

INTRODUCTION TO THE CONSERVATION STRATEGY

OVERVIEW

California is the most biologically diverse state in the nation. Compared to other states, California has the greatest number of plant species and the most endemic species – plants and animals that occur only in California. The California Floristic Province, which includes the Sierra Nevada, has been designated as a global biodiversity hotspot by Conservation International, The Nature Conservancy and the World Wildlife Fund. Floristic diversity in the California Floristic Province is highest in the Sierra Nevada and Transverse ranges (Richerson and Lum 1980). The rich biological diversity and high endemism are the result of adaptation and evolution in response to the highly varied topography, climate zones, fire regime, geology, and soils found in the Sierra Nevada. The region contains one of the most biologically diverse temperate conifer forests on the planet, with 27 different species of conifers and over 3,000 vascular plants, 400 of which only occur in the Sierra Nevada (Centers for Water and Wildland Resources 1996). About 300 species of terrestrial vertebrates, including mammals, birds, reptiles, and amphibians use the Sierra Nevada as a significant part of their range, with an additional 100 species occupying the bioregion as a minor part of more extensive ranges elsewhere (Id.).

One hundred thirty-five plant species and sixty-nine terrestrial vertebrate species found predominantly in the Sierra Nevada are considered at risk by state or federal agencies (Id.). These species are threatened by a variety of stressors – California's rapid pace of development, habitat loss, habitat degradation, new pathogens, competition from introduced invasive species, and disruption of essential ecological processes such as fire. The additional stress from expected changes in future climate and the synergy among stressors are likely to affect the Sierra

Nevada bioregion in ways not previously anticipated.

Land management planning on national forest lands in the Sierra Nevada offers a critical opportunity to define biologically appropriate protection and restoration strategies in this diverse region. With approximately 40 percent of the region comprised of national forest lands, the Forest Service is the largest land manager and oversees eleven national forests covering approximately 11.5 million acres. Thoughtful and forward thinking planning has the potential to positively influence a significant portion of the region. It is also timely to undertake a comprehensive review of biological resources in the region. Management activities on national forest are governed by their respective forest plans. The forest plans are intended to have a life time of about 15 years. The forest plans for the national forests in the Sierra Nevada were first adopted in the mid to late 1980s. Collectively, these forest plans have been amended three times since first adopted, and they are now ripe for a thorough review and revision. Forest Service leadership is in agreement with the need to revise the forest plans. The agency, in July 2012, released a draft revised forest plan for the Lake Tahoe Basin Management Unit and began in 2012 the process to revise three other forest plans (Inyo, Sierra, and Sequoia national forests). The Forest Service has adopted an ambitious schedule to revise a forest plan within three years of initiating the process.

In anticipation of the public dialogue about forest planning, our coalition developed the following conservation strategy for the national forests in the Sierra Nevada. The purpose of the strategy is to identify issues we believe to be a high priority to address during the process of revising forest plans and to suggest specific tools, methods, or actions to resolve or address these issues.

OUR FOUNDING PRINCIPLE: ECOLOGICAL SUSTAINABILITY

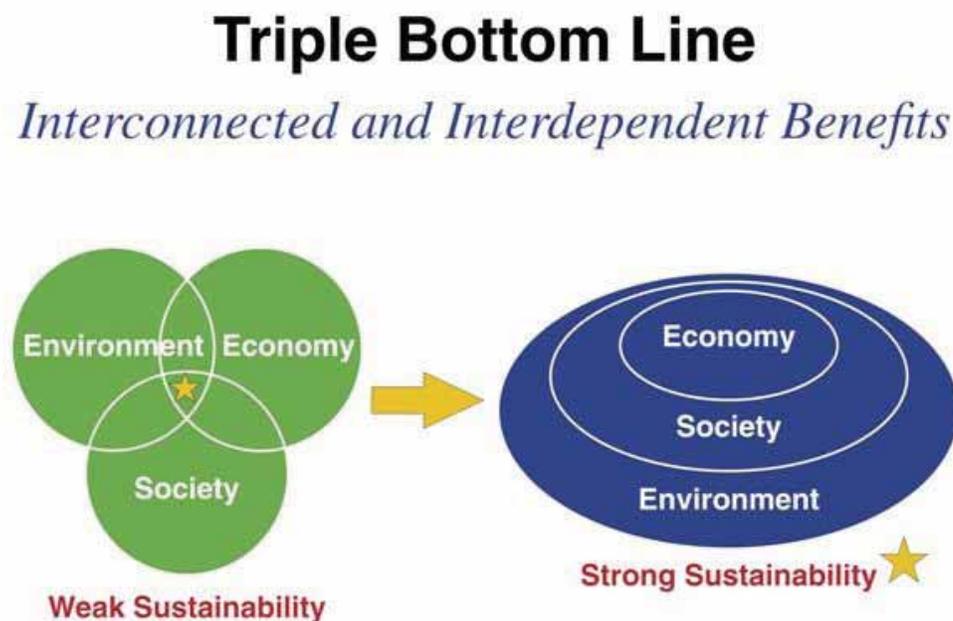
The concept of sustainability is central to any discussion of resource management (Orr 2002). The term generally suggests positive value in our culture, yet sustainability holds a highly variable meaning within various interest groups. While there is no universally agreed upon definition of sustainable management, the term is used widely throughout the world to support the need for improved management.

Commonly, the culture of resource management depicts decisions in a framework of social, economic and ecological choices framing the land manager's decision space. Such "three-legged stool" characterizations perpetuate the myth that humanity is outside the biological system versus limited by it (Dawe and Ryan 2003). The discipline of conservation biology correctly argues that we are biological organisms living in a biologically defined and limited planet. The ecosystem is the foundation upon which social structures and economic systems are built, and while important, social and economic structures do not exist as co-equal with ecological

needs. Rather, social and economic structures must fit within the biological system. This view has been characterized by Hart (1999), USDA Forest Service (2010) and others as strong sustainability. Strong sustainability "acknowledges that the human economy depends on people and social interaction. Society, in turn, cannot exist outside the environment which provides the basic necessities for people to exist: air, food, water, energy, and raw materials" (USDA Forest Service 2010).

Our values, in a broad sense, have been recorded in mottos such as "the greatest good for the greatest number in the long run" and "caring for the land and serving people," and in the Forest Service mission statement: "Sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations." What's missing is an understanding of the impossible demands of an overgrown population on a finite resource base—the American wildlands are in retreat, largely degraded and lack resilience due to unfettered economic demands and, until recently, the absence of enlightened ecological thinking.

Figure I-1. Weak versus Strong Sustainability. Adapted from USDA Forest Service (2010).



Sustainable growth is often confused with sustainable development. Based upon current levels of global climate stress, loss of wetlands, air and water pollution, and species extinctions, sustainable growth is clearly an oxymoron. Sustainable human cultures may still be a possibility if societies can grasp the need for what Orr (2002) calls a “graceful transition” to a downsized economy operating on renewable resources and with a shared understanding about the use of public trust resources such as water, air, soil, and wildlife.

We adopt in this conservation strategy the definition of ecological sustainability proposed by Callicott and Mumford (1997): “meeting human needs without compromising the health of ecosystems.” This definition is compatible with the goals of biological conservation and appropriately frames human demands on the ecosystem. A goal of this conservation strategy is to support sustainable management decisions that are firmly grounded on science-based ecological principles and that recognize the inherent value of the landscapes that contain the structures, composition and processes that support and enhance biodiversity, heterogeneity and complexity.

The primary focus of this strategy is to identify actions that protect and restore biological values on national forest lands in the Sierra Nevada. We also recognize that people work and recreate in and around national forest lands and require a safe environment for these pursuits. There may be instances where actions to accomplish protection and restoration also address public safety; however, we do not always expect this to be the case. In those instances where public safety requires actions that are not based on protection and restoration, those actions that we propose to address public safety will be ecologically sustainable.

CLIMATE CHANGE AND OTHER STRESSORS

The effect of humans on the Sierra Nevada ecosystems has been wide ranging for more than

150 years. Consumption and use of various resources (e.g., water, minerals, timber, forage) combined with patterns of human development and recreation have altered the composition, structure and function of the ecosystem. Climate change has become an emergent stressor that interacts with other demands that have been placed on ecosystems. This conservation strategy was designed to identify existing stressors, consider how they interact with each other, and propose actions to reduce the stress. The result of this approach is that actions to ameliorate the effects of a changing climate on important characteristics of the ecosystem (e.g., at-risk species, disturbance processes) are integrated into each section where appropriate. There is no single section for the conservation strategy that focuses on climate change as a stressor since its effect, along with other stressors, is pervasive. We promote in this conservation strategy several actions to ameliorate and adapt to the effects of climate change including:

- Assessing risk and vulnerability of key attributes or elements,
- Reducing fragmentation of habitat,
- Identifying climate refugia and other reserved areas,
- Reintroducing disturbance processes,
- Limiting the disruption of essential cycles (e.g., hydrologic cycle),
- Reducing other human induced stress resulting from over consumption or habitat degradation,
- Integrating science into management as the basis for future adaptation to management.

These actions commonly are recommended in the literature as “climate smart” approaches to management in a changing environment (Heller and Zavaleta 2009; USDI Fish and Wildlife Service 2010) and focus on increasing the ability of the system to adapt to change. We also address to a limited extent mitigations to reduce the demand for carbon or support carbon storage. The actions proposed to develop local economies for the use of

wood products can lead to a reduction in transportation costs. We also propose actions that we expect will create resiliency in the ecosystem and provide for carbon storage that fluctuates with desired levels of disturbance. The storage and emission of carbon is an essential process in forest systems and is especially important in fire dependent systems. Carbon is a fundamental building block in the creation of structure and habitat. The goal of this conservation strategy is to restore structure, composition and process to forest systems. Carbon as a reserve to provide mitigation or offsets for greenhouse gas production is viewed as a collateral benefit of a functioning forest ecosystem and does not drive restoration objectives.

DESIGN OF THE CONSERVATION STRATEGY

The conservation strategy is designed to address the role of structure, composition, and process of the ecosystems in the Sierra Nevada. Our goal is to design conservation actions integrated across scales in time and space that address our concerns about species at risk, disrupted cycles of disturbance, and other impacts of human activity on the landscape.

Each of the following sections follows a similar format. One to several issue areas are addressed in each section. Each issue area includes a statement that frames current trends and opportunities and proposes conservation actions to address concerns. The conservation actions are designed to be applied in one of four different types of decision making settings:

- Revising a forest plan,
- Decisions at the national forest level not directly addressed in a forest plan,
- Decisions made at the regional level of the Forest Service, and
- Decisions or actions undertaken by other agencies or groups.

The conservation actions defined for a forest plan revision specifically address the desired conditions, objectives, land allocations, and standards that we

recommend for inclusion in the revised forest plans for the Sierra Nevada. We view the desired conditions, objectives, land allocations, and standards as elements common to any plan; they provide direction and set priorities for action. We define these planning elements in the following way:

Desired Conditions: These statements describe the nature of the future environment that is desired. They are focused on conditions that the forest plan can influence.

Objectives: These are the specific state or condition to be achieved within the time frame of the plan. The objectives are linked to the achievement of the desired conditions.

Land Allocations: These are areas to which specific management direction and priorities have been assigned. These are also referred to as management areas.

Standards: These are practices or project design criteria that must be met or applied when developing and implementing projects.

Conservation measures have also been identified for a number of species at risk. Accounts for these species and the proposed conservation measures are located in Appendix A. These species accounts and conservation measures are referenced in various sections of the conservation strategy that address habitat issues for these species.

USE OF THE CONSERVATION STRATEGY THROUGHOUT THE FOREST PLAN REVISION PROCESS

The forest plan revision process will take several years to complete for all national forest in the Sierra Nevada. We also expect that new information will become available about resources in the Sierra Nevada during the period in which revisions are occurring. To accommodate the anticipated need to update information, we designed the strategy in

sections that can be updated independently or as a group. A revision date is noted on the footer of each page and will be changed following any revisions. This version and future revisions of the strategy will

be available on the Sierra Forest Legacy website (www.sierraforestlegacy.org) along with additional background information or recommendations for specific national forests when available.

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