Use Case: Using Ecosystem Services Conceptual Models to Specify and Identify Metrics for Cultural Ecosystem Services in National Forest Planning

http://bit.ly/NI-ESCM

Context

Cultural ecosystem services represent the nonmaterial benefits that people receive from ecosystems, including but not limited to recreation, aesthetics, spiritual connection, cultural identity, and sense of place. Cultural services are inherently hard to quantify, although they often represent some of the most significant services provided by a particular landscape. Due to the difficulty of quantifying and communicating cultural service importance, these services are often not fully considered in decision making and left ambiguous in many ecosystem services conceptual models (ESCMs).

The planning team at the Ashley National Forest used ESCMs to identify key ecosystem services and metrics. Through that process much of the discussion centered on cultural services including recreational use of the Forest; traditional uses such as grazing, hunting, and fishing; tribal resource use; and cultural sites on the Forest. These in-depth discussions allowed greater specificity related to cultural ecosystem services in the final ESCM and the metrics identified and developed for measuring these services.

Process

ESCM Development and Identification of Key Cultural Ecosystem Services

The Nicholas Institute for Environmental Policy Solutions at Duke University in partnership with members of the U.S. Forest Service hosted an hourlong virtual workshop with approximately 10 members of the Ashley National Forest planning team, including participants with expertise on recreation programming, soil and water management, and economics. The workshop participants reviewed a general project-scale recreation management ESCM that had been previously developed from academic literature and conversations with Forest Service experts. They provided feedback on how the ESCM could be adapted to better represent the planning context (a broader scale than the general ESCM) and the specific ecology and recreational uses of the Ashley National Forest.

When specifying the model, the planning team added detail to the cultural ecosystem services included in the general model, which were generic since they were not tied to any particular location (e.g., "education" and "other – sense of place, existence value, cultural and spiritual importance, etc."). The Ashley National Forest planning team identified three uses of the forest for cultural value—traditional uses, community uses, and tribal resource use—and three attributes of the Forest that directly influence its value for cultural services—cultural site condition, solitude, and crowding. The final version of the ESCM adapted to the Ashley National Forest planning context includes these six cultural ecosystem services, and workshop participants selected all six as key ecosystem services to include in the metrics discussion.

Metrics Workshop and Follow-Up Discussion

The Nicholas Institute for Environmental Policy Solutions at Duke University hosted a three-hour virtual workshop with approximately 15 members of the Ashley National Forest planning team.

The workshop participants considered a list of preliminary metrics suggested for each outcome and discussed whether the suggested metrics were the right ones. The planning team revised the preliminary list by removing some suggested metrics, adding new ones, and proposing alternatives. For the cultural ecosystem services, the planning team had in-depth discussions about which specific aspects of each service are relevant to the Ashley National Forest and likely to be influenced by the planning alternatives, as well as what data or methods could be used to get the relevant information. After the workshop, a follow-up call was held with the planning team lead, planning consultant, and the Forest Archaeologist to get additional input on metrics related to tribal and cultural resources. The final metrics for the cultural ecosystem services incorporated several approaches that assist in quantifying these difficult-to-measure services:

- The planning team decided to use a quantitative ranking system to capture cultural ecosystem services metrics that are difficult to measure directly. For example, one metric for the cultural site condition outcome is the potential for conflict and competition between authorized uses (e.g., recreation, harvest of forest products) and cultural site uses, as measured on a 1–5 scale.

- The planning team was interested in metrics around quality of experience and ease of access related to several cultural ecosystem services and recreational uses of the Ashley National Forest. Characteristics such as solitude, crowding, and ability to access areas for recreation are important for different user groups. To address this, we developed an access and quality of experience matrix that maps user groups to the areas and amenities they prioritize. It can be completed for different plan alternatives, enabling visualization of potential differences in user group benefits.

User group	Wilderness areas	Destination recreation areas	Trails with motorized access
Solitude seekers	+		
Mobility-impaired users		-	-
OHV users		-	-
Tribal populations	+		

Note. Example matrix for a hypothetical conservation-focused planning alternative, with a concentration on undeveloped areas and wilderness areas and reduced emphasis on recreation infrastructure compared to the no-action alternative. Shaded cells indicate users that will be positively (+) or negatively (-) affected by the changes this alternative will cause in the area and amenity types listed in the column headings. Adapted from the example Ashley National Forest access and experience matrix.

Resources Used

Workshop materials: This document includes the background information that was shared with the participants before each workshop and example slides with discussion questions.

Ecosystem service conceptual model: The ESCM adapted to the Ashley National Forest planning context, a key product of the first workshop, was used to select key outcomes for discussion during the metrics workshop.

Applications

Communication about cultural ecosystem services. The ESCM can be used to illustrate the multiple cultural ecosystem services that are provided by the Ashley National Forest, and how planning alternatives may affect these services.

Measuring cultural ecosystem services. The metrics developed by the planning team provide ways to measure cultural ecosystem services, which can help planners consider cultural ecosystem services in the planning process and assess how plan implementation is affecting them.

Additional Resources

Ashley National Forest metrics database

Ashley National Forest access and experience matrix