



Resource Management

Point Reyes National Seashore and the surrounding marine sanctuaries protect and support a diverse array of cultural and natural treasures. From the Coast Miwok people who shared the land with elk and mountain lions for more than 2,000 years to the courageous crew of the Point Reyes Lifeboat Station who shared the sea with migrating Pacific gray whales 100 years ago, the natural abundance of the Point Reyes region has attracted and supported people for thousands of years, creating a tapestry of stories, interactions and experiences that continue to shape cultures and to affect the land. Managing the entwined cultural and natural landscape of Point Reyes National Seashore is a balancing act as complex as the web of life it seeks to preserve.

Natural Resource Management

When Congress established Point Reyes National Seashore in 1962, the enabling legislation cited the importance to save and preserve “a portion of the diminishing seashore of the United States that remains undeveloped” in the public interest and to administer the Seashore “without impairment of its natural values . . . in a manner supportive of the maximum protection, restoration, and preservation of the natural environment.” Congress identified Point Reyes as a seashore of national importance because it was accessible to a large urban population center, relatively unspoiled, and because of the “great variety of scenery within a relatively small compass—ocean beaches, arid high cliffs, sand dunes and low but rugged mountains, forested areas and expanses of pasturelands, small fresh water lakes and ponds, and that delight of the geologist, the San Andreas Fault.” The great variety of natural resources continues to make Point Reyes a unique haven 30 miles northwest of San Francisco. Resource management staff work to preserve the natural ecosystems which Congress set aside for the benefit of future generations.

Today, the seashore has the largest active agricultural acreage of any national park. Two large historic ranching districts, comprising more than 28,000 acres, or about one-third of national seashore-administered lands, are active beef and dairy ranches. The seashore also contains almost 33,000 acres of former agricultural land now officially designated as wilderness under public law. This ranching legacy means that, even in areas designated as wilderness, there are existing dams, culverts, roads, and water infrastructure. The Natural Resource team employs science-based management to ensure that natural ecosystems

and native species—such as the northern spotted owl, purple needle grass, and steelhead trout—are identified, protected, and perpetuated in this unique environment with a complex history of use. It accomplishes this goal in part by preserving lands, waters, and watersheds with natural processes and cycles, mitigating the environmental impact of current uses, and restoring lands and waters altered by past uses to more natural conditions wherever possible. Restoration of ecological and hydrological processes to a more naturally functioning state encompasses rehabilitating watersheds, native plant communities, native wildlife species, natural geomorphic processes, and coastal waters.

Science-informed Decision Making

In addition to preserving and restoring habitat, staff conducts inventory, monitoring, and research of the national seashore’s natural resources and associated processes. Over 45 percent of North American avian species and nearly 18 percent of California’s plant species are found in the park. The Biological Resource Management Division of the National Park Service reported that in Fiscal Year 2006 Point Reyes National Seashore contained 27 federally protected endangered and threatened species. Staff develops and implements recovery plans for the 50 federal, state, and locally listed species that occur in grasslands, forests, scrub, dunes, and wetlands throughout the seashore. The NPS calculates the percentage of threatened and endangered species improving at each park as a measure of effective natural resource management. In Fiscal Year 2006, the national seashore reported 14.81 percent of special status species as improving, while the national average was 43.68 percent. However, the seashore’s 27 special status species in Fiscal Year 2006 ranked sixth highest in the National Park Service, and the seashore may have more species improving than parks with a smaller number of special status species. Point Reyes National Seashore has led efforts to focus on a more institutionalized approach to data collection and inventory and monitoring at local parks. It hosts a team focused on the San Francisco Bay Area parks that has established protocols for monitoring species such as the Myrtle’s silverspot butterfly and the western snowy plover.

The establishment of an inventory and monitoring program has provided park managers with critical data on which to base decisions for listed fish species, western snowy plovers, and northern spotted owls. The national seashore also has an active internal monitoring program. For example, tule elk are a special

Park staff and volunteers perform daily monitoring of fish populations at Point Reyes National Seashore. PHOTO BY KRISTIN GILLISS



An NPS range technician discusses a head cut repair with the Point Reyes roads foreman. Point Reyes National Seashore has partnered with ranch operators, community organizations, and state and federal regulatory agencies to study the effectiveness of 10 demonstration best management practices at reducing non-point source pollutant delivery from the pastoral lands administered by the seashore to the Tomales Bay watershed as part of a cooperative effort to improve water quality on NPS rangelands. PHOTO BY KRISTIN GILLISS

status species reintroduced to Point Reyes National Seashore in 1978. Since then, elk numbers have increased from 10 animals to more than 500, one of the largest populations in California, with a free-ranging population of about 50 animals in the Limantour Wilderness area of the seashore. The reintroduction of this free-ranging herd is an important step in the ecological restoration of the park, but both herds require adaptive management based on constant monitoring of population dynamics and disease. The population's success to date is an indicator of the positive impact of staff and volunteer monitoring efforts. Program managers at the national seashore actively seek to mitigate threats to special status species and believe some species may be improving. Additional data and active management is needed to fully understand whether populations are stable or increasing. Staff would like to increase documentation and analysis efforts with additional resources. For example, while rare plant species have comprehensive baseline data, staff members lack the ability to collect data to determine status and trends of populations.

Maintaining the diversity and resilience of native species includes detecting, controlling, and mitigating or eradicating non-native plant and animal species to promote naturally functioning ecosystems. Scientists at the national seashore have identified non-native axis and fallow deer and non-native plants such as Cape ivy, broom, beachgrass, iceplant, and jubata grass as priority species to target for control or eradication. National Park Service funding spent on invasive species control is second only to wildfire management. The presence of these invasive species threatens native flora and fauna at Point Reyes National Seashore, and time spent minimizing the impacts of non-native species limits staff's ability to focus on recovery plans for rare animal and plant species. The NPS's California Exotic Plant Management Team provides support to the seashore's vegetation team to control and eradicate invasive plant species. In Fiscal Year 2007, the seashore will initiate an ambitious 15-year effort to remove all non-native deer within seashore boundaries.

A Holistic Approach to Managing Natural Resources

Natural Resource Management staff members often work closely with Facility Management staff to ensure the built environment at the seashore protects native resources. For example, the seashore's hydrologist will review a proposed culvert replacement to ensure the new design will allow fish passage. When possible, Resource Management staff seeks to improve rather than

maintain existing design. In this example, the hydrologist might suggest replacing a failed culvert with a bridge if it would greatly enhance fish habitat and passage.

Natural Resource staff is eager to collaborate with other national seashore divisions to identify innovative solutions to address human-caused resource degradation. This commitment to improving resources necessitates significant time dedicated to planning and compliance for projects ranging from small-scale soil mitigation to large habitat restoration projects. While an increased project budget has enabled staff to accomplish goals related to resource stewardship, staff has spent increasingly more time on the administrative aspects of compliance related to projects. This time limits the ability of personnel to focus on program-related work. Staff would like to work more closely with other divisions, but they have limited project availability due to resource constraints as well. For example, the range program might save time if the Roads Branch used the auger on the back of its heavy equipment to bore holes in the ground for fence posts rather than the range manager digging them manually, but the Roads Branch may not have staff available to support outside projects in addition to regular operational duties. Project completion for other resource management projects may depend upon hiring an outside contractor, ultimately increasing the cost of projects, versus having work performed by seashore personnel.

The national seashore's commitment to both protecting water resources and restoring native vegetation converge in the Natural Resources Division's range management program. Commercial agricultural activities, such as livestock grazing, dairy farming, and horse ranching, operated by private tenants on ranching lands under special use permits and reservations of use from the seashore have a great impact on the native species and local watersheds. Point Reyes National Seashore's ranching zone is administered in a manner that preserves the seashore's cultural landscape and natural resources by incorporating best management practices into ranching activities. This includes demonstration projects and the creation of customized ranch unit plans. These plans will include steps to minimize soil erosion, protect surface water from increased sediment loads, and restore deteriorated rangeland resources when feasible. For example, in Fiscal Year 2006 the seashore supported a project at Kehoe Ranch to restore a polluted natural spring by relocating a drinking trough to a better location and introducing solar pumps to supply it. The

NATURAL RESOURCE MANAGEMENT OPERATIONAL PRIORITIES

Preserve and Protect natural resources to restore natural hydrologic and ecological processes.

The Giacomini Wetlands, Coastal Habitat, and Drakes Estero Coastal Watershed Restoration Projects and Non-Native Deer Management Project demonstrate the national seashore's commitment to restoring ecological and hydrological processes to a more naturally functioning state. These projects include restoration of watersheds, native plant communities, native wildlife species, and natural geomorphic processes.

Manage, control, and remove non-native invasive plant and animal species to promote naturally functioning ecological systems.

Invasive plant and animal species threaten native flora and fauna at the national seashore. Staff has identified non-native deer and non-native plants such as Cape ivy, broom, beachgrass, iceplant, and jubata grass as priority species to target for control or eradication.

Manage special use permits in the Ranching Zone to promote stewardship and improve resource condition.

Staff will manage ongoing agricultural activities in a manner that employs planning and best practices to improve resource condition. This entails development of ranch unit plans, resource condition and water quality monitoring, permit oversight, and identification of improvement projects.

CULTURAL RESOURCE MANAGEMENT OPERATIONAL PRIORITIES

Build a more robust archeology program.

Point Reyes National Seashore is the site of a rich pre-historic and maritime history that has yet to be fully explored. Increased resources would enable staff to inventory and find new archeological sites, including locating and recovering artifacts from the wreck of *San Agustin*.

Increase access to museum collection.

The creation of finding tools and website aids will enable staff to make the seashore's museum and archive collection accessible to staff, researchers, and the public.

area was also seeded with native plants by a volunteer team. The rancher reports that the relocated trough is much healthier for the cows, and the range manager believes the spring and range are in greatly improved condition.

Funding Mechanisms and Future Challenges

Increased professionalization of the Natural Resource staff has benefited the program areas dramatically, but it has also increased salary costs in the division and therefore limited hiring flexibility for additional non-permanent staff. In Fiscal Year 2000, 84 percent of the Natural Resource Management Division's appropriated base budget was allocated to salaries for permanent full-time staff. In Fiscal Year 2006, 99 percent of base funding expenditures were salaries for six permanent employees. One consequence of limited funding flexibility has been an increased need for program managers to identify alternative fund sources for projects and additional staff. Natural Resource staff has excelled at competing successfully for outside grants and project funds within the National Park Service. While the Natural Resource Management Division has only six staff whose salaries are supported by appropriated base funds, more than 30 employees comprise the division. In addition to positions supported through outside grants and federal project money, the division manages regionally and network-funded positions hosted by Point Reyes National Seashore focused on exotic plant management, fire planning and management, aquatic ecology, and inventory and monitoring.

Natural Resource Management staff members believe past projects have increased the level of knowledge about the park's resources dramatically, but maintaining current staffing levels will be difficult without additional base funding. Many non-base-funded staff perform tasks critical to the seashore's present operations. For example, preservation of the national seashore's water resources includes habitat enhancement and restoration projects; water quality monitoring and restoration; and monitoring and management related to fisheries. Staff also collaborates on watershed-scale planning and restoration within and adjacent to the seashore's boundaries. Currently, however, there is only one base-funded position in the Natural Resource Management Division focused on the seashore's extensive water resources. Supporting positions dedicated to these activities have been funded by grants, partner organizations, or regional funding for the portion of time allocated to Point Reyes National Seashore. However, implementation of large-scale wetland and



"We preserve history and facilitate the research needs of the park and the public. I feel strongly that the museum program can work with the park and partners to facilitate modern research needs. People want to see change over time. It's one of the places where researchers can see change over time by studying specimens, objects, and documents. I love working here because I can connect people to resources. To be able to connect any type of researcher, from a person researching their genealogy, to PhDs to park staff. It's our mission to preserve history, but it's also important to allow people to use the resources."

—Carola DeRooy, Archivist
PHOTO BY DAVID MIYAKO

riparian projects is an ongoing need to preserve and protect native aquatic resources, and water quality is an overarching issue for the ecological health of the seashore. In addition, the national seashore will continue to manage special use permits in the ranching zone to promote stewardship and improve resource condition. The range manager is presently funded by fees received for special use permits; however, the range technician is only a

two-year position funded by grants from the state of California and PRNSA, even though the position is critical to the completion of projects and ranch unit plans. As senior program managers in water resources, vegetation, and wildlife are increasingly obligated to identify and compete for external funding for both staff and projects, their expertise is diverted from managing and preserving the natural resources at the national seashore.



Student interns collect data in the field at Point Reyes National Seashore. NPS PHOTO



Instilling the role of science in decision making to the next generation and the public is a primary role of the Pacific Coast Science and Learning Center. NPS PHOTO

PACIFIC COAST SCIENCE AND LEARNING CENTER

The Pacific Coast Science and Learning Center (PCSLC) is one of 17 research learning centers at national parks. It was established at Point Reyes National Seashore in 2001 to increase the scope and effectiveness of research toward science-based management and preservation of coastal resources. The PCSLC promotes research partnerships with universities and research groups and informs a wide range of audiences about new research pertaining to the resources of coastal parks.

The Pacific Coast Science and Learning Center connects scientists with national parks and science with people. The PCSLC combines existing facilities with the skills of researchers and education specialists to develop and share scientific information for park management and public learning. These efforts help to reduce the backlog of high-priority research needs. From 2002 to 2007, non-federal funds raised for research, management, and education by the PCSLC totaled \$1,053,000. The research enabled by the PCSLC has expanded the national seashore's ability to inventory, monitor, and care for the historical and natural resources under its care. The PCSLC also oversees several of the inventory and monitoring program's marine and coastal projects. With the help of volunteers and partners, this program provides scientists and managers with baseline information and long-term trends within Point Reyes National Seashore ecosystems.

PCSLC facilitates research at the national seashore by overseeing processing, permitting, and documentation of researchers. Research projects at Point Reyes more than doubled from 53 in 2002 to 113 in 2006. Researchers are provided with support to assist the National Park Service with understanding, managing, and preserving coastal ecosystems. The PCSLC is a field station for collaborative research activities, providing researchers with laboratory, office, and dormitory facilities and access to park's extensive biological and cultural datasets. Since 2005 the PCSLC has provided more than 2,000 researcher-nights to scientists working on resource management questions at the seashore. Access to park data and other amenities enables researchers to make maximum use of their time and project funds. The PCSLC works to ensure a high rate of interaction exists between researchers and park staff. The PCSLC also connects researchers with high school and college students seeking high-quality internships and exposure to scientific research. For example, more than 40 interns have worked one on one with researchers since 2003.

While the PCSLC serves the needs of all national park sites within the San Francisco Bay Area including Golden Gate National Recreation Area, John Muir National Historic Site, Pinnacles National Monument, Eugene O'Neill National Historic Site, the Presidio of San Francisco, Fort Point National Historic Site and Muir Woods National Monument, most effort is focused on marine and coastal projects and programs. For example, in 2006, the PCSLC provided logistical, financial, planning, or permitting support to 100 percent of researchers at Point Reyes National Seashore and 66 percent of researchers working at Bay Area national parks.

PACIFIC COAST SCIENCE AND LEARNING CENTER OPERATIONAL PRIORITIES

Prioritize research needs of the park based on park planning, management, and restoration activities and promote access/provide inducements (housing, interns, seed funds) for researchers in those areas.

The PCSLC will identify emerging research needs at the national seashore and facilitate the use of national parks for scientific inquiry, particularly in high-priority research areas.

Engage in the state of California's Marine Life Protected Area Act planning process.

Scientists and staff at Point Reyes National Seashore remain committed to ocean and coastal stewardship. They will continue to collaborate with federal, state, and local stakeholders to support the science-based identification, assessment, and establishment of marine protected areas off the coast of Point Reyes National Seashore and Golden Gate National Recreation Area and promote research and monitoring programs to assess their efficacy.

Develop a science communication plan.

To support science-informed decision making, PCSLC will increase access to research information, including inventory and monitoring of natural resources, to the public, the scientific community, and Point Reyes National Seashore managers. This may be done through science communication interns, stronger ties to National Marine Sanctuaries and the Point Reyes Interpretation Division, science seminars, development of research briefs, and more.



RECENT AND UPCOMING HABITAT RESTORATION PROJECTS

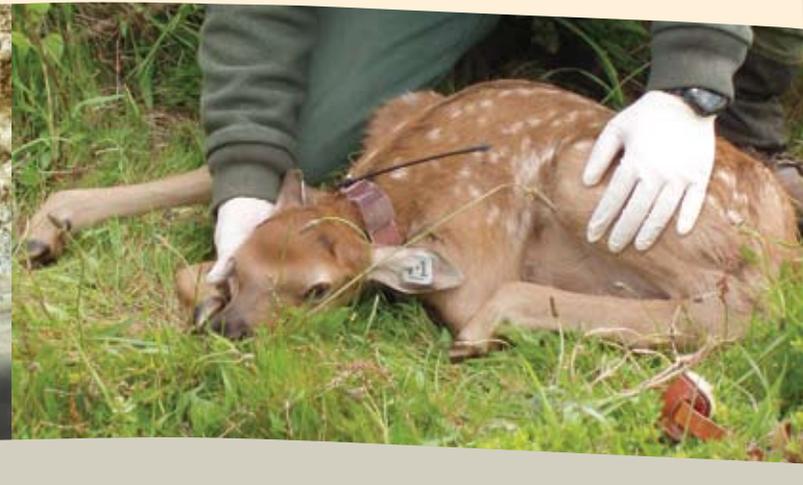
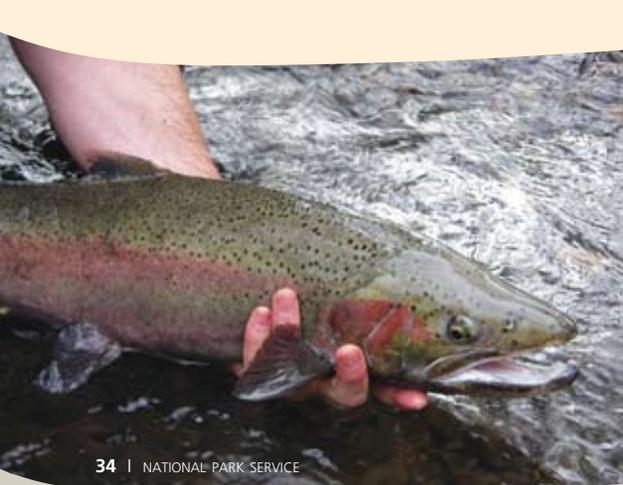
Giacomini Wetlands Restoration Project

The project is the largest restoration project in Point Reyes National Seashore history. It is designed to restore 550 acres of a historic salt marsh that was diked in the 1940s to allow for a dairy ranch.

Coastal Habitat Restoration

Restoration of the national seashore's coastal habitat and processes will protect numerous listed plant species and the federally threatened western snowy plover which nests on seashore beaches. Line item construction will restore 300 acres; National Park Service funds will restore 80 acres near the Point Reyes Headlands; other grants are pending for additional acres parkwide.

Left: Gumplant is native to the coastal dunes and salt marshes of the national seashore, PHOTO ©KATE PETERLEIN; Below, left to right: ocean run steelhead at Pine Gulch Creek; park biologist examines elephant seals; newborn tule elk calf after radio collaring. NPS PHOTOS



RECENT AND UPCOMING HABITAT RESTORATION PROJECTS (continued)

Drakes Estero Coastal Watershed Restoration Project

The project includes a number of specific physical treatments within five coastal watersheds, all draining into the Drakes Estero system, the centerpiece of Point Reyes National Seashore and one of the most ecologically significant estuarine areas in the state of California. The project will remove or replace nine facilities (culverts and dams) currently in various states of disrepair and restore natural conditions and increase estuarine habitat. The project will reduce the maintenance demands at Point Reyes, eliminate the risk of catastrophic failure of culverts and dams, and increase sustainability, both operationally and ecologically, within these small coastal watersheds. Overall, the project will restore fish access to 20 miles of streams.

Right: Mudflats at Drakes Estero, PHOTO ©SUSAN VAN DER WAL; Below, left to right: California red-legged frog, NPS PHOTO; male western snowy plover with chicks, PHOTO ©CALLIE BOWDISH; showy Indian clover, thought to be extinct until 1993 when it was rediscovered in Sonoma County, one of only two experimental populations in the world grows within the national seashore where an experimental population was reintroduced and is monitored by vegetation staff, NPS PHOTO BY JANE RODGERS; coho salmon smolts at Redwood Creek NPS PHOTO.





Kule Loklo, near park headquarters at Bear Valley, is a replica of a Coast Miwok village that features a sweat lodge, a dance house, tepee-shaped structures, and shade arbors, used by local Indians for religious ceremonies and reunions. NPS PHOTO

Cultural Resource Management

The national seashore's cultural resources reflect more than 2,000 years of human history and interaction with the land, including archeological sites, historic structures, ethnographic resources, cultural landscapes, and historic objects and archives. A team comprised of an archivist, curator, and archeologist researches, collects, and preserves other park history ranging from European exploration to wireless communication. The national seashore museum collection includes an archive of almost 500,000 items such as documents, photographs, and maps related to park administrative and resource management records and 14,000 objects related to cultural and natural history. The museum also manages the seashore's library. Point Reyes National Seashore has received excellent ratings from the National Park Service for the percentage of museum standards being met. In Fiscal Year 2006, the national seashore met 81.37

percent of museum facility standards compared to the national average in the NPS of 69.72 percent. The establishment of a museum and the professionalization of cultural resource staff over recent years have enabled the seashore to expand its focus from archiving items and objects to providing access to those items for researchers, staff, and visitors. In the future, staff plans to create finding aids and provide web access to the national seashore's collection. While staff manages Coast Miwok archeological sites and catalogs the physical remnants of the indigenous culture, the seashore itself is a living history to be experienced by visitors. Kule Loklo, a recreated village, provides a place for seasonal tribal events, and operating beef and dairy ranches capture California's rich agricultural history.

The development of a more robust terrestrial and maritime archeological presence is a chief priority of the Cultural Resources



Some of national seashore's dairy and beef producers in the "Ranching Zone" are fourth-generation farmers and ranchers. Today, park managers are also interested in exploring how livestock might be managed to reduce weeds and enhance native species in the national seashore. NPS PHOTO

Division. Coast Miwok archeological sites and artifacts, the 1595 wreck of the Manila Galleon *San Agustin*, and sites believed to be related to the landing of Sir Francis Drake in 1579 are considered fundamental resources of Point Reyes National Seashore. Currently, an archeologist is on staff at the national seashore fewer than two days each week. This deficiency is reflected in the seashore's Fiscal Year 2006 Budget Scorecard result: 14.61 percent of the seashore's archeological sites were listed in good condition compared to the national average of 63.75 percent of sites. The very below average score is partly a result of staff's efforts to document and address the sites in worst condition first; however, management believes its present archeological capacity makes it difficult to improve this score significantly. The majority of identified archeological sites at the national seashore are not in stable condition, either because of erosion along coastal bluffs or because they are located in active agricultural zones where

there is a higher potential for destruction. Preservation efforts are limited by resource constraints and data recovery efforts at sites is usually not possible. An enhanced archeological presence at the seashore could dramatically augment knowledge of maritime and prehistoric history at Point Reyes National Seashore by increasing staff's ability to preserve sites and recover data.

As cultural resources are identified, protected, and preserved, staff works closely with the Natural Resource Management team to ensure cultural resources and landscapes are managed in a manner that protects or improves the health and integrity of natural resources. Cultural and Natural Resource Management staff are currently developing a comprehensive resource stewardship strategy to provide science- and scholarship-based strategies to achieve and maintain the desired conditions of the national seashore's natural and cultural resources.