Eco-Logical Successes

Third Edition

Introduction

Eco-Logical: An Ecosystem Approach to Developing Infrastructure Projects outlines an ecosystem-scale approach to prioritizing, developing, and delivering infrastructure projects. Eco-Logical emphasizes interagency collaboration in order to create infrastructure projects in ways that are more sensitive to terrestrial and aquatic habitats.

The eight Eco-Logical signatory agencies are:

- Bureau of Land Management
- Federal Highway Administration
- National Oceanic and Atmospheric Administration National Marine Fisheries Service
- National Park Service
- U.S. Army Corps of Engineers
- U.S. Department of Agriculture Forest Service
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service

Eco-Logical Successes highlights signatory agencies' strategic environmental programs, projects, and efforts that share the vision set forth in Eco-Logical. This edition of Eco-Logical Successes focuses on two agency programs: the U.S. Forest Service's Open Space Conservation Strategy and the National Park Service's (NPS) Inventory and Monitoring Program.

Forest Service's Open Space Conservation Strategy

The U.S. Forest Service works to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations. An interconnected network of open space provides invaluable environmental and social services: it supports healthy ecosystems, protects drinking water supplies, provides recreation opportunities, and leads to improved public health. Current patterns of growth—namely, low-density development that subdivides formerly large swaths of forest and grasslands—threatens the vital ecosystem, social, and economic benefits that open space provides. In response to the negative impacts caused by fragmentation and parcelization, the Forest Service created its Open Space Conservation Strategy to encourage cross-boundary partnerships to strategically conserve open space across the landscape.

The Open Space Conservation Strategy identifies actions to protect the most ecologically and socially important lands and to reduce potential negative impacts and risks of development. Four priority actions guide the strategy:

1. **Convene partners to identify and protect priority open space**

   The Forest Service works closely with States, communities, landowners, and nonprofit organizations to strategically conserve open space across the landscape. The Forest Service conducts science-based assessments of open space change and incorporates information from other sources, such as State forest resource assessments, State wildlife action plans, and ecoregional assessments to identify priority open space locations. Once they have identified regional priority lands, the Forest Service works in partnership with willing landowners and other public and private groups to protect land through land acquisition and conservation easements.

2. **Promote national policies and markets to help private landowners conserve open space**

   At the national level, the Forest Service promotes policies that provide economic incentives to support landowners who are interested in protecting open space and retaining working land. Such activities include studying the impacts of changes in tax policies; supporting the development of emerging ecosystem service markets, such as water-quality and carbon-credit trading; and providing assistance to help sustain ranching, forestry, and agricultural lands.

3. **Provide resources and tools to help communities expand and connect open spaces**

   The Forest Service shares tools and techniques with local communities to help them restore and connect quality parks, riparian areas, forests, and wetlands to build an interconnected green infrastructure. Forest Service programs, such as the **Forest Legacy Program** and **Urban and Community Forestry** help communities to conserve and manage forests. In addition, Forest Service scientists produce valuable information to help municipalities make informed conservation decisions: regional assessments give an in-depth picture of the consequences of land-use changes and the ongoing forest census provides data and maps about current forest conditions and trends.

4. **Participate in community growth planning to reduce ecological impacts and wildfire risks**

   The Forest Service participates in local, regional, and transportation-planning activities to reduce the ecological impacts of new developments and community infrastructure. The agency encourages the use of landscape-scale, natural resource information in planning, and is developing educational materials to inform Forest Service staff how to engage in local planning activities.

What is Open Space?

The Forest Service defines open space as land that is valued for natural processes and wildlife, agricultural and forest production, aesthetic beauty, active and passive recreation, and other public benefits. Such lands include working and natural forests, rangelands and grasslands, farms, ranches, parks, stream and river corridors, and other natural lands within rural, suburban, and urban areas. Open space may be protected or unprotected, public or private.

Field Implementation

Many of the strategies outlined in the Open Space Conservation Strategy were implemented in the Bozeman Pass Land Conservation Project. Bozeman Pass is located in one of the most important wildlife movement connectivity sites in the Greater Yellowstone region and provides numerous recreation opportunities. The land, which is bisected by Interstate 90, was vulnerable to development and land conversion. To protect this ecologically important area and minimize threats caused by development, the

Open Space Conservation Strategy Supports Eco-Logical Principles

The *Eco-Logical* framework encourages agencies to work together and with the public to implement an ecosystem approach to infrastructure projects. The Forest Service's Open Space Conservation Strategy embodies several key aspects of the integrated planning framework outlined in *Eco-Logical.*

Collaborative Partnerships: Collaboration and partnerships are a cornerstone of the strategy. The Forest Service works with Federal, State and local public agencies, and non-traditional partners to collect and share information to identify priority open space.

Assess Effects and Prioritize Opportunities: The Forest Service conducts science-based assessments and incorporates data from other sources to identify priority open space. The agency works with communities during their planning processes to avoid impacting ecologically important lands when developing infrastructure projects.

Forest Service's Gallatin National Forest worked in partnership with the Montana Department of Transportation, conservation partners, counties, communities, and cooperating landowners to acquire and protect over 2,000 acres of land in the Bozeman Pass area. By working together, public agencies and private citizens were able to conserve a critical area of undeveloped land, ensuring that it will continue to provide environmental and social benefits in perpetuity.

Current Activities

The Forest Service is currently conducting a webinar series titled *Planning for Growth and Open Space Conservation.* Each session of the ten-part series features expert speakers discussing specific opportunities and strategies to conserve open space. Upcoming topics in the series include:

- Land Acquisition and Conservation Easement Programs
- Local Land Trusts: Essential Partners and the Tools They Provide
- Facilitating Large Landscape Conservation Efforts
- Science to inform Open Space Conservation: Land Use Changes, Forest Fragmentation, and the Wildland-Urban Interface
- Linking Highway Infrastructure Projects with Wildlife and Open Space Conservation Efforts
- Private Land Conservation Programs

To access past recordings and register for upcoming webinars visit the Forest Service's website at *http://www.fs.fed.us/openspace/webinars.html.*

ADDITIONAL INFORMATION

For more information on the Forest Service's Open Space Conservation Strategy please contact:

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Bozeman Pass—View from Interstate 90 (Source: Forest Service)

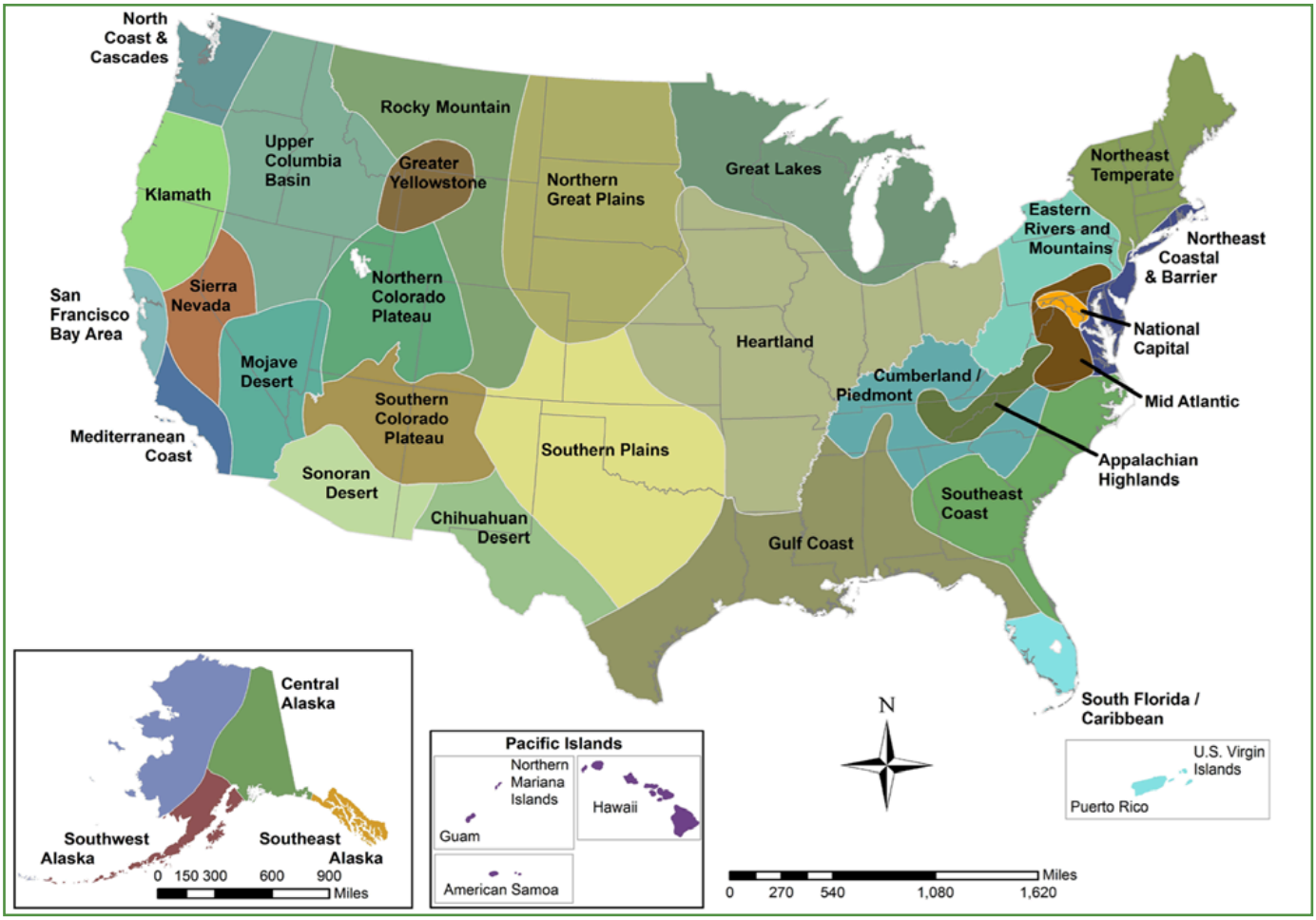
National Park Service Inventory and Monitoring Program

NPS works to preserve natural and cultural resources and values of the National Park System for the enjoyment, education, and inspiration of current and future generations. The health and integrity of a park's natural resources are affected by factors from within and outside park boundaries. Understanding the dynamic nature of park ecosystems and the impacts of diverse activities are essential for the effective management of park resources. NPS created the Inventory and Monitoring (I&M) Program to provide park managers with scientific data that enables them to make better-informed decisions and to work more effectively with other agencies for the benefit of park resources.

The primary goal of the I&M Program is to integrate natural resource inventory and monitoring information into NPS planning, management, and decisionmaking. To achieve this, the I&M Program provides guidance, funding, and technical assistance to parks to complete a set of 12 basic natural resource inventories to assess and document the current condition of natural resources in the parks. These inventories provide baseline data for establishing long-term ecological monitoring, known as "Vital Signs Monitoring." The results of the inventories and long-term monitoring provide park staff with critical data to assess the overall health of park resources and identify situations that require intervention.

Data Management and Information Sharing

Information management is an important element of the I&M Program. NPS has developed several important systems to manage and share the data being captured by the I&M Program. These data management applications ensure that the information produced by the program is easily accessible in multiple formats to a range of end users, including partner organizations and the public. Two key efforts of the I&M's information-sharing efforts are NPScape and Integrated Resource Management Applications (IRMA).



Park units with significant natural resources are organized into 32 ecoregional networks that share funding and staff to conduct long-term monitoring of park ecosystems. (Source: NPS)

NPScape

NPScape is a landscape dynamics monitoring project designed to help park managers better understand the landscape-level opportunities and challenges they face in protecting park natural resources. NPScape provides metric Geographic Information System (GIS) data in six major categories (population, housing, roads, land cover, pattern, and conservation status) that broadly address the environmental drivers, natural attributes, and conservation context of parks and surrounding lands. The data are available at two relevant spatial extents: (1) a local area encompassing everything within 30 kilometers (18.6 miles) of each park boundary, and (2) a larger landscape-scale area. The landscape-scale data in NPScape are used to develop maps, assessments, and reports that inform resource management and planning at local, regional, and national scales.

Integrated Resource Management Applications

IRMA is the cornerstone of the NPS's information management efforts. It serves as a one-stop, web-based application for resource-related data and information, including reports, data sets, maps, and images (NPScape products are also available through IRMA). The system is available to both internal NPS staff and the general public. In addition, IRMA will be linked to other Department of Interior data systems to facilitate cross-agency data sharing.

As well as sharing information within the agency, NPS I&M shares data and other products with the U.S. Fish and Wildlife Service, the Bureau of Land Management, and the U.S. Geological Survey; contributes landscape-scale data and expertise to the Department of the Interior Landscape Conservation Cooperatives; and communicates the results of original research through scientific presentations and publications.

Field Implementation

Data produced by the NPS I&M Program have improved the implementation of NPS mission and goals in parks and regions throughout the Nation. One example is the pilot test of the Texas tortoise monitoring project at Palo Alto Battlefield National Historical Park in Texas. Monitoring the Texas tortoise, currently on both the State and federally threatened species list, has already yielded new understanding of this elusive tortoise. Through this project, NPS has documented the specific risks that nearby roads pose to the park's tortoises by recording migration paths and road-caused mortality. As a result, NPS designed and installed fencing to redirect tortoises along safer migration routes and refined the park's vegetation management plan.

Golden Gate National Recreation Area (NRA) is also using data from the I&M program to inform the development of its long-range transportation plans (LRTPs). The NRA is using the I&M data, along with data provided by other agencies and park-specific data, to develop "Park Transportation Investment Needs Analysis" (PaTINA), a new GIS-based application that will support LRTP development. This application will overlay natural and cultural resource information and environmental risks and hazards on the transportation network to identify areas of potential concern. At the moment, PaTINA is still under development; the mapping and data-merging are complete, and the development team is now beginning the analysis phase. This is the first example of such an approach for NPS, but pending the results of this pilot, the agency hopes to eventually expand this model to other park units nationwide. The development team has employed good data management practices so that the information within PaTINA can eventually be used on a regional or national level.

ADDITIONAL INFORMATION

For more information on the NPS I&M Program please visit http://science.nature.nps.gov/im/, or contact:

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NPS I&M Program Supports Eco-Logical Principles

The *Eco-Logical* approach encourages agencies to integrate environmental solutions and goals into planning, and does so by applying a geographic framework defined primarily by ecological boundaries. NPS's I&M Program enables the direct application of this ecosystem approach.

The I&M Program collects data regarding ecological conditions in and around parks. Information about changes and trends in landscape-scale indicators in and around parks helps park managers anticipate, plan for, and manage associated effects to park resources. Monitoring changes in natural resource data over the long term enables decision-makers to assess the efficacy of management and restoration efforts, and amend approaches as needed.

Eco-Logical Program Update

FHWA continues to pursue activities to raise awareness and operationalize the Eco-Logical approach. This work focuses on creating practical tools and delivering training to support agencies that are implementing the Eco-Logical approach.

Integrated Eco-Logical Framework Implementation Plan

FHWA, in collaboration with the Transportation Research Board and the American Association of State Highway and Transportation Officials, is developing an implementation plan for the Integrated Eco-Logical Framework (IEF). The IEF is a step-by-step process that guides natural resource and transportation practitioners in developing conservation and restoration priorities and integrating such information into transportation and land use planning processes. The IEF implementation plan will include goals and objectives, a tactical action plan and budget, roles and responsibilities of key players, and marketing and communication strategies.

Eco-Logical Benefit Assessment Framework

FHWA is developing an Eco-Logical Benefit Assessment Framework to analyze the benefits and costs associated with applying the Eco-Logical approach. This framework will help agencies understand the potential time and resource savings of using the Eco-Logical approach for transportation and mitigation planning and project delivery as compared to a traditional approach to transportation delivery.

Eco-Logical Training Strategy

FHWA is developing a unified Eco-Logical training strategy to help achieve implementation of the Eco-Logical approach as standard practice among transportation and environmental practitioners. As a first step in developing the strategy, FHWA is coordinating with key stakeholders to understand the current conditions and needs among transportation, regulatory, and resource agencies. The training strategy will use input from these stakeholders to define audiences, delivery methods, and training content to be delivered on a national scale.

FHWA also continues to conduct the Eco-Logical webinar series. Information on upcoming webinars is available at *http://www.environment.fhwa.dot.gov/ecological/eco_webinar_series.asp*.

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