resource agency, and a number of private citizens to nominate the Roy River for the National Wild and Scenic Rivers System. The organization has been active in protecting lands adjacent to the river, through acquisition and easement contributions. American Rivers also has been working with the Bureau of Land Management and the Forest Service during their development of land use and forestry plans for areas within the river's watershed. Over the past five years, American Rivers, either as sole sponsor or as joint sponsor with a local nonprofit, has organized three National Wild and Scenic River designation workshops, two river festivals, 10 river trips, and four clean-up Sundays. All events were exceptionally well attended, according to several sources involved in planning the activities.
- The importance of the Snohomish River to the Tulalip Indian Tribe in Washington State is evidence of the public significance of this river. The tribal oyster and clam grounds, located at the mouth of the Snohomish River, have been degraded by sediment and nutrient loading transported by the river. The proposed project would reduce loadings and provide an opportunity for the oyster and clam populations to rebound. The tribal elders have submitted several letters to the Corps and

the Washington Department of Ecology supporting this project and have offered both financial and in-kind assistance. Oysters and clams are an important part of the local diet and figure prominently in tribal lore. A key legend among most of the Pacific Northwest Indian tribes is the story of the Raven discovering the first humans in a clamshell while walking along the beach.

- The activities of the national nonprofit organization, Defenders of Wildlife, in the Fieldstone River watershed are evidence of public recognition of the resource's significance. Defenders of Wildlife was founded in 1947 to protect wild animals and plants and currently has over 80,000 members. The organization promotes the preservation of biological diversity and the protection of habitats linked by wildlife movement corridors. This national organization has identified preserving the habitat of the red bear as one of its national priorities. The red bear is native to the region and potentially in danger of population decline without action, but is not listed as endangered or threatened. It lives exclusively in the Fieldstone River watershed and the neighboring Travis tributary watershed. Three years ago, Defenders of Wildlife established a bear monitoring network to attempt to estimate and track the bear's population, habitat range, and food preferences. The organization has established a wildlife viewing area in two locations where the bears are particularly prevalent. The areas have had about 100 visitors per week since they were established two years ago. Three years ago, Defenders of Wildlife was successful in lobbying the state legislature to appropriate \$500,000 for land acquisition to protect habitat for the red bear. These efforts were written up in the organization's national publication, *Activists Newsletter*.
- The efforts of Ducks Unlimited in the Midwest River Valley are evidence of the public's recognition of the importance of the river and its riparian zone as habitat for numerous species of waterfowl. Activities of the national headquarters, a new regional office, and local Ducks Unlimited chapters recognize the significance of the Valley as an important habitat in the Central Migratory Corridor. For several years, local chapters of Ducks Unlimited have developed, preserved, and maintained waterfowl habitat in their areas, making their preserves available to members for duck hunting. The chapters also have been active in their public education programs focusing on waterfowl management. Several years ago, Ducks Unlimited established a regional office to coordinate the efforts of the local chapters operating within the Midwest River Valley. This regional office coordinates the management of over 35,000 acres of land, including 20,000 acres of wetlands. The regional office serves over 100,000 members. Recently, in support of the North American Waterfowl Management Plan, the national office has stepped up fundraising efforts for this corridor in order to purchase and manage more small and seasonal wetlands, as well as sites that provide upland nesting cover to enhance the waterfowl habitat in the corridor. The local chapters and regional and national offices have all submitted letters to the Corps supporting the project and detailing their past, current, and planned involvement with the resource and proposed project. Ducks Unlimited has also offered to match the local governments' cost-share in order to expand the proposed project by 1,000 acres. Additionally, Ducks Unlimited has offered to organize volunteers to provide long-term management for the area.

3.4.2. Regional

- The Pacific Rivers Council has actively represented the public's interest and concern for rivers in the Pacific Northwest. The Council has been especially active in promoting and coordinating the appropriate use and management of privately owned land along rivers in this region, in addition to its conservation efforts focusing on public lands. The Council, in its original incarnation as the Oregon Rivers Council, successfully led an effort to pass the landmark Oregon Omnibus National Wild and Scenic Rivers Act that designated 40 river segments for protection, totaling almost 1,500

miles and including approximately 500,000 acres of public land. The Council's public involvement and outreach program for educational and advocacy purposes is perhaps the most successful in the country, reflecting the public's recognition of the significance of rivers the Council works to protect. The Smythe parcel along the Northneck River is one such property for which the Council is actively engaged in working with Federal and state agencies to develop a management plan that will support the restoration of the river's salmon run. The organization has several standing committees and task forces and has established a small working group to address Smythe parcel and other such parcels on the Northneck River. The Council also has engaged the input of the scientific community.

- The regional office of the Environmental Defense Fund (EDF) in Raleigh, North Carolina, has been leading the effort to name the Durham Bull Frog as a threatened species. The frog's sole habitat is the riparian vegetation along the Tarheel River. EDF has published several economic and scientific studies to show the cost-effectiveness of alternative farming and flood plain management practices that would better protect the frog's habitat. EDF also has been coordinating studies being conducted on a volunteer basis by students and faculty at the University of North Carolina to document the importance of the frog in the Tarheel River's ecosystem, both from a food-chain perspective and its importance in controlling the Tobacco Bug population. Since EDF's publication of the frog's imperilment and request for contributions to help the frog in a recent membership mailing, contributions from North Carolina, South Carolina, and nearby states have doubled. EDF was successful in placing the Durham Bull Frog as the animal for the month of February in the Little Tarheel Calendar distributed to school children.

3.4.3. State

- The State Chapter of Waterfowl USA, a national organization of hunters and outdoor enthusiasts, has been especially active in promoting management and conservation of the Red-Backed Duck habitat in the Lucius River watershed. Its activities provide evidence of public recognition of the importance of wetlands in this area. The Lucius River watershed covers one-third of the state and, as a result, public recognition of the resource's significance has been identified at the state level. For the past several years, Waterfowl USA has worked with Boy Scout troops to educate them about the importance of the Lucius River and its wetland areas to the Red-Backed Duck. The organization has involved the scouts in its nesting box and food placement program designed to support Red-Backed Duck populations. Waterfowl USA also has involved other groups in hands-on management programs, including diking wetlands, banding birds, and posting signs for the local refuge. In one year, five scout troops and other organizations raised \$8,000 to purchase wetland acreage along the Lucius River. The organization has written numerous op-ed pieces and public announcements supporting the restoration of the Lucius River area. The State Chapter also leads field trips to the Lucius River for local school districts.
- The recent efforts by an informal and ad hoc coalition of several state conservation groups, local churches, and students at the state university are evidence of the public significance of the Bayou River. The Bayou River has suffered recent and quick degradation as a result of the flooding last year in the Mississippi River Valley. The river bank was severely eroded and sediment and silt deposits altered the River's hydrology in critical crawfish nursery areas. The Bayou River has been the number one producer of crawfish in the state, but this season, the harvest was at an all-time low. Until last year, the Bayou River was the site of the Annual Crawdaddy Festival, which draws participants from all over the state and region. In addition to an array of crawfish food items available, the Festival also is a cultural event and has become a showcase for Cajun arts, crafts, and

music. The cancellation of the Festival this year has been disruptive to the customs and traditions of the Cajun community that lives along the river and tributary creeks. Zydeco Beaumont, a prominent musician, has taken the lead in bringing together the ad hoc coalition. Over one thousand signatures have been submitted in support of this project, representing a who's who of the Cajun community, including the Governor and a majority of elected officials at the statehouse.

3.4.4. Local

- The activities of the local chapter of the Izaak Walton League in the Wiebel Creek Basin reflect the importance of this resource to the public. The League's members have promoted numerous citizen-based programs throughout the watershed, including: establishment of the local Save Our Stream chapter (works on specific stream restoration projects, most recently a trash clean-up and reed planting); the adoption of sections of the creek by the local public schools and several churches; a fundraising effort to purchase a boat for the local government closest to the creek to conduct habitat and water quality monitoring; a weekly nature program for the local cable channel; and a creek awareness program for the schools.
- The Local Flyfishing Club has mobilized to protect the grey fish's habitat, and its activities reflect public recognition of the fish and its home river. The Club has raised money for the restoration efforts of other local conservation groups. Its members have participated in these restoration projects, have posted protection zone signs, and have voluntarily limited catches over the past several years when it appeared that grey fish populations were declining. The Club also has developed a T-shirt depicting the grey fish as the town mascot and has sold the colorful shirt in tackle and sporting good shops throughout the county. All proceeds are donated to the restoration efforts of local conservation groups.

4. TECHNICAL SIGNIFICANCE

This chapter provides guidance on how to identify technical recognition of the importance of an environmental resource. It focuses on providing examples of key criteria or concepts relevant to technical significance. This chapter also provides examples of significance arguments for different forms of technical recognition and different types of resources.

4.1. DEFINITION OF TECHNICAL RECOGNITION

Technical recognition indicates that the Corps may describe an environmental resource as significant based on the technical merits of the resource. Scientific knowledge or judgment of critical resource characteristics identifies the technical merits that endow a resource with significance. Corps planners can establish the extent of a resource's technical merits (and, thus, significance) by assessing several key criteria or concepts. These criteria or concepts include scarcity, representativeness, status and trends, connectivity, critical habitat, and biodiversity. Each is discussed individually in Section 4.3. The methods that scientists use to evaluate each of these criteria or concepts vary considerably. Some methods are strictly quantitative, while others are qualitative by nature. When selecting scientific and technical information to establish technical recognition, Corps planners should rely on information that is based on professionally accepted study methods and studies that produce valid, verifiable results.

4.2. EFFECTS OF DIFFERING VIEWPOINTS ON DESCRIBING TECHNICAL RECOGNITION

Technical recognition of a resource may vary based on differences across geographic areas and spatial scale. Recognition of a resource based on technical criteria or concepts depends on whether a local, regional, or national perspective is being taken. For example, a Corps planner examining the trends in the status of a particular animal species may find that the population size is declining in a particular locality, but increasing on a national scale. The spatial scale used in a planning study may also have impacts on determining technical significance. Typically, a watershed or a larger context (e.g., ecosystem, landscape, or ecoregion) should be considered when describing the technical significance of environmental resources. While virtually all species and habitats are important at the ecosystem level, limited funds and planning resources necessitate focusing on those considered to be significant at a level that justifies Federal expenditures. Generally, technical recognition from a national or regional perspective provides a more convincing argument to justify Federal involvement in an environmental restoration project.

4.3. CRITERIA AND CONCEPTS FOR TECHNICAL RECOGNITION

This section first summarizes types of sources from which Corps planners can obtain information to describe technical recognition. The following sections provide an overview of selected criteria or concepts that can be used by Corps planners to describe the technical significance of a resource. These criteria represent examples, not an all-inclusive listing, of the types of criteria and concepts that can be used to describe technical significance. Different criteria can be developed, as appropriate, for specific planning studies. The selected criteria or concepts are:

- Scarcity,
- Representativeness,
- Status and trends,
- Connectivity,

- Critical habitat, and
- Biodiversity.

In this chapter, the selected examples of key criteria or concepts are discussed generically to introduce relevant ideas and issues associated with identifying and describing significance using the criteria or concepts. Each of the example criteria or concepts are discussed in a separate section: scarcity (4.3.1), representativeness (4.3.2), status and trends (4.3.3), connectivity (4.3.4), critical habitat (4.3.5), and biodiversity (4.3.6). The final section of this chapter provides examples of how the selected criteria or concepts can be used in significance arguments.

Corps planners can obtain information to determine technical recognition for a specific resource from three major sources: (1) published literature, (2) unpublished literature and scientific expertise, and (3) fieldwork. Planners can find published materials by searching library indices, such as *Biological Abstracts*. These indices, which are generally accessible by computer, provide listings and summaries of books, articles, and reports. Other indices, such as the *Science Citation Index*, provide listings of materials that cite a specific reference or author. In addition to published resources, a large body of unpublished information is available. Many agencies, universities or colleges, and conservation organizations produce unpublished reports, have scientific experts, or provide other sources of scientific and technical information. If published and unpublished sources do not provide enough information for a Corps planner to determine technical significance, the planner may have to rely on direct fieldwork.

Appendix B lists examples of conservation organizations that can provide information to assist in describing technical significance. In addition, selected examples of publications with useful background information on criteria and concepts relevant to technical recognition are listed below. They were selected because they are readily available sources that present information in clear, comprehensible terms. The examples are:

- Noss, Reed F. and Allen Y. Cooperrider. *Saving Nature's Legacy: Protecting and Restoring Biodiversity*. Washington, DC: Island Press, 1994.
- Primack, Richard B. *Essentials of Conservation Biology*. Sunderland, Massachusetts: Sinauer Associates Inc., 1993.
- Reid, Walter V., et al. *Biodiversity Indicators for Policy-Makers*. World Resources Institute, 1993.
- Soule, M. E., ed. *Conservation Biology: The Science of Scarcity and Diversity*. Sunderland, Massachusetts: Sinauer Associates Inc., 1986.
- Wilson, Edward O., and F. M. Peter, eds. *Biodiversity*. Washington, DC: National Academy Press, 1988.
- Wilson, Edward O. *The Diversity of Life*. Cambridge, Massachusetts: The Belknap Press of the Harvard University Press, 1992.

4.3.1. Scarcity

Scarcity is a measure of a resource's relative abundance within a specified geographic range. Such a definition is open to different interpretations. Often, scientists, environmental planners, the public, and

other entities perceive different levels of scarcity for the same resource. Generally, scientists consider a habitat or ecosystem to be rare if it occupies a narrow geographic range or if it occurs in small groupings. Determining what constitutes a narrow geographic range or a small grouping can be a subjective exercise. Complicating such a determination is the fact that political boundaries (local, state, and national) often set the spatial limits on policies regarding resource scarcity.

Sections 4.3.1.1 through 4.3.1.5 outline selected issues that the planner may consider in identifying and describing technical significance using the concept of scarcity.

4.3.1.1. Geographic Scale from the Perspective of the Planner

The geographic scale used to determine the scarcity of a resource is extremely important. Scarcity may vary from an international, national, regional, state, or local perspective. A particular resource may be scarce within only part of its range. For instance, it may be scarce within a state or county, but may be abundant on a wider geographic scale (i.e., nationally or internationally). As an example, stands of the sweet bay magnolia tree are extremely rare in the state of Massachusetts, but they are common in the southeastern United States. Therefore, stands of sweet bay magnolia trees could have technical recognition based on scarcity in Massachusetts, but such stands located in the Carolinas would not be significant based on scarcity.

4.3.1.2. Count

Scientists measure the scarcity of a particular environmental resource most simply by counting the number of individuals within a specified geographical range. Resources may also be scarce if they tend to occur in small groupings. At the species level, this means that a species lives in small populations. Even if many small populations of a species exist, the species can still be considered scarce, because the threat of collapse in small populations can be extremely high. At the ecosystem level, occurrence in small groupings means that relatively few ecosystems of a particular type can be found within a specified range. Although the number of individuals in a resource population is the most basic component of the resource's scarcity, other components (see below) can play an important role.

4.3.1.3. Geographic Range

A species, habitat, or ecosystem can be considered rare if it has a narrow geographic range (i.e., is limited to few locations). The concept of endemism is related to this issue. Endemic resources are those that reside in one single geographical area and nowhere else. For instance, the snail darter is endemic to the Tennessee River system. Although the term endemic can describe resources that have wide ranges (e.g., the red maple tree is endemic to North America), it more often describes resources confined to small ranges (e.g., the palezone shiner is endemic to a few stream kilometers in the United States).

4.3.1.4. Uniqueness

A resource can, in some cases, be considered scarce if it has many individuals, but is unlike any other resources found within a specified range. For example, live coral reefs are relatively abundant around the globe (although they are disappearing rapidly). However, these ecosystems are unique in their capacity to support an incredible diversity of resident species. Reefs are some of the most complex and productive ecosystems on the planet. It is this extraordinary characteristic that makes live coral reefs a unique and, thus, scarce resource.

4.3.1.5. Threat of Interference

Threat of interference (in most cases from human activities, but also from natural causes) creates the potential for a resource to become scarce. The existence of threats that can make a resource scarce within the area of a restoration site is of immediate concern. In addition, a resource may be considered scarce if threats to that resource exist within the watershed or even beyond the region containing the resource. For instance, within a river ecosystem that is undergoing restoration, an abundant type of riparian habitat may not be threatened. But outside the watershed that contains the ecosystem, this type of habitat is threatened by human interference in almost all instances. Therefore, the habitat can be considered scarce, because it is severely threatened elsewhere.

4.3.2. Representativeness

Representativeness is a measure of an environmental resource's ability to exemplify the natural habitat or ecosystems of a specified geographic range. Sections 4.3.2.1 and 4.3.2.2 outline selected issues that the planner may consider in identifying and describing technical significance using the concept of representativeness.

4.3.2.1. Presence of Native Species

In assessing representativeness, Corps planners can inventory the number and percentage of native species within the study area for a proposed restoration project. Native species are those that naturally inhabit a specific ecosystem or region without being introduced by humans. As a natural corollary to presence of native species, the absence of exotic species also implies representativeness. Exotic species are those that occur in a given area as the result of direct or indirect, deliberate or accidental, introduction by humans. The introduction by humans allows exotic species to cross a natural barrier to dispersal. Exotic species are often able to dominate and displace native species within an ecosystem. Ecosystems that are not experiencing severe invasions by exotic species and sustaining populations of native species are generally more representative of the regions they inhabit.

There are several methods of identifying the species and communities of an area that help determine the abundance of healthy populations of native species. Examples of these methods are satellite imaging; manual species inventories; and gap analysis (see Chapter 2), which attempts to combine many approaches.

4.3.2.2. Presence of Undisturbed Habitat

Within an ecosystem or larger area, the presence of undisturbed habitats increases the representativeness of the area. An ecosystem that is relatively untouched by human influences exhibits the natural characteristics of its area or region better than one in which humans have extensively disturbed natural habitats. In addition, undisturbed habitats are less likely to contain established populations of exotic or nuisance species.

4.3.3. Status and Trends

The concept of status and trends for an environmental resource involves evaluating the occurrence and extent of the resource over time, how it has changed, and why. This concept refers to the current health of an environmental resource and the direction its health is moving over time. Documentation of the status of a resource includes descriptions of the physical attributes, the extent of degradation, and

human alterations of the resource. The trends associated with a resource's degradation should indicate whether the resource is declining, recovering, or maintaining a steady status. In addition, trends should describe how quickly the status of a resource is changing.

Sections 4.3.3.1 through 4.3.3.4 outline selected issues that the planner may consider in identifying and describing technical significance using the concept of status and trends.

4.3.3.1. Choosing Variables for Describing Status

Scientists can examine many different aspects of an ecosystem or environmental resource to determine the status of its health. Some of these aspects, which are described below, are related to other criteria for determining technical significance.

- ***Presence of pollution.*** Water quality monitoring efforts attempt to discover the presence of toxic or other contaminants in surface and ground water. Scientists also monitor soil, sediments, biota (e.g., monitoring for tumors in fish), and other media to reveal the health of ecosystems.
- ***Biodiversity.*** Scientists have identified various methods to quantify biodiversity. However, information on biodiversity must be carefully considered, since it is not always directly correlated with the health of an ecosystem or habitat. Some ecosystems that have been severely degraded can support a greater degree of biodiversity than they did prior to the degradation. Often, a large percentage of the species in such degraded ecosystems are exotic species or unwanted opportunists. (See Section 4.3.6 for discussion of biodiversity as a criterion for technical significance.)
- ***Abundance of distress-loving and exotic species.*** Often, after a habitat has experienced a major disturbance or disaster (either man-made or natural), unwanted, opportunistic species (such as weeds) colonize the habitat. Many of these species were not present in the habitat before the disturbance occurred. Scientists can search for and map the extent of species that indicate a degraded habitat. An example is the presence of gulls in inland areas. These birds typically live in coastal areas, but can take advantage of habitats stressed by human disturbances. They are able to find food in urban and suburban areas and can thrive at landfills. Species such as gulls often increase their populations in the habitats they invade at the expense of native species.
- ***Extent of man-made barriers and other disturbances.*** The presence of man-made barriers is an indicator of a degraded ecosystem. Such barriers divide habitats into fragments and disrupt the movements, dispersal, and routines of species living within the habitats. Scientists quantify the extent of barriers and other disturbances by such measures as the total area of impervious surfaces in a watershed. (See Section 4.3.4 for discussion of connectivity as a criterion for technical significance.)
- ***Degree and immediacy of threat(s).*** The status of an ecosystem or habitat depends on the degree and immediacy of threats facing the ecosystem. Threats may be extant, such as increasing habitat fragmentation, or they may be potential, such as a proposed timber removal project.

4.3.3.2. Historical Data Collection for Observing Trends

Scientists can determine the status of an environmental resource at any point in time. To characterize the trend of a resource's health, however, they must have access to historical data on the status of the resource. Monitoring that is conducted continuously or at regular intervals produces the most reliable historical data sets. Such monitoring efforts and the resultant data should incorporate a wide range of variables that describe the attributes of the resource and diagnose its health.

Corps planners can take advantage of reports on status and trends that are available from government agencies and other sources. Sources such as *Wetlands: Status and Trends*, published by the U.S. Fish and Wildlife Service, report the results of monitoring efforts and describe current and historical data on the status of resources. This 1991 report constitutes a statistically valid effort to estimate the Nation's wetland resources and indicates trends (i.e., gains or losses in acreage) for 14 categories of wetland and deepwater habitats. It is the first update of an earlier report entitled *Status and Trends of Wetlands and Deepwater Habitats in the Conterminous United States, 1950s to 1970s*, which was completed in 1982. The citation for the 1991 report is: Dahl, Thomas E. and Johnson, Craig E. *Wetlands: Status and Trends in the Conterminous United States, Mid-1970s to Mid-1980s*. Washington, DC: U.S. Department of the Interior, Fish and Wildlife Service, 1991.

4.3.3.3. Direction of Trends in Level of Degradation

In general, Corps planners can consider a potential restoration site that has declining trends and an imperiled status to be more significant than one that is recovering. Prioritization by the direction of trends in the level of degradation allows ecosystems that are recovering naturally to continue that process, and can divert resources to ecosystems that may be incapable of recovering naturally (at least within a relatively short time frame).

4.3.3.4. Recoverability

Planners also may consider the concept of recoverability of a degraded resource in examining a resource's status and trends. Recoverability is a measure of the ability of human intervention to restore the natural productivity of a degraded ecosystem.

4.3.4. Connectivity

Connectivity is a measure of the potential for movement and dispersal of species throughout a given area or ecosystem. Connectivity is essentially the opposite of fragmentation, and it must be considered in the context of an entire landscape or watershed. The variation and quality of links between habitats in a landscape or watershed determine the level of connectivity.

Sections 4.3.4.1 and 4.3.4.2 outline selected issues that the planner may consider in identifying and describing technical significance using the concept of connectivity.

4.3.4.1. Landscape Context

The context of the landscape that surrounds an environmental resource is essential to determining the connectivity of a habitat area. The structural characteristics or spatial patterns of the landscape are key factors in documenting the level of connectivity of a particular resource. Such spatial patterns include existence and suitability of habitat corridors, degree and pattern of habitat fragmentation, and presence of natural and man-made barriers.

Habitat corridors are broad, heterogeneous zones that permit migration of species from one area to another over long periods of time. Habitat corridors that facilitate natural patterns of migration and dispersal are the most likely to be productive in sustaining plant and animal species. In addition to providing needed living space and routes, such corridors assist in producing genetic variation, since they allow populations of species from different areas to intermix. Some corridors, however, can facilitate the dispersal of exotic or pest species and disease. In addition, the presence of a habitat corridor does not necessarily mean that it functions as a route for migration of species between habitats. The suitability of the corridor must be considered. Nevertheless, a restoration site that can potentially serve to create or re-establish habitat corridors can produce substantial positive impacts on the health of an ecosystem. Thus, Corps planners could recognize such a site as technically significant.

Often, rivers, other waterways, and riparian forests serve as highly functional habitat corridors. Aquatic ecosystems inherently connect to other waterways and terrestrial landscapes. Hydrologic cycles, drainage regimes, and upstream/downstream links contribute to the capacity of rivers, streams, and other aquatic ecosystems to function as corridors. Also, many vertebrates and other animal groups use the riparian zones of rivers and streams as corridors to move among habitats.

The extent and pattern of habitat fragmentation are important in determining connectivity or the potential for connectivity. Habitat fragmentation occurs through a process in which habitats are increasingly subdivided into smaller units, resulting in increased insularity and loss of total habitat area. Many habitats have progressed from complete, interconnected systems into patches, mosaics, or absence of habitat. Restoration efforts can be effective in eliminating fragmentation if the efforts target corridors and address the pattern of fragmentation.

Man-made barriers (and to a lesser extent, natural barriers) can disrupt connectivity. A truly contiguous landscape is relatively free from such barriers. Man-made barriers include roads, railroads, dams, canals, power lines, fences, fire lanes, and other rights-of-way and barriers. The capacity of roads to separate terrestrial habitats and prevent migration and dispersal of species is well documented. Perhaps even more pronounced is the capacity of dams and other water blockages to divide habitats in rivers, streams, and other waterways. Areas that are fragmented due to man-made barriers may have a high potential to re-establish their connective capacities, if the barriers can be removed.

4.3.4.2. Use by Migratory Animals

Migratory animal species depend on at least two distinct habitats in their seasonal movements. Existence of migratory species within a habitat is proof of some level of connectivity for the habitat. A habitat must be connected to a second habitat if it allows passage of migratory animals. For example, a small, isolated wetland may be an important stop for a migratory bird species. The wetland allows birds to migrate successfully between two widely spaced habitats, demonstrating its role in connecting the two habitats.

4.3.5. Critical Habitat

Critical habitat is habitat that is essential for the conservation, survival, or recovery of one or more species. While critical habitat can, in some cases, serve as a criterion for institutional recognition (see Section 2.1.1.1), it can also be a criterion for technical recognition. This section outlines selected issues that planners may consider in identifying and describing technical significance using the concept of critical habitat.

Under the Endangered Species Act of 1973, as amended, the Secretary of Interior can designate critical habitat for a listed species (see Chapter 2). In practice, however, the Federal government has designated critical habitat for only a portion of the species listed as endangered or threatened. Critical habitat designations can be found in the Federal Register - Final Rule for individual species and in the Federal Listing of Species.

Under 50 CFR Part 424, critical habitat is defined as "(1) the specific areas within the geographical area currently occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (i) essential to the conservation of the species and (ii) that may require special management considerations or protection, and (2) specific areas outside the geographic area occupied by a species at the time it is listed upon a determination by the Secretary that such areas are essential for the conservation of the species." When listing a new species, critical habitat is specified to "the maximum extent prudent" and such designations are made on the basis of the best scientific data available after taking into consideration the probable economic and other impacts.

4.3.6. Biodiversity

Biodiversity, most simply defined, is a measure of the variety of distinct species and the genetic variability within them. A more complete definition also encompasses the variety and interaction of habitat types and ecosystem processes extending over a given region. Thus, biodiversity can be measured at the individual level (genetic variation), the population level (species variation), and the community level (variation of biological communities and interaction of ecosystem functions).

Sections 4.3.6.1 and 4.3.6.2 outline selected issues that the planner may consider in identifying and describing technical significance using the concept of biodiversity.

4.3.6.1. Number and Distribution of Species

In measuring biodiversity at the population level within a specified region, biologists attempt to describe not only species richness (i.e., the number of species found in a community), but also distribution of individuals among species (i.e., how evenly the total number of individuals is divided among species). Biologists consider diversity to be greater if individuals are more evenly distributed. For instance, in a bird population that contains 10 species and 80 individuals, an even distribution contains eight individuals per species. This population is more diverse than a population of 80 birds in which 53 of the individuals are one species, and the remaining species each have three individuals.

4.3.6.2. Using Indices of Biodiversity

Many methods of calculating diversity at the population level have been proposed that combine species richness and distribution of individuals among species. These methods generally produce a mathematical index or scale of diversity. Many exogenous variables, however, can affect the results of any particular diversity study. For instance, species rarity, sample size, and even differences in size of individuals in a community produce substantial variations in the results of diversity studies that use different (although equally valid) methods. Some scientists have suggested that diversity indices should not be used to make direct comparisons of diversity for different areas, but should be used to analyze biodiversity for a particular area.

4.4. EXAMPLES OF SIGNIFICANCE ARGUMENTS FOR TECHNICAL RECOGNITION

This section provides examples of significance arguments for technical recognition. The first two examples are provided as case studies to illustrate the types of information that planners may use in identifying technical significance. The remaining examples present brief significance arguments using different forms of technical recognition for different types of resources.

4.4.1. Case Study--Technical Recognition of the Maylands

This example presents a brief case study of a hypothetical restoration project where the environmental resources associated with the proposed project can be considered technically significant based on connectivity and declining resource trends.

Background

The May Watershed contains approximately 8,000 hectares of poorly drained, forested wetlands. These floodplain forests have been extremely productive in supporting fish and wildlife, especially populations of migratory large mammals. In 1980, the Corps executed drainage projects to prevent waters from flooding May City. The projects focused on the so-called Maylands in the middle of the watershed, four kilometers northeast of May City. The projects consisted of the diversion and channelization of two small feeder streams that had flowed through the Maylands section of the wetlands. These projects prevented waters from overflowing the stream banks in the Maylands, with a resultant loss of the intermittent saturation of over 300 hectares of wetlands. The changes in the hydrology of the area induced changes in the vegetation occupying the area. The floodplain forest in the Maylands has mostly died (loggers also removed some stands of trees for timber sales), and a dryer, more denuded habitat has replaced it. With the fragmentation of the greater floodplain forest within the May Watershed caused by degradation of the Maylands, many populations of migratory large mammals have experienced sharp declines throughout the entire area. The Corps is considering restoration of the Maylands.

Scientific studies and recent professional judgments argue that the Maylands are significant based on technical merits. Local university scientists and students, in cooperation with Corps planners, studied several aspects of the wetlands. The results of the studies demonstrate technical recognition based on connectivity and status and trends.

Connectivity of the Maylands

University biologists and their students compiled two inventories of species (the first in 1977, and the second in 1988) within the Maylands and the entire watershed. The first inventory presents evidence that five migratory large mammal species used both the Maylands and the whole watershed as part of a larger migratory route. The second inventory revealed that two migratory large mammal species continue to use the watershed, with no such species using the Maylands. The former presence of migratory mammals in the habitat of the Maylands illustrates its connective capacities on a regional scale as part of a migratory corridor for the mammals.

Subsequent to the second inventory, biologists began researching the reasons for the decline in populations in the Maylands and the watershed. They discovered that, before the diversion and channelization projects, the Maylands had served as a habitat corridor within the watershed. The Maylands connect two large tracts of forested wetlands. The degradation of the Maylands essentially separated the

two tracts and increased the edge area of the tracts. This habitat fragmentation resulted in greater human predation on the mammals and less foraging area to support their feeding requirements.

Status and Trends in the Maylands

The only studies that relate to the status and trends of the Maylands are the two species inventories conducted by the university biologists. These inventories indicate the level of diversity among mammal species in the Maylands and demonstrate that the status of the Maylands as a viable habitat for migratory large mammals is declining rapidly. In addition, the 1988 inventory showed a marked increase over 1977 numbers of moobirds inhabiting the Maylands. Moobirds are infamous for destroying the eggs of other species of birds and replacing the eggs with eggs of their own. The moobird, although important to ecosystem health in many instances, is an opportunistic, nuisance species that thrives in fragmented habitats with access to open areas.

In addition to the two species inventories, planners have observed that the abundance of man-made barriers has increased. The drainage projects enabled loggers to access some of the trees in the Maylands. During operations, loggers built dirt roads to transport timber. The roads are causing further habitat fragmentation, even when they remain unused. Other human-induced disturbances, such as grazing, are also evident. Given the current number of human-induced disturbances, the threat of additional disturbances is high.

Conclusion

The Corps can consider the Maylands to be a significant resource, based on technical recognition. The high degree of connectivity, along with the declining resource trends associated with the Maylands confirm this significance. Corps planners can weigh this technical significance in deciding whether to restore the Maylands.

4.4.2. Case Study--Technical Recognition of Homestead Creek

This example presents a brief case study of a hypothetical restoration project where the environmental resources associated with the proposed project can be considered technically significant based on the scarcity of species and habitat.

Background

Homestead Creek is located in the Northwest corner of the Roaming River watershed. Roaming River and its tributaries are, for the most part, wide and shallow. Homestead Creek, which is 12 kilometers long, is the fastest flowing tributary of Roaming River. In their studies, biologists have divided Homestead Creek into six segments of approximately two kilometers each. The segments are labeled 1 through 6, with Segment 1 located at the headwaters. Beginning in the 1950s, the Corps constructed a series of three small-scale dams on the creek to divert water for municipal use. The dams were sequentially developed from the mouth of the creek, heading back toward the headwaters. The dam nearest the headwaters (Dam 1) is located in Segment 3. After the Corps constructed the dams, biologists discovered a relatively abundant species of fish living in Homestead Creek that has been found in small numbers in only one other tributary of the Roaming River. This small fish, the darting homesteader, is endemic to the Roaming River watershed. Furthermore, the darting homesteader has restrictive habitat requirements, including fast-moving, clear, shallow waters with a rocky or gravelly bottom and a narrow temperature range. The darting homesteader also requires fallen trees, stumps, and other debris for cover.

Scientific studies and recent professional judgments argue that Homestead Creek and its natural resources are significant, based on technical merits. Biologists have documented the habitat requirements and distribution of the darting homesteader. The results of their research demonstrate technical recognition based on scarcity of the homesteader and its habitat, which makes this species vulnerable to extinction.

Scarcity of the Darting Homesteader

As stated above, the darting homesteader is endemic to the Roaming River watershed, and biologists have found the fish in only two tributaries. Thus, biologists consider the fish to be scarce on a national and regional basis. Investigations, in which biologists seined the creek, provide evidence of a healthy number of individual homesteaders residing in Homestead Creek. Over time, however, the seines have revealed that the populations are becoming fragmented due to interference by the dams. The most recent seining captured no homesteaders in Segments 4 and 5 between Dams 2 and 3, and revealed a very small population in Segment 3 between Dams 1 and 2. Biologists believe genetic variation is dwindling in the population in Segment 3, and are concerned that the population may collapse. Almost all of the homesteaders discovered by the research reside in the headwaters above Dam 1 (Segments 1 and 2). A sparse population inhabits one other tributary of the Roaming River, but this tributary's habitat is not as ideal for supporting the homesteader as Homestead Creek's. Biologists believe this population faces similar odds of extirpation as the population located in Segment 3. Due to the narrow range of the homesteader and its susceptibility to the threats imposed by the dams, biologists have declared it to be rare and threatened.

Scarcity of Habitat

Within this region of the Nation, wide, shallow river and stream systems are relatively uncommon. The Roaming River watershed provides excellent shallow stream habitat in a region where few exist. Fast-flowing waters in this type of system are even more uncommon. Only Homestead Creek and one other stream in the watershed possess fast-moving waters. In addition, most of the stream bottoms in the Roaming River watershed and surrounding watersheds have bottoms of fine silt. Homestead Creek is one of a handful of stream reaches with a rocky gradient. Because some biologists view Homestead Creek as necessary for the survival of the homesteader, The Nature Conservancy is examining the possibility of purchasing land in the upper reaches of Homestead Creek to preserve portions of its habitat.

Conclusion

The Corps can consider Homestead Creek to be a significant resource, based on technical recognition. The scarcity of the darting homesteader, due to its narrow geographic range within the Roaming River watershed and existing threats of disturbance, confirms the significance of the creek. In addition, the scarcity of the type of habitat provided by the creek on a regional scale reinforces the significance of the creek. Corps planners can weigh this technical significance in deciding whether to restore Homestead Creek.

4.4.3. Examples of Significance Arguments Based on Technical Recognition

The following examples present brief significance arguments using different forms of technical recognition for different types of resources.

4.4.3.1. Example Significance Argument for Longbird Lake

Longbird Lake is home to a wide variety of native species and exotic species are not over-abundant. The greatest concentrations of native species are found in the submerged and emergent vegetation. While some established exotic fish species inhabit the lake, many native species persist, including two species endemic to the region. Many native birds and mammals also use the lake, especially frequenting the forest stands on its northern shore. The relatively high concentrations of native species compared to other lakes in the area demonstrates Longbird Lake's representativeness. In addition, Longbird Lake is, for the most part, an undisturbed habitat. Although the lake was originally created 50 years ago by the Dietz Dam, zoning laws have prevented moderate or intense development along the shores of the lake. While some recreationists use the southern reaches of the lake, human activity does not significantly disturb the more natural areas that have been established for over 30 years on the lake's northern shore. Longbird Lake is a technically significant resource because it is highly representative of the native species and habitat of lacustrine ecosystems in the region.

4.4.3.2. Example Significance Argument for Segment 4 of the Pink River

The headwaters of the Pink River are a spawning ground for the Pink River Salmon, an anadromous fish species that migrates annually from the ocean for spawning. Segment 4 is blocked by a dam, but salmon can go around the dam by means of a fish ladder. Scientists have kept records of salmon populations since the installation of the fish ladder. The Pink River Salmon population has continued to experience sharp declines, decreasing by about ten percent per year. In addition, records indicate that fewer fish are reaching the spawning sites each year. Fisheries biologists believe that the degradation of aquatic habitat in the portion of Segment 4 immediately beyond the fish ladder is the major reason for the continued population declines. Restoration of that portion of Segment 4 will improve the connectivity functions of the Pink River that are essential to the survival of the Pink River Salmon. Segment 4 of the Pink River is a significant resource based on technical recognition of the declining trends and imperiled status of an anadromous species as well as its connectivity functions in the species' life cycle.

4.4.3.3. Example Significance Argument for the Wetlands of the Drop Gorge River

Along the Drop Gorge River, just before it descends 45 meters through narrow Drop Gorge, a series of technically significant wetlands exist in the rocky areas above the river. These rocky areas are periodically flooded by surging waters, resulting in the formation of pools that tend to hold water throughout the year. Upstream water supply projects, however, have altered the river's flow regime, reducing the frequency of flooding and threatening the viability of the wetlands.

The rocky wetlands along the Drop Gorge River and their biota are representative of Appalachian highland wetlands throughout the state. In addition, the habitat provided by the pools supports a scarce plant, the faux indigo herb, which has not been found anywhere else in the state. The wetlands support a number of native plant species that are characteristic of the state's upland wetlands and the Eastern highlands of the U.S. In addition, the landscape is relatively undisturbed by direct human use. The existence of pools and rocky areas has prevented trampling and development by humans. Exotic species are also infrequent in the wetlands. Furthermore, there is a healthy population of the scarce faux indigo herb, which grows on the edges of the pools in the wetland. Biologists believe that the survival of this plant within the state depends directly on the unique habitat provided by these pools. Due to the representativeness of the wetlands, as well as their role as an important habitat for the faux indigo, the wetlands of Drop Gorge River are considered technically significant.

4.4.3.4. Example Significance Argument for Brown Bay

Brown Bay is a technically significant resource because it contains habitat that supports not only extensive natural biodiversity but also populations of the threatened spindly kelp. The bay contains several different types of ecosystems that support a variety of fish, invertebrate, plant, mammal, and marine bird species. The state university has conducted several studies on biodiversity in the bay. These studies have revealed extremely high levels of alpha diversity among biological communities in the bay, and relatively high levels of beta and gamma diversity. In addition, the size and distribution of some populations of plants, fish, and invertebrates suggest that a great deal of genetic diversity resides in the populations. One species, however, that has recently experienced severe declines in the bay is the spindly kelp. This species of kelp, which is found in only two other coastal regions of the U.S., is listed as a threatened species. The spindly kelp forests in Brown Bay are a major contributor to the productivity of the bay, providing food and shelter for many other species. Because of the spindly kelp's threatened status and downward trends in the size of the kelp forests in the bay, biologists have recommended that Brown Bay be designated as critical habitat. They also believe that the kelp forests themselves provide critical habitat for several other species. Brown Bay is a significant resource, based on these technical merits: existence of critical habitat, abundance of natural biodiversity, and potential for recovery of a threatened species.

5. RECOMMENDATIONS

Achieving the best use of public resources within today's budget constraints implies a need to make decisions regarding which environmental resources deserve a level of priority in planning, managing, or allocating funds for environmental restoration efforts. Information on the significance of different types of environmental resources can assist planners and decision makers in several ways. Planners can formulate alternative environmental restoration project plans that more effectively address national and regional environmental resource priorities. Information identifying national and regional resource priorities and significant environmental resources can assist decision makers in evaluating which projects best meet national or regional goals. Finally, such information can facilitate cooperative decision making among Federal agencies, state agencies, and nonprofit organizations, for development of objectives and alternatives on a watershed basis to address restoration problems or opportunities. Cooperative planning efforts are likely to facilitate partnerships that leverage investments in environmental restoration, thereby achieving greater environmental benefits than any single agency could achieve alone.

Corps planners must view the issue of significance from a new perspective. As stated in Chapter 1, the issue of significance has been considered in identifying and describing the significant impacts of a proposed action on an environmental resource. For many traditional water resources projects (i.e., flood damage reduction and navigation projects), the significant impacts were detrimental to the affected area. Environmental restoration and protection is a "priority" output in the Corps of Engineers budgeting process, therefore, it is likely to be a primary mission now and into the future. In planning studies that support this environmental mission, Corps planners must now identify and describe the significance of an environmental resource to assist in evaluating, justifying, and selecting among proposed restoration projects.

A well-written and carefully documented significance argument can provide important information to Corps decision makers to assist in prioritizing restoration opportunities within the Corps environmental program and in coordinating with restoration efforts of other agencies and organizations. Because Corps planners are accustomed to evaluating the significant impacts of a proposed project on environmental resources, rather than the issue of resource significance, planning reports often do not adequately address resource significance. Some reports simply summarize or list laws or coordination requirements that were considered by the planning team to satisfy the NEPA regulations. Others touch on the issue of resource significance, but such information is scattered throughout the report. The guidance provided in this report is intended to encourage planners to prepare a significance argument for their planning reports that is concise and clearly describes environmental resources within the study area that are of national and regional significance.

APPENDIX A: DEFINITIONS

Definitions of useful terms for determining and describing resource significance in an ecosystem or watershed context for environmental project planning are provided below. These terms are environmental resource, ecological attributes, ecoregion, ecosystem, ecosystem functional characteristics, ecosystem structural characteristics, habitat, landscape considerations, and watershed.

- **Environmental resource.** An environmental resource is a natural form, process, system, or other phenomenon that: 1) is related to land, water, atmosphere, plants, animals, or biological communities; and 2) has one or more ecological attributes.
- **Ecological attributes.** Ecological attributes are components of the environment and the interactions among all its living (including people) and nonliving components that directly or indirectly sustain dynamic, diverse, viable ecosystems. Ecological attributes include functional and structural characteristics of ecosystems.
- **Ecoregion.** An ecoregion is a large biogeographical unit characterized by distinctive biotic (i.e., species, populations, and communities) and abiotic (i.e., land, air, water, energy) relationships.³
- **Ecosystem.** An ecosystem is the dynamic and interrelating complex of plant and animal communities and their associated non-living environment. Ecosystems occur at spatial scales that range from local through regional to global.⁴
- **Ecosystem Functional Characteristics.** Functional characteristics encompass dynamic, interactive processes and natural systems that sustain ecosystem viability. Examples of functional characteristics of ecosystems include:
 - Surface and groundwater storage, recharge and supply;
 - Floodwater and sediment retention;
 - Transport of organisms, nutrients and sediments;
 - Humidification of the atmosphere (by transpiration and evaporation);
 - Oxygen production;
 - Nutrient cycling;
 - Biomass production, food web support, species maintenance;
 - Shelter for ecosystem users (from sun, wind, rain, or noise);
 - Detoxification of waste and purification of water;
 - Reduction of erosion and mass wastage; and
 - Energy flow.

³Ecoregions have been delineated by Robert G. Bailey, 1976, "Ecoregions of the United States" (map), published by the U.S. Forest Service; and by James M. Omernik, 1987, "Ecoregions of the Conterminous United States," *Annals of the Association of American Geographers*, vol. 77, pp. 118-125.

⁴The U.S. Fish and Wildlife Service is currently identifying watershed-based "Ecosystem Units" for the Service's management purposes. A working draft map of Ecosystem Units was published in "An Ecosystem Approach to Fish and Wildlife Conservation," U.S. Fish and Wildlife Service, March 1994.

- **Ecosystem Structural Characteristics.** Structural characteristics of ecosystems encompass species, populations and communities, habitats, and the chemical and physical properties of air, water, and soil or other geophysical resources. Examples of structural characteristics include:
 - Water quality;
 - Hydrology;
 - Soil condition;
 - Geological condition;
 - Topography;
 - Morphology;
 - Plants and animals; and
 - Carrying capacity, food web support, or nutrient availability (as determined by indicator species).

- **Habitat.** Habitat refers to the place occupied by an organism, population or community. It is the physical part of the community structure in which an organism finds its home, and includes the sum total of all the environmental conditions present in the specific place occupied by an organism. Often a habitat is defined to include a whole community of organisms.

- **Landscape Considerations.** Landscape considerations take into account the effects of spatial and temporal heterogeneity, geometry, and areal extent on ecological processes. These are not only considerations of the detrimental effects that activities and conditions in adjacent areas can have on the restoration project, but also, the migratory routes and dispersal patterns for species of interest, invertebrates and food sources. Landscape considerations also take into account accessibility of areas from which recolonizing individuals can come.

- **Watershed.** Watershed refers to the geographically defined drainage basin that contributes water to an ecosystem or habitat. For environmental project planning, the watershed is the hydrologic unit encompassed in the study area because the events and activities therein influence the ecological success of the restoration project. The watershed will be defined by the scope of the study and study objectives.

**APPENDIX B: EXAMPLES OF ORGANIZATIONS THAT CAN PROVIDE INFORMATION
TO ASSIST IN DESCRIBING TECHNICAL SIGNIFICANCE**

Center for Marine Conservation
1725 De Sales St. NW, Suite 500
Washington, DC 20036

Center for Plant Conservation and
Missouri Botanical Garden
P.O. Box 299
St. Louis, MO 63166

Environmental Defense Fund
257 Park Ave. South
New York, NY 10010

International Council for Bird Preservation
32 Cambridge Road, Girton
Cambridge CB3 0PJ, United Kingdom

International Union for the Conservation of
Nature and Natural Resources (IUCN)
Avenue de Mont Blanc
CH-1196 Gland, Switzerland

National Audubon Society
950 Third Ave.
New York, NY 10022

National Wildlife Federation
1400 16th St. NW
Washington, DC 20036

The Nature Conservancy
1815 North Lynn St.
Arlington, VA 22209

Smithsonian Institution and National Zoological
Park
1000 Jefferson Dr. SW
Washington, DC 20560

Society for Conservation Biology
c/o Blackwell Scientific Publications, Inc.
238 Main St.
Cambridge, MA 02142

United Nations Environment Program (UNEP)
1899 F St. NW
Washington, DC 20006

Wildlife Conservation International
and New York Zoological Society
Bronx Zoo
185th St. and Southern Blvd.
Bronx, NY 10460

World Wildlife Fund (WWF)
1250 24th St. NW
Washington, DC 20037

Xerces Society
10 Ash St. SW
Portland, OR 97204