

# CHAPTER 1: PURPOSE AND NEED

## Introduction

In conformance with the National Environmental Policy Act (NEPA, Public Law 91-190, 42 USC 4321-4347), this Draft Environmental Impact Statement (DEIS) has been prepared to assist the National Park Service (NPS) in development of a Non-Native Deer Management Plan for Point Reyes National Seashore (referred to as “Seashore,” “PRNS,” or “park”), and for lands administered within Golden Gates National Recreation Area (GGNRA) by the Seashore. Through the NEPA review process, a series of alternatives for non-native deer management will be examined through “appropriate participation by the public; the application of scholarly, scientific, and technical information in the planning, evaluation, and decision-making processes; the use of NPS knowledge and expertise through interdisciplinary teams and processes... (NPS 2001b).

NPS management policy guidance states that all proposed wildlife management goals and techniques must be described in writing in the form of management plans (NPS 2001, §4.4.4.2). The selected alternative will become the Seashore’s non-native deer management plan and direct the management of all axis deer (*Axis axis*) and fallow deer (*Dama dama*) within PRNS and Seashore-administered portions of GGNRA.

## Need

The need for action is a review of the existing problems, regulatory guidance, and concerns related to the presence and management of the non-native deer in PRNS and GGNRA. It lays out the reasons why axis and fallow deer are problematic and why a management plan is needed. In this case, impacts of non-native deer on the native ecosystem in the park and regulatory policies indicate the reduction or elimination of these species is needed. The alternatives investigate the degree of removal required and the means to do so.

The Seashore is a unit of the National Park Service (NPS), and so follows the policies of that agency. The primary mission of the National Park Service is the preservation of resources, including natural resources, in an unimpaired condition. In its 2001 Management Policies, the NPS provides park units with the specifics of what this mission means to resource managers. For example, the 2001 Policies direct parks to “re-establish natural functions and processes in human-disturbed components of natural systems (sec 4.1.5).” This same section includes non-native (also called “exotic” or “alien”) species as an example of a human-caused disturbance that can have severe impacts on natural biota and ecosystems.

Parks are specifically mandated to control exotic species “up to and including eradication” of a population if that species does not meet an identified park purpose and if such control is “prudent and feasible.” Only through the removal of exotics and other changes resulting from human disturbance can the NPS return its park units to the most natural condition possible and meet its mandate to preserve them in this condition for future generations.

The presence of non-native axis and fallow deer is the result of human activities and is disruptive to many elements of the natural ecosystem at PRNS. Some of the more serious effects these non-native deer have at the Seashore include possible competition with, and displacement of, native tule elk and black-tailed deer (particularly in high deer density or low forage conditions), the potential for transmitting disease to these native ungulates, and heavy use of and resulting impacts to riparian habitat and presumably to the native wildlife dependent on this habitat.

Tule elk in particular may be sensitive to the presence of fallow and axis deer for several reasons. All three species are primarily grazers, and so may be competing for food and habitat. Anecdotal evidence suggests fallow deer are more aggressive than other deer or elk at PRNS and so may displace them when the species compete for forage. In addition, both tule elk and black-tailed deer are susceptible to paratuberculosis, which is carried by axis and fallow deer at the Seashore, and which is aggravated by herding or crowding. Both species of non-native deer gather in herds, and both are rapidly increasing at PRNS. Prevalence of paratuberculosis was about 10% and 8% in axis and fallow deer, respectively, during the most recent survey (Riemann et al. 1979).

The Seashore has re-introduced tule elk to the park because they are the historically dominant native herbivore in California coastal and central grasslands from Shasta County southward to Santa Barbara County. In 1998, PRNS re-introduced free-ranging tule elk to the Limantour wilderness area of the Seashore. This elk herd currently numbers 38 animals, but resource managers are concerned that they may be kept from fully occupying habitat in PRNS by competition from fallow and/or axis deer. The NPS Management Policies requires parks to consider the removal of exotic species when they interfere with the restoration of natural systems, including restoration of native plants or animals (sec. 4.1.5).

The native ungulates (deer and elk) in the park are not the only wildlife that may be affected by axis and fallow deer. Fallow deer are known to cause reduction or local extinctions of small mammals that rely on the same ground-level grasses and forbs as the deer (Putman et al. 1989). Both axis and fallow deer browse shrubs when grasses are not available, and alter riparian cover and vegetation through browsing and the creation of trails. Loss of riparian habitat can affect a number of species at PRNS, including several special status species, such as the California red-legged frog, Coho salmon, and steelhead trout. It is for reasons like these that both the joint PRNS/GGNRA General Management Plan and the Point Reyes Resource Management Plan direct park staff to protect existing ecosystems and reduce or eliminate exotic plants and animals (see Relationship to Other Federal Laws, Plans, and Policies for more information).

Fallow and axis deer also affect Seashore ranchers by damaging fences, through depredation of pasture and supplemental livestock feed, by overgrazing fallow fields, and through a possible increase in the risk of disease transmission. Populations of both species of deer have increased in recent years and the range of fallow deer appears to be expanding eastward, towards and beyond Seashore boundaries. This population and range expansion, if allowed to continue, could mean these same types of impacts would occur on private and public lands outside PRNS. Currently, the population of axis deer and fallow deer are about 250 and 860, respectively. An expanding deer herd would also adversely affect riparian areas currently being restored outside the park.

The cost to the park for staff, equipment, vehicles, and supplies to monitor and manage non-native deer currently totals approximately \$140,000, or 2.5% of the park annual budget. The diversion of staff and money to the management of an exotic species is at the expense of preservation and the re-establishment of native species and habitat at the Seashore.

## **Purpose and Objectives**

The purpose of this management plan is to define management prescriptions for non-native deer management. Both the park's General Management Plan (GMP) and Resource Management Plan (RMP), identify goals for management of these exotic species. The park RMP (NPS 1999) indicates that: "Regardless of potential competition and disease issues, the presence of these non-native deer compromises the ecological integrity of the Seashore and the attempts to reestablish the native cervid fauna comprising tule elk and black-tailed deer" and notes that three scientific panels comprised of

federal, state, and university researchers and managers recommended the removal of nonnative deer to promote native deer and elk.

As noted above, the primary problems associated with the presence of these non-native deer are:

- their interference with native species and native ecosystems,
- conflicts with the laws, regulations, and policies of the National Park Service regarding restoration of natural conditions and native species, and
- impacts on ranchers in the park and on park operations and budget, along with the potential for each of these to increase as the population expands beyond park boundaries.

The objectives of the plan are to solve these problems. In other words, objectives are the specific goals of the plan.

The objectives of the plan are:

- To correct past and ongoing disturbances to Seashore ecosystems from introduced non-native ungulates and thereby to contribute substantially to the restoration of naturally functioning native ecosystems.
- To minimize long-term impacts, in terms of reduced staff time and resources, to resource protection programs at the Seashore, incurred by continued monitoring and management of non-native ungulates.
- To prevent spread of populations of both species of non-native deer beyond Seashore and GGNRA boundaries.
- To reduce impacts of non-native ungulates through direct consumption of forage, transmission of disease to livestock, and damage to fencing to agricultural permittees within pastoral areas.

## **Background**

### *Management of Axis and Fallow Deer*

Axis deer (*Axis axis*) are native to India and Sri Lanka. They are typically found in large herds of up to 150 animals in agricultural pastures and open grasslands intermixed with low, open scrub. Axis deer are considered grazers, with grasses making up the bulk of their diet, although they eat increasing amounts of forbs during the dry season. Eight axis deer were purchased from the San Francisco Zoo by a local landowner and released on the western slope of Inverness Ridge in 1947 for hunting purposes. By the time the Point Reyes National Seashore was established in 1962, the axis deer population was well established, with an estimated population size of several hundred. Today the herd numbers approximately 250.

European fallow deer (*Dama dama*) are native to Asia Minor, the southern Mediterranean region, and possibly northern Africa. Like axis deer, fallow deer are considered grazers, eating predominately grasses during most of the year and increasing their intake of forbs during times of low forage availability. This species also congregates in large herds of up to 140 animals. Twenty-eight fallow deer were introduced by the same landowner to the area over the period of 1942 to 1954. By 1973, there were an estimated 500 animals. Today the population is approximately 860.

Population management of fallow and axis deer did not begin until 1968 (Gogan et al. 2001). Until this time, only small numbers were shot by ranchers. From 1968 through 1971, in a more concerted effort to reduce population size, ranchers in the Seashore removed 256 axis and fallow deer under California Department of Fish and Game (CDFG) permits (Wehausen and Elliott 1982).

In 1971, NPS closed the Seashore to public hunting. An interim management plan was implemented in 1973 in conjunction with CDFG, linking population control to research on deer-borne diseases and competition between deer and cattle (NPS 1973). CDFG issued NPS a scientific collecting permit and indicated control was to be accomplished by NPS staff (Buckmann 1973). In 1973, a two-year disease survey conducted by the CDFG resulted in the collection and necropsy of 290 axis, fallow, and black-tailed deer. The researchers found evidence of exposure to several livestock diseases in both non-native species and a high incidence of liver flukes in fallow deer (Brunetti 1976, Elliott 1976a). One axis buck was captured and donated to M. Hoffman, a private citizen, in June 1976 under permit from CDFG. The buck died soon after release into an enclosed facility and no further deer were relocated (CDFG 1976).

In 1976, an informal management plan was approved to limit populations of each species to 350 through “tenant rancher permits” and, as needed, ranger culling (National Park Service 1976). State law required that ranchers donate all meat collected in such depredation hunts to charity (NPS 1984). A Point Reyes National Seashore/Golden Gate National Recreation Area Citizen’s Advisory Committee later that year recommended that population control take place through ranger culling only, without public or rancher hunting (NPS 1984). The chosen target population levels of 350 were based on estimated 1973 populations and future target populations were stipulated to depend on axis and fallow deer carrying capacities, to be determined through further research. A cooperative research program with CDFG, which extended through 1980, resulted in collection and necropsy of 586 more deer with the carcasses donated to charity (Gogan et al. 2001).

In 1976, a portion of the Seashore was designated as wilderness (Public Law 94-544, 90 Stat. 2515 and Public Law 94-567, 90 Stat. 2692), and from 1980 to 1984 control of non-native deer was expanded beyond the pastoral areas of the park into wilderness. PRNS rangers culled a total of 513 deer in 1981 through 1983 (NPS 1984). Venison was donated to the California State Penitentiary at San Quentin and St. Anthony’s Charity in San Francisco (NPS 1984b).

In 1984, with direction from the Assistant Secretary of the Interior, NPS proposed initiating public hunts for exotic deer, in cooperation with CDFG (NPS 1984b, Gogan et al. 2001). The idea met with strong public opposition and was never pursued. In 1990, those institutions receiving donated venison notified NPS that they could no longer pay for the transportation of carcasses from the Seashore to the processing plant. NPS assumed these costs and the number of deer culled declined. Funding difficulties and controversy over the culling in the media led to discontinuation of the deer control program in 1994. Since then, 2-5 non-native deer have been culled every year and donated to the local Native American tribes for use during traditional ceremonies. In 2000, 9 fallow deer and 7 axis deer were collected as part of an NPS disease survey. Lung and intestinal parasites were found as well as evidence of exposure to anaplasmosis and leptospirosis, two livestock diseases. One collected axis deer was positive for paratuberculosis or Johne’s disease (NPS unpublished data). It is estimated that since 1968, over 2,900 axis and fallow deer have been collected from the Seashore (NPS unpublished data, Gogan et al. 2001).

## *Regulatory Background*

This section identifies in more detail the laws, policies, and regulations that are prompting the Seashore to take action to return the park ecosystem to a more natural condition.

As noted above, the primary mandate of the National Park Service is to preserve park resources and values unimpaired for future generations. This mandate comes from the law that established the National Park Service called the Organic Act (16 USC 1). Park units are prohibited from taking actions that would result in impairment to park resources or values, and findings in the environmental impact statement are used as a basis for determining whether such impairment is possible if action is taken. Similarly, parks are

obliged to take action to eliminate actions that are resulting in impairment (2001 Management Policies, sec. 1.4.7). Impairment is defined as an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values (NPS 2001).

Although it is not automatic that the presence of a non-native species would impair native park resources, invasive or wide-spread exotic species are recognized by the NPS as having the potential to severely disrupt or harm the integrity of natural ecosystems in park units. Non-native species are defined as those that did not evolve in concert with the species native to an ecosystem, and occupy it as the result of deliberate or accidental human activities. As noted above, the 2001 Policies direct managers to restore natural ecosystem functioning that has been disrupted by past or ongoing human activities. The 2001 NPS Policies specifically require managers to manage all non-native species not maintained for an identified park purpose, up to, and including eradication, if control is prudent and feasible and the species “interferes with natural processes and the perpetuation of natural features, native species or natural habitats.” In addition, high priority is mandated for the management of “exotic species that have, or potentially could have, a substantial impact on park resources, and that can reasonably be expected to be successfully controllable” (Section 4.4.4.2).

Adherence to NPS Management Policies is mandatory for every NPS unit unless specifically waived or modified by the Secretary of the Interior, the Assistant Secretary of the Interior, or the Director of the NPS. As such, Point Reyes National Seashore is required to evaluate current non-native deer management practices for potential impairment; develop a non-native deer management plan and EIS to determine whether an impairment is possible; restore natural ecosystems to the extent possible; and consider removal, up to and including eradication, of non-native deer.

Beyond the provisions and requirements of the Organic Act and NPS Management Policies, the Seashore is guided by the Wilderness Act, the Act that established wilderness at Point Reyes National Seashore, plans and policies of PRNS and other relevant laws, policies, and regulations. Each of these is discussed in more detail in the section on federal laws, plans, and policies below. However, a few particularly relevant laws and policies are summarized here.

About 35%, or 32,000 acres of the Seashore is either designated or proposed wilderness and is managed under the Wilderness Act and its regulations. Wilderness lands are generally undeveloped and show little or no influence of humans. They are protected or managed to preserve natural conditions. The NPS Management Policies regarding wilderness indicate parks should “seek to sustain the natural distribution, numbers, population composition, and interaction of indigenous (e.g. native) species.” Management actions in wilderness are restricted to those “necessary to correct past mistakes, the impacts of human use, and influences outside of wilderness boundaries (6.3.7).” The legislation designating 25,370 acres at PRNS as wilderness and the potential for an additional 8,003 acres required the land be administered “without impairment of its natural values.”

As noted above, the park’s resource management plan, which is its most recent guidance document for the management of natural resources, indicates that axis and fallow deer “compromise the ecological integrity of the seashore” and calls for their removal to promote native deer and elk. Both the PRNS and Golden Gate National Recreation Area resource management plans (1999) indicate a primary objective of the natural resource program is to control non-native plants and animals and prevent the loss of native species and habitats.

Finally, the park is guided by an executive order (EO 13112) on invasive species (1999), which requires all federal agencies to prevent the introduction of invasive exotic species, detect and respond rapidly to and control populations of these species, and provide for the restoration of native species and habitat conditions in ecosystems that have been invaded by non-native plants and animals.

## *Relationship to Other Federal Laws, Plans, and Policies*

In addition to the Organic Act and Wilderness Act described above, the following laws, plans, regulations, and policies are relevant to this project:

**The Redwood National Park Act**, as amended in 1978 (PL 95-250, 92 Stat. 163, 16 U.S.C. §1a-1) states, in reference to all NPS units: “The authorization of activities shall be construed and the protection, management, and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress.” Derogation and impairment have been determined by the NPS to be the same standard.

**The National Environmental Policy Act (NEPA)** of 1969 (Section 102(2)c) requires that an environmental impact statement be prepared for proposed federal actions that may significantly affect the quality of the human environment. The Council on Environmental Quality regulations (40 CFR Part 1500) and the NPS Director’s Order 12 provide further guidance on the procedural requirements of NEPA.

**The Endangered Species Act** of 1973 (PL 93-205, 87 Stat 884, 16 USC §1531 et seq., as amended) defines the purpose of that act: “ to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species...” Section 7 of the Endangered Species Act directs federal agencies to further the purposes of the Act. Federal agencies are required to consult with the U.S. Fish and Wildlife Service (USFWS) to ensure that any action authorized, funded or carried out by the agency does not jeopardize the continued existence of listed species or critical habitat. Initial consultation with the USFWS indicates the action alternatives evaluated in this EIS will not result in a “finding of adverse effect” on any federally listed species or critical habitats.

**The Wilderness Act of 1964** (78 Stat. 800; 16 U.S.C. §1131-1136). Actions to remove exotic deer in the wilderness may be required. Therefore, provisions of the Wilderness Act restricting how this may be accomplished are relevant. The Wilderness Act states that: “...each agency administering any area designated as wilderness shall be responsible for preserving the wilderness character of the area and shall so administer such area for such other purposes for which it may have been established as also to preserve its wilderness character.” It further stipulates that: “Within wilderness areas designated by this Act the use of aircraft or motorboats, where these uses have already become established, may be permitted to continue subject to such restrictions as the Secretary of Agriculture deems desirable. In addition, such measure may be taken as may be necessary in the control of fire, insects, and diseases, subject to such conditions as the Secretary deems desirable.”

**Section 106 of the Historic Preservation Act.** Section 106 of the Historic Preservation Act requires federal agencies to take into account the effects of their actions on properties listed on, or eligible for, the National Register of Historic Places. Because this project does not affect historic structures or districts, Section 106 compliance is considered not to be applicable.

**The Point Reyes National Seashore Act** (Public Law 87-657, 76 Stat. 538, 16 USC) established the park in 1962 by for “purposes of public recreation, benefit, and inspiration, a portion of the diminishing seashore of the United States that remains undeveloped.” It also refers specifically to hunting within the Seashore: “The Secretary may permit hunting and fishing on lands and waters under his jurisdiction within the Seashore in such areas and under such regulations as he may prescribe during open seasons

prescribed by applicable local, State, and Federal law.” However, public hunting is not allowed at GGNRA, and the Superintendent’s compendium current prohibits it inside PRNS as well.

**Public Law 94-544** (90 Stat. 2515; 16 U.S.C §) and **94-567** (90 Stat. 2692; 16 U.S.C §) established the Point Reyes Wilderness Area of 25,370 acres and potential for 8,003 more acres. The laws amend the Seashore’s enabling legislation (P.L. 87-657) by inserting in Section 6(a) after “shall be administered by the Secretary,” the words: “...without impairment of its natural values, in a manner which provides for such recreational, educational, historic preservation, interpretation, and scientific research opportunities as are consistent with, based upon, and supportive of the maximum protection, restoration, and preservation of the natural environment within the area.”

**Golden Gate National Recreation Area Act** (Public Law 92-589, 86 Stat. 1299 USC) established the park in 1972 in order to “preserve for public use and enjoyment certain areas of Marin and San Francisco Counties, California, possessing outstanding natural, historic, scenic, and recreational values, and in order to provide for the maintenance of needed recreational open space necessary to urban environment and planning.”

**Executive Order 13112 on Invasive Species**, signed by President Clinton in 1999, mandates that:

“Each Federal agency whose actions may affect the status of invasive species shall, to the extent practicable and permitted by law, (1) identify such actions; (2) subject to the availability of appropriations, and within Administration budgetary limits, use relevant programs and authorities to: (i) prevent the introduction of invasive species, (ii) detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner, (iii) monitor invasive species populations accurately and reliably, (iv) provide for restoration of native species and habitat conditions in ecosystems that have been invaded, (v) conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species, and (vi) promote public education on invasive species and the means to address them; and (3) not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions.”

**Point Reyes National Seashore General Management Plan (GMP)**. Although the Seashore is currently in the process of updating its GMP, the most recent version was completed in 1980. It contains no specific directives in regards to non-native deer but states that, throughout the Seashore, “restoration of historic natural conditions (such as the reestablishment of Tule elk) will continue to be implemented when such actions will not seriously diminish scenic and recreational values” (p. 13). The GMP also requires natural resource managers “to enhance knowledge and expertise of ecosystem management through ... exotic plant and animal reduction, regulation and control of resource use, and pollution control” (p.1).

**Golden Gate National Recreation Area General Management Plan (GMP), 1980**. In the section on Preservation and Restoration of Natural Resources, the GMP requires the recreation area to “maintain and restore the character of natural environment lands by maintaining the diversity of native park plant and animal life, identifying and protecting threatened and endangered plant and animal species, marine mammals, and other sensitive natural resources, controlling exotic plants, and checking erosion whenever feasible” (p.9).

**Point Reyes National Seashore Resource Management Plan (RMP), 1999** cites as one of the most significant resource issues to be addressed, the “control of nonnative plants and animals that disrupt natural (ecosystems) or prevent their restoration” (p.30). In reference to non-native deer specifically, the RMP states (p. 40):

“Due to the non-native nature of fallow and axis deer, and to the potential for forage competition with native deer and elk and disease transmission to them, a determination of the feasibility of complete removal of the fallow and axis deer should be undertaken. The issue of exotic deer management consumes a considerable amount of staff time that could be devoted to other resource management needs. Removal of the exotic deer from the seashore would reduce a continual burden on the small natural resources staff, improve a major component of the ecosystem, provide additional habitat for native ungulates, and eliminate the potential for disease transmission from these exotics to native deer and elk.”

**Golden Gate National Recreation Area Resources Management Plan (RMP), 1999.**

States in Section 4.1 that the objectives of the Natural Resources program are to: “prevent loss of native species and habitats by eliminating or controlling non-native and feral species populations” (p. 38).

**Compendium of Superintendent’s Orders** for Point Reyes National Seashore and Golden Gate National Recreation Area (36 CFR 1.7 (b)) specifies that the taking or hunting of wildlife by the public is prohibited within the boundaries of the park.

*Relationship to State Laws and Other Agencies, Laws, Policies and Plans*

**California Fish and Game Code (CCR), Title 14:** One of the alternatives considered but rejected is the relocation of non-native deer to private property elsewhere in the state. The following summarized sections of the CCR are relevant to the decision to reject this alternative as infeasible.

It is unlawful to import, transport, possess, or restrict wild animals alive into this state, except under a revocable, nontransferable permit issued by the California Department of Fish and Game (Title 14, Sec 671).

Written permission from the California Department of Fish Game Commission is required to release any wild animal into the wild, including those that are domesticallly reared which are not native to the state, may be diseased or have the potential for disease (Title 14, Sec. 671).

A Fallow Deer Farming Permit is required for the rearing of fallow deer for commercial sale of meat, parts, or live deer (Title 14, Sec 676).

A fully certified fallow deer farm requires that all of the deer are marked such that they are individually identifiable and all deer must have been tested numerous times for tuberculosis and brucellosis and determined by the Department to be negative or have originated from fully certified fallow deer farm (Title 14, Section 676(c)(1)).

Only certified fallow deer farms can serve as sources for breeding stock for new fallow deer farms (Title 14, Section 676(c)(1)(D)).

The permit requirements for fallow deer are extensive, and include requirements for fence height (8 feet), materials (12.5 gauge wire) and posts (4 x 4 wood) (Title 14, Section 676 (g)).

Hunting inside the park is currently not allowed. Hunting regulations outside the park would require a deer license tag or permit from the Department. The hunting season would be concurrent with the general deer season.

## **Scoping Process and Public Participation**

The Seashore conducted a formal public scoping process between May and July of 2002, including a public meeting in Point Reyes Station in May 2002. The purpose of scoping is to present preliminary information to the public and asks for input regarding additional environmental issues or alternatives. This scoping was advertised through over 200 letters (“Dear Friend of Point Reyes National Seashore”) to interested persons, groups, agencies, libraries, and local community members. In addition, an April 28, 2002 article in the Marin Independent Journal, and a May 2, 2002 article in the Point Reyes Light both announced the time and place of the public meeting.

During the public meeting of May 4, 2002, four individuals and a spokesperson for one organization (In Defense of Animals) presented comments to the PRNS and GGNRA Citizen’s Advisory Commission. Public comments from the meeting are summarized in section 1.1 of Chapter 5 (History of Public Involvement).

During the scoping period of May 4 – July 5, 2002, the Seashore received 31 letters or emails offering comments and concerns about the non-native deer management plan. A table in Section 5.1 summarizes the issues raised and alternatives suggested.

## **Issues and Impact Topics**

The following is a summary of environmental issues or impact topics found to be relevant to the management of non-native deer. The NPS interdisciplinary team developed these issues with input from the public during scoping. Each of these is examined in more detail in chapter 4 of this EIS.

### *Water Resources and Water Quality*

Axis, and particularly fallow deer, congregate in large groups and return to and remain in areas for long periods of time. When they occupy riparian areas, they heavily trample and browse vegetation, along with thrashing antlers against riparian trees during the rut (reproductive) season. This results in a loss of the stability that vegetation provides, with resulting destabilization of streambanks, changes in stream flow, and increased erosion and sedimentation of streams, ponds, and rivers in the park. Increased levels of nutrients and pathogen loading are also common sequelae.

### *Soils*

Large herds of fallow or axis deer could compact soils, and denude them by trampling and browsing vegetation, scraping and tearing at the soil during rut. Denuded soils would then be subject to erosion and destabilization.

### *Vegetation*

Large herds of fallow deer (up to 150 animals) remain in and return to certain pastures and forests, and can cause loss of a significant amount of vegetation through grazing and trampling. This can be

particularly noticeable in riparian areas, and especially in those riparian areas that have been fenced to exclude cattle for restoration purposes. Because deer are able to pass through most fences, they can interfere with restoration efforts.

### *Wildlife*

The diets of fallow deer and axis deer overlap with native ungulates. Because fallow deer are more aggressive, it is possible that they would compete for and occupy habitat, which could otherwise be occupied by tule elk. Non-native deer also compete with native black-tailed deer when forage is scarce, with reduced black-tailed productivity and lower fawn survival as possible outcomes. Fallow and axis deer may also serve as reservoirs of paratuberculosis, to which both black-tailed deer and tule elk are susceptible. Non-native deer also eat the same food as several native PRNS small mammal and bird species, and may indirectly affect other wildlife through the loss of habitat from deer browsing or trampling of vegetation.

### *Special status species*

Exotic deer compete for food with prey species of the federally threatened northern spotted owl. They also occupy beach habitat used by western snowy plovers (federally threatened) as nesting habitat. In addition, fallow deer frequent riparian areas and may trample, thrash, and browse vegetation, resulting in the removal of habitat for threatened California red-legged frog, coho salmon, steelhead trout, and the endangered California freshwater shrimp. Non-native deer may also browse plants used by the endangered Myrtle's silverspot butterfly for nectar or as larval hosts.

Although they do not have special federal status, several bird species in the park that are rare or unique occupy habitat in brush or nest on the ground in areas where non-native deer might browse. Deer may eat or trample special status plant species as well.

### *Human health and safety*

Deer may offer safety hazards for drivers; as numbers increase, the risk of collisions may increase.

### *Visitor experience*

Reductions in the number of axis or fallow deer may adversely affect visitors who seek to view non-native deer, but may eventually improve the chances of viewing native ungulate species. Landscape vegetation changes are also possible in some areas as understory or grasslands regrow. Social values, which differ among visitors and which help shape visitor experience, would also be affected by management strategies such as contraception use or the shooting of deer.

### *Park operations*

Park staff, equipment, vehicles, and supplies are used to monitor and manage exotic deer, including censusing, disease testing and monitoring, erecting deer-proof fencing, and monitoring of native species to understand impacts.

## *Regional economy*

Ranchers have reported costs associated with the presence and growth of exotic deer populations, including fence repair, forage depredation, and veterinary costs.

## **Issues Considered and Rejected**

This section describes environmental and/or management issues that were suggested by the public or members of the NPS interdisciplinary team, but were not carried forward for complete analysis. The reasons for rejecting the issues were either because initial analysis showed negligible or no impacts to a particular resource, or because the issue was outside the scope of this planning effort.

## *Management of Native Deer at PRNS*

Commenters suggested broadening this planning effort to include native deer and elk at Point Reyes National Seashore. However, an existing document, the “Point Reyes National Seashore Tule Elk Management Plan and Environmental Assessment,” completed in 1998 (National Park Service 1998), already directs management of native tule elk in the Seashore. Although there is no planning document for native black-tailed deer, this is because management actions for this species are not anticipated in the near future and so there has, to date, been no need for such a document. Should such a need arise, a black-tailed deer management will be developed and appropriate compliance completed.

## *Management of Non-Native Deer Outside of NPS Boundaries*

The NPS has no management jurisdiction over wildlife outside of its boundaries; such management jurisdiction rests with the California Department of Fish and Game. Therefore, planning for areas outside NPS boundaries, on state or private lands in which non-native deer reside now or in the future, is beyond the scope of this document. However, because deer currently inside the park would very likely begin to travel outside the park under certain scenarios as the population size continues to increase (No Action, for example), the impacts of their migration outside the park are analyzed in this document. Also, agencies and private landowners whose properties are adjacent to PRNS have been given the opportunity to contribute to the development of this document through public scoping and interagency meetings.

## *Livestock Management at PRNS*

Some commenters have noted that cattle grazed in pastures inside the park are also non-native species and have impacts on native wildlife habitat, and that this plan should include their management as well. However, ranching pre-dates the park and is specifically mentioned by the enabling legislation and general management plans of both PRNS and GGNRA as allowed. The 1980 PRNS General Management Plan (GMP) designates a “Pastoral Lands” zone of approximately 17,040 acres in the National Seashore “to permit the continued use of existing ranchlands for ranching and dairying purposes.” The 1980 GGNRA GMP specifies that the northern Olema Valley be part of a Pastoral Landscape Management Zone in which “where feasible, livestock grazing will continue within limits of carefully managed range capacities.” Changes in these policies are possible in the next cycle of general management planning, which is expected to begin in both parks within the next two years. In addition, park staff have recently prepared a Biological Assessment in accord with Section 7 of the Endangered Species Act (NPS 2002c) to analyze the extent to which agricultural lease renewals in the Seashore might affect any of the federally listed Threatened or Endangered species at the Seashore. The U.S. Fish and Wildlife Service has reviewed this assessment and issued a Biological Opinion which found that, although lease renewals

might adversely affect several threatened and endangered species at the park, they were “not likely to jeopardize” them. The species identified in the Biological Opinion included salmonids, red-legged frogs, western snowy plovers, and six species of threatened and endangered plants. Both the Biological Assessment and Biological Opinion are available by request.

## **Required Impact Topics**

Any NPS EIS is required to consider a set of mandatory topics to decide whether they apply. These are discussed below.

### *Conflicts between the alternatives and any state or local land use plans or policies*

As noted in the section on state plans, policies, and regulations, the state Department of Fish and Game does have several policies relevant to exotic deer game farming, and to the release of non-native animals into the wild. The policies guide deliberate release, but show that the state is concerned about and controls, through individual permits, the import, transport, or release of exotic and/or diseased wildlife. The state code is relevant to animals that may leave the park, as the Department would take over their management outside the park.

### *Wetlands and Floodplains*

Riparian areas are frequented by fallow deer herds and are analyzed along with other vegetation impacts (in the Vegetation section of the Impacts chapter) in this document. Non-native deer do not otherwise affect wetlands or floodplains.

### *Prime and unique agricultural lands*

As noted in other sections of this document, the Seashore and GGNRA both include areas grazed by cattle. The relationship between these lands and the management of exotic deer is confined to adverse impacts of the deer on cattle forage and on fences. Neither of these issues is related to prime or unique agricultural lands, and so this topic is considered irrelevant to the deer planning effort.

### *Important scientific or cultural resources*

The scientific resources that are affected are the native species in the parks. These resources are analyzed in the soils, water quality, vegetation, and wildlife sections of the EIS. However, cultural resources are not likely to be affected by any of the management actions in any of the alternatives. It is possible that trampling of vegetation and resulting loss of soil through erosion or bank failure related to the congregating of large herds of deer (particularly during the rut, for example) might uncover buried archeological resources. This possibility is considered remote and the impact negligible. Therefore, the impacts to cultural resources are not analyzed in this EIS.

The following additional resources would not be affected and so are not analyzed:

- Sacred sites
- Indian trust resources
- Energy conservation
- Natural or depletable resource conservation
- Urban quality and the built environment