

# A CONSERVATION STRATEGY FOR THE NORTHERN CHANNEL ISLANDS

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## INTRODUCTION

The National Park Service (NPS), U.S. Fish and Wildlife Service (FWS), and the National Biological Service (now U.S. Geological Survey, Biological Resources Division; USGS-BRD) assembled a team of biologists in September, 1994. Their charge was to develop a strategy for conservation of rare plant species and their habitats on the northern Channel Islands.<sup>1</sup> Of primary concern were 16 plant taxa that the FWS proposed for listing under the Endangered Species Act. Thirteen of the taxa were later listed as threatened or endangered.

The long-term goals of the team and the agencies are the restoration of the native island ecosystems and recovery of rare species. The conservation actions proposed by the team to achieve these goals will be applied by the NPS at several levels; ecosystem (litter accumulation, nutrient cycling, fire frequency), community (native and non-native plant density, shrub canopy cover), and species (fecundity, recruitment, mortality) levels.

## METHODS

The conservation team compiled and reviewed available literature and data relevant to the proposed species and their plant communities. Two public meetings were held to gather additional scientific data on the species, their habitats and distributions. On the basis of the literature and research reviews, the team developed interim and long-term recovery goals both for species and plant communities.

Quantitative standards were developed for measuring progress toward the goals.

The team published a 1996 draft Channel Islands National Park Technical Report titled "Conservation Strategy for the Northern Channel Islands; Volume 1: Community Assessments and Ecological Standards". Following completion of this document, the team will develop additional recommendations for management actions to achieve recovery goals on each island. These will be published in a second volume.

## RESULTS

Literature reviews, the listing proposal, and public meetings indicated a level of ecosystem degradation characterized by a reduction in geographic range for all species of concern and, for certain species, a reduction in reproductive success. Considering such widespread effects, the team chose to take an ecosystem-level approach to recovery planning. It was agreed that the best strategy for recovery of the species would be restoration of the ecosystem processes and habitat structures that support them. Because such a holistic conservation strategy addresses fundamental problems common to all terrestrial species of the islands, it contains added management benefits as well.

There are several major threats common to most native species and plant communities. These threats are the direct and indirect results of ranching-era land use

<sup>1</sup>The NPS is responsible for management of Santa Rosa, San Miguel and Anacapa Islands and the eastern 10% of Santa Cruz Island. The Nature Conservancy (TNC), a non-profit organization, owns 90% of Santa Cruz Island and is responsible for managing that portion of the island. Although not part of the conservation team, TNC shares the long-term goal of restoration of island ecosystems and native species.

practices of the last 150 years. The rare species have experienced degradation at the ecosystem level. Symptoms of this degradation are evidenced in:

- Fragmentation of populations into small, isolated units;
- Lack of reproduction or recruitment in populations;
- Soil loss that exposes root systems to damage;
- Lack of adequate seed banks and seed beds for regeneration from seed;
- On Santa Cruz and Santa Rosa Islands, continued rooting, browsing and grazing by ungulates that removes living plant tissue;
- For wildlife species, lack of adequate cover and forage for successful breeding and rearing of young.

Plant communities have experienced similar degradation, although the severity of effects depended largely upon the longevity and life history of the dominant species in each community. Documented effects on plant communities include:

- Reduction in native species cover, density and biomass;
- Increase in cover, frequency and biomass of non-native species, particularly annual grasses and short-lived perennial herbs;
- Lack of recruitment in dominant native woody species;
- Elimination of the soil litter layer and loss of seed banks;
- Excessive water runoff that results from insufficient vegetative cover and leads to soil erosion;
- Soil compaction, erosion and degradation of soil structure;
- Changes in the composition of soil microflora and microfauna;
- Lowered or altered rates and patterns of nutrient cycling;
- Loss of fire-induced successional communities due to inadequate fuels and lack of seed banks.

Rare plant populations and native communities on the northern Channel Islands share similar symptoms of decline; therefore they also share similar interim conservation goals that have been formed from holistic, landscape-wide management approaches designed to recover them. For individual native taxa, interim goals, as appropriate, include:

- Immediately increase reproductive effort and recruitment of new individuals into populations;
- Achieve increasing population growth rates over the next 10 to 15 years;
- Expand population boundaries.

A major landscape-level goal for the northern Channel Islands is to increase the range and connectedness of shrub and woodland communities while restoring species distribution, range, structure and function within all communities. For plant communities, specific interim goals for the next 10 to 20 years include:

- Increase cover, density and biomass of native taxa;
- Decrease cover, frequency and density of non-native species;
- Control or eradicate aggressive weedy species, both native and non-native;
- Develop a soil litter layer capable of holding a seed bank and functioning as a seed bed for germination;
- Reduce soil compaction and erosion rates;
- Restore the processes of nutrient cycling and fire across island landscapes.

The team developed specific quantitative recommendations on the level and rate of progress toward the above goals that should be achieved for each plant community.

## DISCUSSION

There are a range of management actions that can be undertaken to achieve recovery goals developed by the team. Recommendations for specific management actions are the next step in the conservation strategy process. The recommendations will be designed to reduce, mitigate, or eliminate threats to species and the plant communities that support them on all the islands.

Certain management actions, such as removal of alien animals, are effective at the landscape level and will effect substantial improvements in most native habitats. Past removal of alien animals from the islands serve as measures of the rate and type of restoration that can occur without additional intervention following removal. In some cases, additional management intervention, such as weed control or soil erosion control, will be needed to enhance landscape-level restoration. Such efforts should benefit the habitat of most or all of the rare plants. However, individual species may need additional management intervention at specific sites, if past impacts have been severe and prolonged. For instance, species with depressed reproduction may need focused efforts on propagation and establishment of new populations. In summary, the Conservation Strategy provides a framework for guiding recovery of ecosystems, communities, and rare species on the northern Channel Islands.

**Keywords:** California Channel Islands, conservation, recovery, rare species, landscape, community, ecosystem.