

NPS Response to Comments

In reviewing the 1,900 pieces of correspondence received during the comment period, NPS grouped similar substantive comments from one or more commenters and summarized them under subject topics (e.g. Alternative A, Wildlife and Wildlife Habitat etc.), each with a unique Topic Code number (e.g. AL 1000, WH 4000). These Topics were grouped together to reflect related issues where appropriate and to avoid repetition in the responses.

AL 1100 – Alternative A (1)

What is the need for the management plan if none of the adverse impacts of Alternative A (No Action, continuation of the current management) would result in the impairment of park resources?

Response In common parlance, the word “impair” means “to damage or make worse” and as such, the term “impairment” in an EIS is often thought by the public to mean the same thing as “adverse impact”. However, the term “impairment” has been given a specific legal meaning through the interpretation of the 1916 NPS Organic Act, which established the National Park Service. The Organic Act established the NPS to preserve and protect designated resources of the country and provide for their enjoyment by the public in so far as the resources are “unimpaired for the enjoyment of future generations” (16 USC 1). Impacts of a proposed action could be adverse, long-term and severe and still not constitute “impairment.” Impairment, when used by the NPS, is narrowly defined as an impact that, “would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values” (NPS 2001). Guidance in the NPS Management Policies (2000) defines an impact as constituting impairment if it affected a resource or value that was:

- Necessary to fulfill specific purposes identified in the establishing legislation for a park;
- Key to the natural or cultural integrity of a park or to opportunities for enjoyment of the park; or
- Identified as a goal in the park’s general management plan or other relevant NPS planning documents.

The establishing legislation for Point Reyes (Public Law 87-657, 76 Stat. 538, 16 USC) identified “...public recreation, benefit, and inspiration,” and ensuring that “a portion of the diminishing Seashore of the United States that remains undeveloped” as the specific purposes of the Seashore. Public Law 94-544 and 94-567 amended the Seashore’s enabling legislation by inserting 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.” Although the continued existence of exotic deer would have adverse and sometimes major adverse effects on park resources and values as described in the EIS, under current conditions, the impacts of their continued existence would not prevent fulfillment of these stated purposes and so would not constitute impairment as defined by NPS. However, should non-native deer populations and range expand, as with Alternative A, NPS believes impairment to wildlife would likely occur.

Data on current and past population growth of fallow and axis deer at PRNS indicate that the No Action Alternative would result in an increase in non-native deer numbers within the Seashore and throughout Marin County. Adverse impacts of No Action to native deer, particularly native black-tailed deer, would be major. Black-tailed deer are considered a “keystone “ species in the native California coastal ecosystem because increases and decreases in their population numbers have repercussions throughout the ecosystem. Alternative A therefore affects a resource that is key to the natural integrity of the park or to

*Chapter 5 – Consultation and Coordination
Response to Comments*

opportunities for enjoyment of a park and as such, impairment would likely occur. For a detailed description of the impacts of non-native deer to Seashore resources, see FEIS Chapter 4, Environmental Consequences, and in particular, the discussion of the impacts of the No Action Alternative.

In addition and separate from the requirement that park resources and values be left unimpaired for future generations, the Organic Act requires the conservation of park resources and values at all times, even when there is no risk that any park resources or values may be impaired. NPS managers are called upon to always seek ways to avoid, or to minimize to the greatest degree practicable, adverse impacts on park resources and values (NPS Management Policies Section 1.4.4). For this reason, even though impacts of the No Action alternative would not rise to the standard of “impairment” for most resources, the Seashore is obliged to evaluate options that would help in rectifying damage caused by fallow and axis deer and select what it believes to be the best among them for implementation. Only by doing so can it minimize or avoid possible impacts of non-native deer on Point Reyes National Seashore resources and values and best meet the NPS conservation mandate.

AL 1101 – Alternative A (2)

NPS must demonstrate that the proposed action (Preferred Alternative) will measurably contribute to the restoration of native wildlife and natural ecosystems within PRNS.

Response The discussion of the beneficial impacts of Alternatives D and E are in two principal areas of the FEIS: Chapter 2, discussion of the *Environmentally Preferred Alternative* and *Park’s Preferred Alternative* and Chapter 4, *Environmental Consequences of Alternative E*. The discussion in Chapter 2 Alternative E explains how the NPS concluded that Alternative E best achieves the objectives of the management plan. In particular, objective # 1, “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” is clearly accomplished by removal of all fallow and axis deer within NPS boundaries, as called for in the Preferred Alternative. Native ecosystems are, by their very nature, comprised of interdependent native species. Two cornerstones of native ecosystem restoration are reintroduction of extirpated native species and removal of non-natives.

AL 1110 – Alternative A (3)

Commenters believe that the park must adopt a plan that can address the impacts of non-native deer to staffing and financial resources.

Response One of the objectives of the plan is 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. As the EIS indicates (see Park Operations in the Impacts chapters and figure 17 for more information), continuing with current management of non-native deer is likely to cost about \$2.1 million through 2021 and then further maintenance and management costs would be up to \$280,000 per year. Although implementing the Preferred Alternative would cost more initially, about \$4.5 million through 2021, it would eliminate the costs for non-native deer management after this date.

AL 1110 – Alternative A (3)

Commenters state the adverse impacts of the No Action alternative are understated and are major both inside and outside the Seashore.

*Chapter 5 – Consultation and Coordination
Response to Comments*

Response The impact analysis for Alternative A (Chapter 4) indicated that major impacts to water resources, soil, vegetation, wildlife, species of special concern and the regional economy outside the park could occur. The degree of impact to these same resources inside the park under the No Action alternative would be moderate for soil, water, the regional economy and species of special concern, and moderate to major (depending on species and location) for vegetation and wildlife. Moderate impacts to park operations would also occur. The definitions of impact thresholds for each of these resources is provided in the Methodology section of the EIS. Thresholds and impact indicators were developed through consultation with resource experts, literature searches in some cases, and the best professional judgment of NPS managers. Thresholds are defined to delineate differences not only in the intensity of an impact, but include considerations of context, duration and timing. The definitions for moderate and major differ in geographic context and duration for many of the affected resources. Examples for a few resources are provided below to illustrate this difference.

Impacts to Water Resources

Moderate: would be apparent locally and would have the potential to become larger or regional.
Major: would be substantial, highly noticeable, and regional (i.e., would occur over a large area, such as the Tomales Bay watershed, or Point Reyes National Seashore).

Impacts to Wildlife

Moderate: would be sufficient to cause a change in the resource or population (e.g., abundance, distribution, quantity, or quality); however, the impact would remain localized in the Seashore. The change would be measurable, but negative effects could be reversed with active management, and the resource or population could recover within the Seashore.
Major: would be substantial, highly noticeable, measurable, and potentially irreversible (permanent). The resource or population would be unlikely to recover within the Seashore with or without active management.

Impacts to the Regional Economy

Moderate: detectable in a moderate to large number of local businesses or could have the potential to expand into an increasing influence on the economic environment.
Major: a substantial, highly noticeable influence on many local businesses, and could be expected to alter those environments permanently.

AL 1200 – Alternative B (1)

Commenters support control of non-native deer numbers in perpetuity rather than total elimination because they want to have some non-native deer available for viewing.

Response Alternatives B and C, which both result in maintaining non-native deer through perpetual control of their numbers, were not chosen as the Preferred Alternative for a number of reasons. First and foremost, the adverse impacts of these two alternatives on park resources (e.g. vegetation, wildlife, soils, water resources, special status species, human health and safety, park operations) and the regional economy are more severe and of longer duration than in the Preferred Alternative (Alt. E), which calls for removal of all non-native deer by 2021. The impacts of the non-native deer populations on riparian and woodland ecosystems, to other wildlife and to ranchers would continue forever if non-native deer remain, albeit at reduced levels if the number of deer were reduced. The Preferred Alternative (and Alternative D,

*Chapter 5 – Consultation and Coordination
Response to Comments*

which would completely remove all non-native deer through lethal means) would best accomplish the objectives of the plan and comply with NPS laws, regulations and policies (see Table 1 in the EIS).

Another consideration in choosing the Preferred Alternative was the cumulative total number of deer that would need to be killed over the lifetime of the plan. If a population of axis or fallow deer were maintained in the park (as in Alternative B or C), it would require perpetual management through lethal removals because control of non-native deer through contraception alone is infeasible. Over many years, the total number of deer removed would be very high. This is illustrated in Table 1 and Figure 1 in the final EIS.

AL 1210 – Alternative B (2)

Commenters oppose maintenance of any non-native deer populations because it would result in excessive ongoing costs and in the removal of thousands of animals, in perpetuity.

Response Comment noted. Further information may be found in FEIS Chapter 4, Environmental Consequences, which discusses the environmental impacts of the two alternatives (B and C) that would maintain non-native deer in the Seashore in perpetuity. Also see the response to AL 1200.

AL 1310 – Alternative C (2)

Commenters oppose Alternatives B and C for a variety of reasons, mostly because contraception appears infeasible and the alternative requires a high expenditure of park operations resources.

Response Your comment is noted and reflects, to a large extent, the assessment of NPS. Please see FEIS Chapter 4, *Environmental Consequences*, for the impacts to park operations from Alternatives B and C. Also, see Chapter 2, Table 3 for a summary of the impacts of each alternative.

AL 1400 – Alternative D (1)

Commenters support Alternative D for a variety of reasons, mostly because it will reduce impacts to Seashore ecosystems, ranchers and park operations quickly.

WH 1100 – Wildlife and Wildlife Habitat: Ethical Issues

Commenters state that rapid removal of all non-native deer is the most humane method in the long-term.

Response Both Alternative D (Removal of All Non-Native Deer by Agency Personnel) and the Preferred Alternative E (Removal of All Non-Native Deer by a Combination of Agency Removal and Fertility Control), are the Environmentally Preferable alternatives, because they cause the least damage to the biological and physical environment. (See Chapter 2, Environmentally Preferable Alternative.) Both alternative D and E also contribute to restoration of natural ecological processes and best protect, preserve, and enhance historic, cultural, and natural resources.

Although both Alternatives D and E fully accomplish all four of the Seashore's stated objectives for non-native deer management, Alternative E is the park's Preferred Alternative. Although Alternative E does have increased safety risks to NPS staff responsible for capturing and treating animals with a contraceptive, and is more expensive, it also may reduce the total number of deer requiring lethal removal. Lower levels of culling would mitigate some, though not all, of the concerns of members of the public who oppose using lethal methods to control the non-native deer populations.

*Chapter 5 – Consultation and Coordination
Response to Comments*

Alternative E will also expand current knowledge about long-term reproductive intervention in wild ungulates. The Preferred Alternative presents an opportunity for long-term study of the use of potential sterilants in controlling overabundant or unwanted deer under free-ranging conditions. Issues of wildlife overabundance often arise in areas where lethal removal is difficult, such as areas with firearms restrictions or public safety concerns. Information gained through Alternative E could benefit other national park units, other land-management agencies and zoological parks nationwide.

We believe these benefits outweigh the additional time Alternative E would take to eradicate non-native deer compared to Alternative D, and the increased cost to NPS and risks to staff.

AL 1410 – Alternative D (2)

The process of culling will increase the rate at which non-native deer disperse beyond the park boundaries and will not meet the plan objectives.

Response See Chapter 4, Impacts on Wildlife of Alternatives B-E. Any deer control program involving lethal removal of animals with firearms has the potential to scatter deer herds and push deer out of the Seashore into adjacent lands. Provisions in those action alternatives that specify removing animals from the edges of the Seashore before culling animals deeper within the park would mitigate such scattering. Experts with experience in wildlife removal programs will be consulted prior to initiation of the culling and a comprehensive implementation plan will be developed. A monitoring plan incorporating the principles of adaptive management has been included in the FEIS as an appendix. This plan includes measurement of population size and range with projections of herd movements. The goals will be to reduce the populations as quickly as possible to minimize impacts on native species, minimize the risk that axis and fallow deer would expand their ranges outside the park, minimize the total number of deer removed, and maximize the overall culling efficiency.

AL 1410 – Alternative D (2)

Commenters are concerned about residues of any contraceptives used and consequent adverse impacts to native predators.

Response For a detailed discussion of current wildlife contraceptive technology, see Chapter 2, Alternatives C and E. In the past, some fertility control agents, namely steroid hormones, have raised concerns about residues in meat that might be consumed by humans or other wildlife. For this reason, steroid contraceptives are not being considered for use at Point Reyes National Seashore.

The most promising long-lasting drugs currently being considered for use in PRNS non-native deer are Spayvac® and GonaCon®. As of the writing of this document, Spayvac® is no longer available for use in wildlife. Both of the products are protein vaccines injected into female deer in order to induce an immune response to the deer's own reproductive proteins. Should a treated deer become preyed upon or scavenged by other animals, any contraceptive remaining in the deer's tissues would be digested by the predator's digestive system. Like other proteins, these vaccines are denatured (broken down) by digestive enzymes and are not expected to cause any effect to the predator or scavenger. Therefore, the adverse impacts to other wildlife prey or scavenger species from these two contraceptive drugs are considered insignificant. However, as described in Chapter 2, before granting registration or an experimental use permit, the Environmental Protection Agency (EPA) would require safety data from the applicant.

*Chapter 5 – Consultation and Coordination
Response to Comments*

AL 1410 – Alternative D (2)

The commenter states that the DEIS failed to examine the impact of culling on disease transmission as non-native deer will leave the park as a result of culling and will be weaker from the stress involved with culling.

Response The commenter states that stress resulting from herd culling may increase the incidence of paratuberculosis in the non-native herd. Stress, as defined in veterinary texts, is the physiological (rather than psychological) condition arising when those mechanisms concerned with adapting an animal's body to its environment are taxed beyond their normal capacities. Psychological factors, although they are acknowledged as playing some part in the process, are considered relatively minor. The physiological responses typical of stress are hormonal, with release of glucocorticoid steroid hormones, and behavioral actions (the “fight or flight” response). Environmental factors that cause stress include poor nutrition, severe climate, physical effort, pain and crowding.

Culling of deer results in increased pain for animals that are shot and in increased physical effort for bystander animals. As described in the EIS (Chapter 2, descriptions of Alternatives B-E), efforts would be made to deliver immediately lethal shots to target animals to reduce the duration of painful stimulus. It should be noted that increased physical effort and pain are also likely results of almost any wildlife management action including relocation, capture (for euthanasia, contraception or relocation), and remote injection (darting). Such stressors clearly could cause increased susceptibility to some diseases.

However, paratuberculosis is an infectious disease transmitted primarily through the fecal-oral route. Important factors for an increased prevalence of paratuberculosis are crowding and increased fecal contamination of forage and water. The prevalence of the infection and the incidence of clinical disease may climb when a population approaches carrying capacity, as in Alternative A (No Action). Animals, including those most susceptible to the infection, i.e. the calves, would be exposed to greater numbers of the organisms more frequently. At these high densities, affected herds would be stressed by reduced forage nutritional quality and reduced ability to fight disease through a weakened immune system. This immunosuppression could result in increased transmission of infections, heavier pathogen loads and progression to clinical illness (Manning et al. 2003). Animals in the clinical phase of Johne's disease shed the organism more often and in greater numbers, increasing the potential for contamination from this hardy and long-lived organism, a factor relevant to the health not only of non-native deer, but of numerous other susceptible native species.

Both crowding and fecal contamination of the environment are alleviated by lethal removals (Alternatives B-E). In addition, culling activities would likely “split” large herds into smaller groups, further reducing deer densities and the potential for fecal contamination. Reducing the overall number of infected animals would have a far greater positive effect on the current and future disease status in the non-native deer population than would shielding them from the stress of culling.

Commenters note that non-native deer are more likely to leave the Seashore as a result of culling activities. Any deer control program involving lethal removal of animals with firearms has the potential to scatter deer herds and push deer out of the Seashore into adjacent lands (see Chapter 4, Alternative E, Impacts to Wildlife). Provisions in all alternatives that include lethal removals specify removing animals from the edges of the Seashore before culling animals deeper within the park to minimize such scattering.

AL 1500 – Alternative E (1)

Commenters state preference for Preferred Alternative and removal of non-native deer from the park.

*Chapter 5 – Consultation and Coordination
Response to Comments*

Response Comment noted.

AL 1510 – Alternative E (2)

Commenters state that the park's Preferred Alternative will fail because the non-native deer population is already on private lands and is beyond NPS control.

Response NPS believes that the Preferred Alternative (E), which includes a combination of lethal removal and non-lethal fertility control, will succeed in eradicating non-native deer from the Seashore. This assessment is based on consultation with experts in the field of wildlife biology and contraception, population models developed by some of these experts, and the past history of non-native deer management in the Seashore. NPS recognizes that the presence of non-native deer on the Vedanta property complicates management because the Vedanta Society has expressed that lethal removal on their lands is unlikely. However, the Society has also expressed support for the use of fertility control on these populations. Records and data from the Seashore's non-native deer culling program from 1976 to 1994 indicate that a focused lethal removal program, when adequately funded and staffed, would be successful in removing large numbers of axis and fallow deer.

AL 2000 – Alternatives: Alternatives Eliminated

Commenters state that the discussion and evaluation of the current state of available contraceptive technology is inadequate. The Seashore should rely on experts with successful immunocontraception projects to assess the feasibility of non-native deer control through contraception alone.

Response Please see Chapter 2, *Alternatives and Actions Considered But Rejected*, and the Response to AL 4300 for a discussion of why NPS considers eradication of non-native deer with fertility control alone to be infeasible. In coming to this conclusion, NPS consulted with a large number of leading experts in the field of wildlife contraception, from universities, government agencies and non-profit institutions. The experts consulted were unanimous in concluding that, because of the size of the non-native deer population in the Seashore and its relative inaccessibility to capture and treatment, it would be infeasible to rely on contraception alone for control or elimination.

The list of experts consulted includes scientists who are currently conducting fertility control research with both captive and free-ranging deer. Seashore biologists themselves have experience with using immunocontraception in free-ranging tule elk from 1996 to 2004. The population models developed by Barrett and Hobbs incorporate peer-reviewed and published modeling techniques to reach the conclusions which informed the document. In the opinion of NPS biologists as well as the experts consulted, the contraceptive literature published since the release of the Draft EIS, including some references listed by commenters, do not alter the choice of Alternative E as the Preferred Alternative. The discussion of the current state of wildlife contraceptive technology has been updated in the final EIS to reflect the most recent developments (see Chapter 2, *Alternative E* and Chapter 2, *Alternatives and Actions Considered But Rejected*).

AL 2000 – Alternatives: Alternatives Eliminated

The EIS rejects contraception- only alternatives because of unverified, theoretical computer models and selective citing of the scientific literature. The document does not include full consideration of Spayvac®.

Response The document includes a discussion of Spayvac®, a long-duration formulation of porcine Zona Pellucida, in Chapter 2, *Alternatives C and E*. All available information on Spayvac® was

*Chapter 5 – Consultation and Coordination
Response to Comments*

reviewed during the preparation of the plan and the manufacturing company was consulted directly. The park's Preferred Alternative calls for using the latest contraceptive technologies to safely prevent reproduction for as long as possible with minimal treatments per animal. Spayvac® was one of the contraceptives considered for use. Unfortunately, since the release of the Draft EIS, Spayvac® has become unavailable for use in wildlife research, according to company representatives. Therefore other experimental products, such as GonaCon®, would be considered for use.

The Final EIS contains updated information on wildlife contraceptive technologies, collected since release of the draft (see Chapter 2, Alternatives C and E). As mentioned in the responses above, the preparation of the document involved consultation with many leading experts in the field of wildlife contraception, from universities, government agencies and non-profit institutions. These experts informed NPS of any promising new contraceptive technologies.

AL 2000 – Alternatives: Alternatives Eliminated

Commenters support the NPS Preferred Alternative since using contraception alone would be futile and inexact.

Response Your comment has been noted. The reasons for dismissing alternatives that did not include lethal removal are listed in Chapter 2, *Alternatives and Actions Considered But Rejected*.

AL 2000 - Alternatives: Alternatives Eliminated

Commenters state that NPS should not reject the contraception-only alternatives because of cost or difficulty.

AL 4000 – Alternatives: New Alternatives or Elements

AL 2000 – Alternatives: Alternatives Eliminated

There is a lack of evidence in the EIS that non-native deer are degrading ecological processes in the park.

AL 1101 – Alternative A (2)

NPS must first demonstrate that fallow and axis deer are having the detrimental effects alleged in the document.

Response See the FEIS Chapter 4, *Environmental Consequences of the No Action Alternative (A)* for a lengthy description of the adverse impacts of non-native deer to water resources, soils, vegetation, wildlife and special status species. These impacts have been documented both in the Seashore and elsewhere. Axis and fallow deer were introduced to the Seashore in the 1940s and are not native components of its ecosystems. The resources and habitats they utilize are consequently rendered unavailable to native species.

Because they maintain populations of non-native deer in the Seashore, Alternatives A, B and C would continue ongoing impacts to park natural and physical resources. The presence of non-native axis and fallow deer 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 competition with native tule elk and black-tailed deer (particularly in high deer density or low forage conditions), the potential for transmitting disease to these native deer, and heavy use of and resulting impacts to riparian and woodland habitats and the native wildlife dependent on these habitats. Introduced fallow deer in other parts of the world are

*Chapter 5 – Consultation and Coordination
Response to Comments*

known to cause reduction or local extinctions of small mammals that rely on the same ground-level grasses and forbs. Both axis and fallow deer at PRNS browse shrubs when grasses are not available, and fallow deer in particular alter riparian cover and vegetation through thrashing, trampling, browsing and creating trails. Loss of riparian habitat would affect a number of species at PRNS, including several special status species, such as California red-legged frog, Coho and Chinook salmon and steelhead trout. In contrast, Alternative D or E would remove all non-native deer from NPS lands and eliminate these impacts on natural and physical resources.

Wildlife monitoring in the Seashore is ongoing and the analysis in the FEIS on impacts of non-native deer has been supplemented by new information since the DEIS was published, including the following:

- A US Geological Survey analysis of the impacts of non-native deer on native black-tailed deer (Fellers, 2006),
- A US Geological Survey report on the impacts of “lekking” fallow deer to woodland and riparian vegetation and soils (Fellers and Osbourn, 2006),
- A Humboldt State University report on dietary overlap between fallow deer and native tule elk (Fallon-McKnight, 2006).

Data on the adverse impacts of fallow and axis deer to natural ecosystems, (both at PRNS and elsewhere in the U.S.) and detailed results of the studies cited above are described in FEIS Chapter 3, *History of Research on Non-Native Fallow and Axis Deer at Point Reyes National Seashore and Golden Gate National Recreation Area* and FEIS Chapter 4, particularly under Alternative A, No Action).

AL 2100 – Alternatives: Hunting

To eliminate the threat that non-native deer will spread far outside the park, NPS should work with California Department of Fish and Game in expanding hunting of non-native deer on private lands.

Response The threat of non-native deer moving outside the park is one of several reasons a management plan is needed. As noted in responses to comments above, NPS laws, policies and regulations and the results of research and monitoring indicate removal of these exotic species is needed inside the park. Therefore, simply coordinating a hunting effort with the California Department of Fish and Game for those deer that would move outside the Seashore would not resolve policy and impact issues inside the boundaries of PRNS.

The NPS has no jurisdiction over hunting on private property, state or county lands and would only be able to make recommendations to CDFG on how alteration of hunting regulations might be used to benefit the Seashore’s mission or help conserve its resources. The NPS works with CDFG now to try and minimize adverse impacts of non-native deer and would continue to do so in implementing the Non-Native Deer Management Plan as needed.

AL 2100 – Alternatives: Hunting

The NPS should include an alternative with public hunting.

Response See FEIS Chapter 2, Alternatives and Actions Considered but Dismissed, for an explanation of why public hunting, either alone or in combination with another management technique, was rejected. The reasons can be summarized as follows:

*Chapter 5 – Consultation and Coordination
Response to Comments*

- Public hunting within Golden Gate National Recreation Area is not allowed in its establishing legislation. Eighteen thousand of the 90,000 acres administered by Point Reyes National Seashore are GGNRA lands.
- The limited hunting season and restricted hunting zone, along with the large number of non-native deer (at least 1,100) make it extremely unlikely that reduction of the population to a manageable number or eradication of either species could be accomplished solely by public hunting.
- There are serious public safety concerns for a hunt in a national park with such high visitation and in such proximity to 3 towns.
- Public comments received during the initial scoping process and public comment period for the draft EIS indicate that the public does not favor public hunting in the park. Historically, local communities have responded unfavorably to any PRNS wildlife management plans that included public hunting.

AL 4000 – Alternatives: New Alternatives or Elements

The need for the Non-Native Deer Management Plan is not sufficiently supported by the current level of information. More research is needed for a solid scientific basis for the proposed management decisions such as will removal protect native ecosystems, whether and how eradication versus control would benefit native ecosystems, and whether fertility control alone could eventually achieve eradication in the future if it was more effective and easily delivered.

WH 2000 – Wildlife and Wildlife Habitat: Methodology and Assumptions

Further studies are needed such as impact of annual rainfall on reproductive rates for the deer collected from fecal samples, examination of vegetation type and biomass change in areas used by non-native deer, the degree of overlap in diet between non-native deer and native deer.

Response The need for a management plan arises out of a combination of monitoring and research findings and the requirement to follow stated laws, regulations and policies of the National Park Service. These regulatory requirements are summarized in response to comments above, and in the *Purpose and Need* chapter of the EIS.

We disagree that the plan is not sufficiently supported by the current level of information, and note that the monitoring and research findings at PRNS on the ecology, population biology and diseases of non-native deer has been extensive (see Chapter 3, History of Research on Non-Native Fallow and Axis Deer at Point Reyes National Seashore and Golden Gates National Recreation Area). The impacts of non-native deer to livestock and native deer have been analyzed by a number of respected biologists through dietary analyses, range studies and population projections (Brunetti 1974, Elliott 1983, Fellers 1983, Gogan et al. 2001, Hobbs 2003, Fellers and Osbourn 2006). There is little, if any, argument among professional wildlife biologists that expanding populations of axis and fallow deer would have detrimental effects on native black-tailed deer and tule elk.

In terms of further studies, research into non-native deer impacts is already a stated component of all analyzed alternatives. Please refer to Chapter 2, Actions Common to All Alternatives, for a list of activities the NPS considers indispensable for protection of native species and ecosystems and to assess the success of any management action. These activities include the continued monitoring of native and non-native deer numbers, ranges and impacts. Specific examples include monitoring of disease in non-native deer, surveillance for evidence of overgrazing by non-native deer, and assessment of dietary overlap between native and non-native deer.

*Chapter 5 – Consultation and Coordination
Response to Comments*

Finally, we note that research alone would not accomplish any of the objectives of the management plan, which include following the required laws, regulations and policies of the NPS described above and in the *Purpose and Need* chapter of the EIS.

AL 4000 – Alternatives: New Alternatives or Elements

Non-Native Deer Management Plan Alternatives should include the contraception of native deer because there are too many of them.

Response As set forth in FEIS Chapter 1, *Need for Action* and *Purpose* and *Objectives* sections, management of these two non-native deer species is being proposed in order to protect the park’s resources and values, which include the native deer. Some 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. The park’s population of native black-tailed deer is currently considered to be below carrying capacity and not requiring a management plan. Should such a need arise, a black-tailed deer management will be developed and appropriate compliance completed.

AL 4000 – Alternatives: New Alternatives or Elements

The NPS should use implementation of the Non-Native Management Plan as an educational and research opportunity for complex environmental issues.

Response Research would continue under any of the alternatives, including No Action or the Preferred Alternative. Research activities are described in the section *Actions Common to All Alternatives*, and include: monitoring of native and non-native deer numbers, growth rates, survival and fecundity, deer range, dietary overlap and disease. Educational opportunities would continue to be numerous as well. The Seashore has had and expects to continue to have many successful relationships with individuals and organizations that have provided educational programs, fund-raising campaigns, and a host of other activities. In addition, interpretive and educational programs provided by Seashore staff help park visitors understand, appreciate, and enjoy the park and its resources (NPS Management Policies, 2001). The Seashore Interpretive Program has always stressed the importance of preserving native ecosystems, and in recent years, has designed interpretive materials and presentations on the history and future of non-native deer management. This emphasis will certainly continue.

Some commenters suggested that further research into non-native deer impacts and the use of non-lethal deer management techniques were rejected because of their cost. This is not the case. The Seashore’s Preferred Alternative includes non-lethal deer management techniques in the form of experimental use of long-lasting contraceptives (see Chapter 2, Alternative E). Contraception as the sole method of controlling or eliminating non-native deer was rejected because it is infeasible and unlikely to succeed (see Chapter 2, Alternatives and Actions Considered but Rejected).

AL 4000 – Alternatives: New Alternatives or Elements

To protect the deer and other wildlife immediately NPS should reduce the speed limit on West Marin roads.

Response The loss of deer through vehicular accidents within and outside NPS boundaries is regrettable but is outside the scope of this management plan. Prevention of deer-vehicle interactions is accomplished

*Chapter 5 – Consultation and Coordination
Response to Comments*

through NPS signage, road maintenance and state highway (Caltrans) programs. NPS has no jurisdiction over wildlife outside of its boundaries.

AL 4000 – Alternatives: New Alternatives or Elements

Commenters state the plan/EIS should consider reintroduction of mountain lions as a management control tool.

Response Mountain lion (*Puma concolor*), as well as other predators such as bobcat (*Felis rufus*) and coyote (*Canis latrans*), are already important to the Seashore ecosystem and are thought to exist at carrying capacity, or maximum sustainable numbers. These species did not evolve with fallow or axis deer and are likely not well adapted to prey effectively upon them. In light of the steady growth of non-native deer populations since the discontinuation of lethal control in 1994, Seashore biologists do not believe that these predators act as efficient controllers of deer numbers.

Historically, two other potential deer predators, grizzly bear (*Ursus arctos*) and black bear (*Ursus americanus*), were also present in the Point Reyes area but were extirpated over the past century. Recent sporadic observations of black bear in Marin County suggest that the range of this species may naturally be expanding southward. It is unlikely that the black bear, whose diet consists predominantly of vegetation and mast, would effectively limit non-native deer populations, even if its numbers were at carrying capacity. Re-introduction of the grizzly bear would also not be likely to have more than a negligible impact on reducing the non-native deer population. Grizzlies have very large home range requirements (100-400 square miles), so very few could live on park lands. In addition, current land use trends in Marin County, and the potential for dangerous interactions with humans and livestock would make any attempt at reintroduction highly controversial. The Seashore has no plans for re-introducing extirpated predators in the near future.

AL 4000 - Alternatives: New Alternatives or Elements

Commenters state that an element of the alternatives should combine contraception or sterilization with predator reintroduction and also suggest an element combining contraception or sterilization with relocation of deer outside of the Seashore.

Response See also the above response addressing increasing natural predation. It was unclear whether the commenters were suggesting that all or only a portion of the 1,100 plus non-native deer in the Seashore should be relocated to new environments. Relocation requires live capture and handling capture of deer in the wild, a task which is difficult, risky for NPS staff and deer and will result in some unavoidable animal deaths. Given their large numbers and the extent (>50,000 acres) and geographical difficulty of their range, it is unlikely that all the non-native deer in the Seashore could be captured. It is also unlikely that any individuals or groups would be interested in taking sufficient deer to make any substantial difference in current populations. Because lethal removal would be required as part of any alternative, including one that involves select relocation, we believe contraception is a more viable non-lethal management element. Contraception does not depend on the continued supply of individuals or groups interested in taking and maintaining live deer, yet it accomplishes the same goals of reducing numbers of deer lethally removed.

Relocation is discussed in the FEIS in the *Alternatives and Actions Considered but Rejected* section of Chapter 2. This section of the FEIS explains the regulatory impediments and health concerns which make adoption of more than a token number of deer very difficult. As detailed in the *Alternatives Considered But Rejected*, the relocation alternative was found to be unlikely to accomplish the objectives of the

*Chapter 5 – Consultation and Coordination
Response to Comments*

project, would be incompatible with state wildlife policy and would pose risks to wildlife, livestock and farmed deer outside of the Seashore.

AL 4000 – Alternatives: New Alternatives or Elements

The commenter favors non-lethal alternatives and recommends that the NPS discourage the public from feeding deer which further increases the deer population.

Response NPS managers are unaware of any feeding of deer in or around the Seashore and there is no evidence that feeding of deer has contributed to the continued increase in the non-native deer population. The feeding of wildlife, whether native or non-native, is inconsistent with NPS *Management Policies* (NPS 2001). Feeding of fallow, axis and black-tailed deer does not occur within NPS boundaries. The feeding of wildlife by private citizens, outside of NPS boundaries, is illegal under CA Department of Fish and Game (CDFG) regulations and is regulated by that agency.

Please also refer to the above responses in this section for discussion of the NPS determination that non-lethal methods would not be feasible.

AL 4000 – Alternatives: New Alternatives or Elements

Commenters state that NPS should consider an alternative that would relocate deer to fenced "deer viewing areas", whether inside or outside of the park on the lands of willing private owners. Commenters note that this has precedent in other national parks and federal lands and ask why this would not be appropriate for this plan.

Response Please refer to the Alternatives and Actions Considered but Rejected section of Chapter 2 where the alternatives Restricting Deer to a Fenced Area and Relocation are discussed. The primary mission of the NPS is to preserve park resources and values in as natural a state as possible and unimpaired for future generations. Those resources include the native ecosystems of the Seashore.

Although wildlife have been fenced in NPS units (including the Seashore) as a first step towards restoration of native species, maintaining wildlife in enclosed areas for a long period of time or permanently is more in keeping with private game farms, game parks or zoological collections. Fencing non-native deer within the Seashore would also be in conflict with the NPS Management Policies (sec 4.15 and others) which states that parks “will re-establish natural functions and processes in human-disturbed components of natural systems in parks unless otherwise directed by Congress” and identifies removal of exotic species as one of the actions that may be necessary to restore natural conditions.

If non-native deer were restricted to deer viewing areas on private property outside NPS boundaries, relocation and a willing recipient of the animals would be required. FEIS Chapter 2, Alternatives and Actions Considered but Rejected addresses the range of problems that make a relocation alternative infeasible. Title 14 §671.6 of the California Code of Regulations states: “No person shall release into the wild without written permission of the commission any wild animal...which: (1) is not native to California.” In addition, paratuberculosis, or Johne’s disease, has been documented in non-native deer at PRNS (Riemann et al. 1979b). Johne’s disease is a chronic, incurable and transmissible diarrheal disease of domestic and wild ruminants. Carriers can shed the organism sporadically and Johne’s disease can be difficult to diagnose in infected cervids. Because of the difficulty of accurately screening deer for Johne’s disease and the infection risk that carrier animals would pose to livestock, farmed deer, and other wildlife, California Department of Fish and Game has communicated to NPS that movement of non-native deer to

*Chapter 5 – Consultation and Coordination
Response to Comments*

other parts of the state is undesirable. Relocating non-native deer would require a permit from the Department.

AL 4000 – Alternatives: New Alternatives or Elements

AL 4300 – Contraception

The alternatives should include continued research on types of contraceptives and other non-lethal techniques.

Response As noted above and in the EIS, two techniques in the Preferred Alternative include the use of contraception in combination with lethal removal to decrease the size of non-native deer populations. The description of all potential contraceptive agents for deer is in Chapter 2, Alternative C and again under Alternative E, the Preferred Alternative. These sections identify a set of criteria any contraceptive would need to meet, including:

- few adverse effects on the target species (non-native deer);
- no adverse effects on non-target species or humans;
- a multi-year or permanent effect;
- logistically and economically feasible delivery;
- either registered for use in wildlife by the EPA or with an EPA-approved experimental use permit.

There are currently no contraceptive drugs registered for use in wild deer. In order to register a chemical, a sponsor is obliged to provide the EPA with substantial evidence of its effectiveness through controlled studies and must demonstrate the safety of the agent on target and non-target species. Environmental and human safety issues must be addressed as well. In order to receive an experimental use permit, NPS and the sponsor would need to submit to EPA safety and effectiveness data on the proposed chemical. Alternatively EPA could grant NPS a permit to use an unregistered but researched contraceptive if it could document that the use of the chemical would avert an emergency, either of an agricultural or an ecological nature. The data submitted would likely be gathered from the company sponsoring the chemical, although the Seashore would also be required to continue monitoring and gathering additional information about its effectiveness in the field. This continued monitoring would require collection of data on survival and fawning rates of treated and control deer through radio telemetry, population counts and/or necropsies. Additional studies on health effects and safety of the experimental drug could be required by the EPA.

AL 4100 – Alternatives: Livestock

Given all the other impacts to resources that are ongoing at the park, such as the impacts of agriculture, why does the issue of non-native deer need immediate resolution rather than a more intermediate step while additional research is conducted?

Response Please see the response to Concern 10376 above. We believe existing research supports the need for action now before the populations expand outside the Seashore.

*Chapter 5 – Consultation and Coordination
Response to Comments*

AL 4400 – Alternatives: Non-Lethal

The commenter states that the EIS should include more non-lethal control alternatives such as: 1. relocation to another area; 2. use of the existing sterilization vaccine; 3. participation in field trials for a new vaccine; 4. funding through a local ballot initiative; 5. funding through a park admission charge.

Response See also Response to AL 4000 and AL 1110 for additional background information on the NPS decision-making process for rejecting contraception-alone alternatives as infeasible and unreasonable alternatives for inclusion the EIS.

The non-lethal alternatives (relocation, sterilization vaccines, research into contraceptives) suggested by commenters were either determined to be infeasible or would not accomplish the objectives of the plan, as stated in Chapter 1, Purpose and Need. The reasons for rejecting these alternatives are discussed in Chapter 2, Alternatives and Actions Considered but Rejected.

The raising of additional funds through local ballot initiatives or park admission fees would not make these rejected alternatives any more feasible and would not accomplish the objectives of the plan. In addition, placement of a bond measure on the local ballot is beyond the jurisdiction of the National Park Service and is beyond the scope of the document. Charging of an admission fee at the Seashore has historically been rejected because of the many entryways into the park, leading to difficulty enforcing any admission program.

Use of fertility control alone to control or eliminate non-native deer is not only expensive and logistically difficult, it is infeasible. All of the programs in which contraceptives have been documented to successfully control or reduce deer populations have occurred in small confined populations (as in zoos or islands). Researchers currently conducting contraceptive studies with wild deer agree with the Seashore's assessment that such non-lethal control techniques would not succeed unless augmented with lethal removals.

The current state of wildlife contraceptive technology and regulations require that the following conditions be met for any expectation of population control in free-ranging, wild deer:

- a small area with good road or trail access to subject animals
- approximately 250 or fewer subject animals
- “approachable” or non-wary subject animals
- a multi-year contraceptive drug which is effective in fallow and axis deer, is specific to them, and is available with a registration number from EPA.

The Seashore encompasses 90,000 acres of pastoral, natural and wilderness areas. Indeed, the predominant appeal of the park is its lack of roads and wild character, juxtaposed with its proximity to a major metropolitan area. Current estimates of non-native deer numbers are 250 axis deer and 860 fallow deer. The minimum number of fertile does is estimated to be 470. In 2003, Hobbs created a stage-based simulation model to examine the effects of culling and fertility control on fallow deer numbers in PRNS (see Appendix B). Using Seashore data on fallow deer numbers, Hobbs found that attempting to eradicate the population in 15 years using only fertility control (even with longer duration agents) would be futile.

Wildlife biologists agree that in order to control a deer population, at least 80% of all fertile does must be treated with a contraceptive. If the contraceptive is not effective in 100% of animals treated, if the population is near carrying capacity or if a reduction in deer numbers is desired, upwards of 95% of all fertile females must be treated. Because of the Seashore's size, lack of roads and rugged topography, it is impractical to expect that such requirements could be met.

*Chapter 5 – Consultation and Coordination
Response to Comments*

Dale R. McCullough, Professor Emeritus of Wildlife Biology at University of California, Berkeley, wrote in a communication to NPS:

“Stated plainly, there is no way that contraception alone will eliminate feral deer populations from Point Reyes National Seashore. Furthermore, even in the most optimistic scenario, the degree of population reduction will be moderate. It will be inadequate to reduce feral deer populations to low enough numbers to achieve the essence of the program goals.”

AL 4400 – Alternatives: Non-Lethal

WH 4000 – Wildlife and Wildlife Habitat: Impact of Proposal and Alternatives

AL 4300 – Alternatives: Contraception

Commenters feel that the Plan/EIS should include alternatives and management actions to control non-native deer that rely on non-lethal methods only.

Response Non-lethal options include relocation and contraception, and both were considered in the formulation of alternatives analyzed in this EIS. As noted above, relocation in the numbers required to meet park objectives is not feasible because a steady supply of recipients would be difficult to secure, and the permitting agency who would decide whether translocation is allowable (California Department of Fish and Game) has indicated it is not likely. This leaves contraception, which is included to the maximum extent feasible, as part of the Preferred Alternative. However, contraception by itself would not meet objectives. In analyzing the likelihood of success of a contraception-only alternative, the following sources of information were consulted:

- past data on 5 years of contraception of tule elk at the Seashore
- scientific literature reviews
- the opinions of experts in the field of wildlife contraception
- population models designed by wildlife biologists (See Appendices A and B).

Contraception, by its very nature, prevents reproduction but does not remove adults from the population. In fact, life expectancy of treated females can increase as a result of reduced energetic costs of pregnancy and lactation (Warren 2000b, Hone 1992) and increased resources in populations with strong density-dependent responses (Garrott 1995). Therefore, only if at least 75-95% of females were treated and the contraceptive was 100% effective for each year in the reproductive lifetime of each female (8-10 years), could a population be controlled or fall to zero by attrition (see Barrett model, Appendix A).

The logistical difficulties of treating such large numbers of animals and the uncertainty of effectiveness have led the vast majority of wildlife biologists to conclude that controlling large free-ranging populations of long-lived ungulates solely with annual contraception is impractical and unlikely to succeed (McCullough 1996, Garrott 1991 and 1995, Curtis et al. 1998, Warren et al 1992 and 2000, Rudolph et al. 2000, Fagerstone et al. 2002). Without exception, all of the experts in the field of wildlife contraception that reviewed the document agreed with NPS’s rejection of this alternative as infeasible.

Treating a minimum of 400 deer per year with even the most effective, remotely delivered yearly contraceptive, during the 2-3 months before the reproductive season when it must be delivered is beyond the logistic capabilities of most commercial deer ranching facilities or zoos. The capture, treatment, marking and re-treatment of deer at the Seashore is significantly more difficult than this, and well beyond the financial, logistic and operational abilities of the Seashore.

*Chapter 5 – Consultation and Coordination
Response to Comments*

There is currently no EPA-registered multi-year duration wildlife contraceptive drug. It is unknown at this time whether any of the drugs currently in development would cause lifetime sterility in fallow or axis deer. Because these drugs are experimental, and treatment animals are free-ranging, each treated animal would require capture and permanent marking, as well as monitoring over its reproductive life. Capture and handling of wild deer is difficult, risky for NPS staff and deer and will result in some unavoidable animal deaths. Even if a lifelong injectable sterilant for axis and fallow deer were 100% effective, capture, permanent marking and treatment of the minimum numbers required for to remove all non-native deer, using sterilants alone, are impractical for free-ranging deer in a 70,000-acre park.

AL 4500 – Alternatives: Lethal Removal (1)

WH 4000 – Wildlife and Wildlife Habitat: Impact of Proposal and Alternatives

Commenters recommend that deer carcasses be given to charity.

Response As noted in the EIS (see Chapter 2, *Actions Common to All Alternatives* and the descriptions of the individual Alternatives B through E) where fallow and axis deer carcasses are accessible to transport, they would be donated to charitable organizations as food for the needy. In addition, the Seashore is currently developing a cooperative program with the U.S. Fish and Wildlife Service and the California Condor Recovery Program to donate deer carcasses for use as food by reintroduced California Condors (*Gymnogyps californianus*), an endangered species. Funds to enable the donation of meat to the needy or to the condor reintroduction program will be provided by the NPS National Resource Preservation Program (NRPP) and Operating Formulating System (OFS).

AL 4500 – Alternatives: Lethal Removal (1)

The commenter prefers the use of professional sharpshooters rather than hunters, to be more humane to non-native deer.

WH 4000 – Wildlife and Wildlife Habitat: Impact of Proposal and Alternatives

If contraceptive treatment is not feasible, sharpshooters should be used, employing the most humane methods.

Response We agree that the most humane method of lethal control is by way of professional sharpshooters. The Seashore's Preferred Alternative (E) calls for the use of professional sharpshooters for removal of deer, along with contraception of fallow does over a 15-year period. As described in Chapter 2, all culling would be conducted by NPS staff or contractors specifically trained in wildlife sharpshooting. Efforts would be made to deliver immediately lethal shots to target animals and sharpshooters would be required to complete range qualifications specifically designed for ensuring humane and effective wildlife removal. Use of hunters to control deer was rejected as being infeasible and unlikely to accomplish plan objectives (see Chapter 2, Alternatives and Actions Considered but Rejected).

The Preferred Alternative is also more humane than those that prolong the removal process because it would remove fewer total deer. This is because taking longer would allow deer to reproduce and repopulate the herd, requiring the removal of the offspring. This is illustrated in the final EIS in Figure 1 and Table 1, which show the total number of deer that would require removal under each of the alternatives.

*Chapter 5 – Consultation and Coordination
Response to Comments*

As specified in Chapter 2, contraception by itself is not feasible. However, the Preferred Alternative (E) includes fertility control (long-lasting contraception of deer) in combination with lethal removal. Both actions would continue until both axis and fallow deer have been extirpated. Because of their current large populations (~250 axis deer and ~860 fallow deer), it is expected that total removal of both species under the Preferred Alternative would require 15 years. Monitoring during program implementation would be done to assess success of the program and to guide adjustments in the management techniques used. The Alternatives chapter describes the necessary criteria a contraceptive must meet, including a multi-year or permanent effect. Although the Preferred Alternative assumes one of chemicals currently in development would be available for use in fallow deer and perhaps for axis deer as well, lethal removal via sharpshooting would be used if fertility control agents could meet the criteria or were not available.

GA 1101 – Impacts Analysis: Livestock (2)

Why is one of the Non-Native Deer Management Plan objectives to reduce non-native deer impacts to ranching when cattle have impacts that are so much greater than the non-native deer?

Response (See also Response to PN 8000, which addresses why the issue of ranching and ranching impacts is not within the scope of this resource management plan but rather the park’s General Management Plan, currently under development.) Cattle operations in the Seashore are a separate issue from exotic deer management and outside the scope of this plan.

The U.S. Fish and Wildlife Service, which administers the federal Endangered Species Act, recently concurred with the Seashore’s Biological Assessment (NPS 2002c) that ranch lease renewals would not be likely to jeopardize any listed threatened or endangered species in the park. Both the Biological Assessment and Biological Opinion are available by request.

In addition, while the park’s general management plan dictates removal of the exotic deer, it mirrors the Seashore’s enabling legislation in specifically allowing cattle ranching and dairying to continue (see Issues Considered but Rejected section in the EIS for more information). Ranching pre-dates the park and is specifically allowed in the enabling legislation and general management plans of both PRNS and GGNRA. 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.” Although changes in these policies are possible in the next cycle of general management planning over the next two years, these laws, policies and plans are currently binding on the actions of the Seashore.

GA 1200 – Impact Analysis: Native Deer

The need for the management plan should be revised because native deer can cause the same adverse effects (to ranchers for example) and have the same diseases.

Response (See also response above, which reiterates, based on FEIS Chapter 1, Purpose and Need, why the management plan is directed at non-native deer and is necessary given the fundamental purpose of the national park system to preserve native plants and wildlife.)

The need for managing non-native deer at the Seashore goes beyond disease control and the reduction of impacts to ranchers. As noted above, and in more detail in Chapter 1 of the FEIS, axis and fallow deer cause numerous impacts on native species and the Seashore’s natural ecology, and their presence is in

*Chapter 5 – Consultation and Coordination
Response to Comments*

contrast with direction provided by the National Park Service laws, regulations and policies. These impacts and regulatory policies indicate the reduction or elimination of these species is warranted.

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 (NPS 2001). 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. Native deer are considered part of the native ecosystem, in which the species have evolved in concert with each other, and as such, are to be protected and restored. 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. Non-native deer differ in their habitat use and life histories from native black-tailed deer and elk. It is these differences, as well as the apparent explosive growth of the herds in recent years that results in impacts to natural resources. Some of the more serious effects these non-native deer have at the Seashore include competition with, and displacement of, native tule elk and black-tailed deer (particularly in high deer density or low forage conditions), the documented potential for transmitting disease to these native deer, and heavy use of and resulting impacts to riparian and oak woodland habitats, habitats which support a large number of sensitive native wildlife species. Spread of non-native deer to areas outside PRNS boundaries would result in expansion of these impacts to natural areas throughout Marin County.

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* section of the FEIS for more information).

GA 3000 – Impact Analysis: General Methodology for Establishing Impacts/Effects

How will culling occur?

Response Information on how lethal control would be implemented is in the FEIS Chapter 2, under the description of Alternative B. Alternatives C through E address culling, but since it is already described in detail, readers are referred back to the more complete description under Alternative B.

Culling would be conducted by NPS staff or contractors specifically trained in wildlife sharpshooting. Efforts would be made to deliver immediately lethal shots to target animals and sharpshooters would be required to complete range qualifications specifically designed for ensuring humane and effective wildlife removal. NPS would follow the recommendations of the American Veterinary Medical Association (AVMA) for humane treatment of animals (see the AVMA website for examples: www.avma.org/resources/euthanasia.pdf). As such, every attempt would be made, to “reduce pain and distress to the greatest extent possible during the taking of an animal’s life” (AVMA 2001).

Beyond culling, all actions which involve direct management of individual animals, ranging from aerial surveillance to live capture and contraception would be conducted in a manner which minimizes stress,

*Chapter 5 – Consultation and Coordination
Response to Comments*

pain, and suffering to every extent possible. In addition, every effort would be made to minimize the degree of human contact during all procedures that require handling of wild ungulates.

Specifics of timing and location of the removal activities would be determined by PRNS managers and would vary depending on movement of animals, seasonal grouping patterns and estimates of numbers. Because visitor and staff safety would be paramount, removal activities would not occur during times and locations of high visitation.

PN 8000 – Purpose and Need: Issues Eliminated from Further Consideration

TE 4000 – Threatened and Endangered Species: Impact of Proposal and Alternatives

AI 4000 – Alternatives: New Alternatives of Elements

Commenters indicate that there should be an alternative that eliminates ranching because the impacts are more severe than from non-native deer.

The impacts of ranching should be included as a cumulative impact.

Is the purpose of the Non-Native Deer Management Plan to obtain more land for ranching?

Response In Chapter 1, *Issues Considered and Rejected*, a number of issues that were suggested by the public or members of the NPS interdisciplinary team, like the issue of livestock management at PRNS, were found to be outside the scope of this planning effort and were therefore not carried forward for analysis.

As noted above, ranching pre-dates the park and is specifically allowed in the enabling legislation and general management plans of both PRNS and GGNRA. 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.” Any proposed changes to these agricultural policies will be thoroughly discussed and open to public comment over the next two years as the Seashore updates its general management plan. However, these policies are currently binding on the Seashore and an alternative that eliminates ranching is therefore not a reasonable one for this plan to analyze. The response to GA 1101 addresses relative impacts from ranching and non-native deer. The USFWS recently concurred with Seashore biologists that the effect of renewing existing cattle leases on several listed threatened and endangered species would be adverse, but would not be likely to jeopardize any of these species.

The impacts of livestock grazing, along with other park programs are analyzed in the cumulative impact sections of each alternative and each resource. For example, the combined impacts of cattle operations, past, present and future planned park activities, activities outside the Seashore and those of continuing current management of non-native deer on vegetation are analyzed in the cumulative impact section of impacts of Alternative A to Vegetation. The combined impacts of cattle ranching and other activities relevant to soils are analyzed under the Soils impact analysis.

As stated in Chapter 1, Need, Purpose and Objectives, 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. The need for developing a non-native deer management plan is not related to

*Chapter 5 – Consultation and Coordination
Response to Comments*

any foreseeable change in the amount of land to be used for agricultural purposes or other issues to be addressed by the general management plan.

PN 8000 – Purpose and Need: Objectives in Taking Action

Commenters question why the plan focuses on non-native deer when other non-native species, such as feral cats and off-leash dogs, are impacting the park.

Response The issue of feral cats and dogs, as well as off-leash pet dogs, is of concern to Seashore managers but is a separate planning issue from that of the management herds of the two non-native deer species. Though stray and abandoned dogs and cats can have detrimental impacts to native wildlife, it is not as broad as the effect of expanding and migrating herds of non-native deer. In addition, the management and regular control of these animals within PRNS takes place through law enforcement officers and is authorized under the Code of Federal Regulations (36 CFR 2.15). Regulations governing feral and domestic animals in the park are detailed in the Seashore's *Compendium*, updated in 2005. Issues concerning dogs and cats were not addressed in the non-native deer management plan because these issues have no influence on the persistence, management or eradication of the non-native deer herds and are outside the scope of this planning effort.

PO 4000 – Park Operations: Impact of Proposal and Alternatives

The management plan is a waste of scarce federal funding.

Response (Also see Response to WH 1000 and GA 1200, reiterating the need for the management plan.) The primary purpose of the National Park Service (NPS) is to preserve the nation's natural and historic treasures for the continued enjoyment of future generations. The NPS expends significant financial resources toward the preservation and perpetuation of natural processes and native species. Considerable effort is directed toward stabilizing rare, threatened and endangered species by improving habitat conditions for their continued survival. A key component of habitat improvement is the control or removal of factors that negatively impact native species. Scientists around the world recognize that the most important cause of native species decline, second only to habitat loss, is non-native species invasions.

Consequently, one of the best uses of limited financial resources to benefit native ecosystems is to improve habitat conditions through removal of non-native competitors where prudent and feasible. Not doing so guarantees the continuation of harmful impacts these species have and also requires perpetual expenditures of staff and budgetary resources, often at the expense of improving conditions for or management of native species of concern. Beyond the outright acquisition of undisturbed habitat, the most effective means, both financially and logistically, of benefiting numerous native, threatened, and endangered species and of perpetuating natural processes is through a focused removal of competing non-native organisms.

Specifically, the non-native deer management plan was developed to accomplish the following important objectives:

- To correct past and ongoing disturbances to Seashore ecosystems from non-native deer 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 deer.
- To prevent spread of populations of both species of non-native deer beyond Seashore and GGNRA boundaries.

*Chapter 5 – Consultation and Coordination
Response to Comments*

- To reduce impacts of non-native deer through direct consumption of forage, transmission of disease to livestock, and damage to fencing to agricultural permittees within pastoral areas.

The NPS considers the accomplishment of these objectives via implementation of the preferred alternative, to manage and eventually eliminate non-native deer from the Seashore, to be highly beneficial for native species, consistent with the primary purpose of the National Park Service and a worthwhile expenditure of public funds.

ON 1000 – Other NEPA Issues: General Comments

The commenter states that NPS was biased (pre-decisional) in its choice of eradication as a component of the Preferred Alternative.

Response The purpose of an Environmental Impact Statement (EIS), and of the National Environmental Policy Act (NEPA), is to make sure that federal agencies fully consider the environmental costs and benefits of their proposed actions before they make any decision to undertake those actions. The NPS is required to analyze impacts and a reasonable range of alternatives, as well as input from the public, before choosing the alternative that causes the least damage to the biological and physical environment. It must also develop and fully analyze an alternative which best protects, preserves, and enhances historic, cultural and natural resources.

The range of alternatives and the impact analyses were developed with input from NPS subject experts, wildlife and contraception experts from universities and other agencies, and from literature searches. Public input was also considered in developing the range of reasonable alternatives as well as the issues of importance in the impact analysis. Before beginning the EIS, the Seashore accepted public comments at a public information meeting at the Point Reyes Dance Palace on May 4, 2002 as well as in letter or email form from May 4, 2002 until July 5, 2002.

Both the national NEPA Regulations and those that guide the National Park Service state that “the preferred alternative must be identified in the draft EIS” so that agencies and the public can understand the lead agency’s “orientation” (40 CFR 1502.14 (e), Q4a). In these regulations, “preferred alternative” is defined as the agency-preferred course of action at the time a draft EIS is released. Having a preferred alternative helps the public focus its comments during review of the NEPA document. Therefore the identification of a preferred option at the draft EIS stage is not predecisional, but required. It is also not the same as the “selected” alternative, as the park will consider all comments on the draft EIS before making any final decision on which alternative to implement.

Though the NPS has expressed preference for this alternative, the assessment in the EIS is developed equally for all alternatives. Only after thorough analysis of all the impacts was it obvious that the alternatives which feature eradication of all non-native deer (D and E) would best reduce damaging impacts to natural and physical resources. The non-eradication alternatives (A, B and C), which feature no action or control of deer numbers as some specified level, would perpetuate ongoing detrimental impacts to park natural and physical resources. Alternative E (Removal of all Non-Native Deer by a Combination of Agency Removal and Fertility Control) was found to be the park’s Preferred Alternative and, along with Alternative D (Removal of all Non-Native Deer by Agency Personnel), was also found to be the Environmentally Preferable Alternative.

WH 2000 – Wildlife and Wildlife Habitat: Methodology and Assumptions

The commenters are concerned that spread of non-native deer outside of NPS boundaries endangers the mission of other agencies/organizations to preserve native biodiversity.

*Chapter 5 – Consultation and Coordination
Response to Comments*

Response The commenters' concerns are well founded and addressed in the plan's Purpose and Need stated in Chapter 1, and Chapter 4, Environmental Consequences for Alternative A (No Action).

The document concludes that for wildlife, data on current and past population growth of fallow and axis deer at PRNS indicate that continuing current management (the No Action alternative) will result in an increase in non-native deer numbers within the Seashore and throughout Marin County. Pockets of extremely high non-native deer density, such as those currently seen in Olema Valley, are likely to be found increasingly throughout Marin County. Native species richness and diversity would decrease in those high-density areas. Overall, the magnitude of impacts to native wildlife within NPS boundaries are considered moderate or major in intensity, adverse and long-term, and those outside the boundary have the potential to become major in intensity. Similar moderate to major adverse impacts are expected for vegetation inside and outside NPS boundaries.

The recent expansion of non-native deer towards park boundaries is of concern to NPS managers and is one of the compelling components of the stated Need for Action (Chapter 1). The Preferred Alternative (E) would reduce and eventually eliminate the expansion pressure over 15 years by removing all deer within the Seashore. Outside the Seashore, because NPS has no wildlife management authority over state and private lands, California Department of Fish and Game would be responsible for non-native deer control should it become necessary.

PN 8000 – Purpose and Need: Objectives in Taking Action

If one of the objectives for the plan/EIS is truly to prevent transmission of disease, then wouldn't the park also need to address the reduction of disease transmission from livestock or native deer?

Response It is true that one of the objectives includes preventing the transmission of disease from non-native deer to cattle or to other wildlife. The disease of greatest concern in this regard is paratuberculosis, or Johne's disease, an incurable diarrheal wasting disease of wild and domestic ungulates. Both tule elk and black-tailed deer are susceptible to paratuberculosis, which is also carried by axis and fallow deer at the Seashore. Prevalence of paratuberculosis was about 10% and 8% in axis and fallow deer, respectively, during the most recent survey (Riemann et al. 1979). Although paratuberculosis has been documented in tule elk at the fenced Tomales Point Elk Reserve, it has not been documented in PRNS black-tailed deer (Sansome 1999) or in the newly established free-ranging tule elk in the Limantour Wilderness Area. The restoration of tule elk in Limantour in 1998 involved a 6-month quarantine of 45 elk which were transported from Tomales Point. The Limantour animals are considered to be the most extensively paratuberculosis-tested wild elk known (Manning et al 2003). Only those animals that tested negative for a battery of fecal and blood tests were released to start the new herd. In 1999, Sansome collected over 120 samples from PRNS black-tailed deer for paratuberculosis testing. All samples tested negative and Sansome concluded that "black-tailed deer pose a minimal risk of re-infecting *M. paratuberculosis* (the organism which causes paratuberculosis) free elk in free-ranging herds" (Sansome 1999). Transmission of paratuberculosis is facilitated by large numbers of animals in close proximity. Because both species of non-native deer gather in large herds, and both are becoming more numerous at PRNS, managers are concerned that the new disease-free Limantour elk herd and native black-tailed deer are susceptible to infection from axis and fallow deer.

Domestic cattle are also carriers of paratuberculosis and infection of native deer from livestock is considered a possibility, albeit minor. The reverse, transmission of disease from native deer to cattle, is also a possibility, and is again considered minor. Elk and black-tailed deer tend to avoid areas where large numbers of livestock congregate and are therefore less likely to be infected (or to infect) with the organism that causes paratuberculosis. Livestock management at PRNS is outside the scope of this

*Chapter 5 – Consultation and Coordination
Response to Comments*

planning effort. The impacts of livestock to wildlife and any proposed changes in the Seashore's agricultural policies will be thoroughly discussed, and open to public comment, over the next two years in the next cycle of general management planning leading to a revised General Management Plan.

TE 4000 – Threatened and Endangered Species: Impact of Proposal and Alternatives

Commenters express concern that an excessive population of non-native deer will have detrimental impacts on threatened and endangered species if not controlled. The damage includes loss of vegetation, erosion and negative impacts upon endangered species.

Response See Chapter 4, the section on impacts to special status species of increasing non-native deer numbers and range (No Action, Alternative A). The federally listed species that are likely to be affected by non-native deer include northern spotted owls (*Strix occidentalis caurina*), western snowy plover (*Charadrius alexandrinus nivosus*), California red-legged frog (*Rana aurora draytonii*), Coho salmon (*Oncorhynchus kisutch*), steelhead trout (*Oncorhynchus mykiss*), California freshwater shrimp (*Syncaris pacifica*), and Myrtle's silverspot butterfly (*Speyeria zerene myrtilae*). Based on current and past data on fallow and axis deer, without active control their populations will continue to increase, resulting in expanded range and higher animal concentrations within the Seashore and Marin County. Ongoing impacts to species of special concern range from minor to major. All of the impacts associated with the presence and/or expansion of these populations are characterized as adverse.

TE 4000 – Threatened and Endangered Species: Impact of Proposal and Alternatives

Commenters question the plan's conclusion that non-native deer adversely impact sensitive species when there are many other causes for decline in these species.

Response The EIS makes no claim that non-native deer impacts are currently responsible for decline of listed species outside of PRNS boundaries. However, the discussion, in Chapter 4, of Alternative A (No Action) does detail the impacts of non-native deer spreading outside the Seashore and affecting listed species throughout Marin County. As the commenter states, there are usually multiple, complex and inter-related causes for the decline of any particular species of concern. These causes can usually be found in the recovery plans for the species, prepared by U.S. Fish and Wildlife Service and cooperating agencies or institutions. The presence and expansion of non-native deer populations at the Seashore do contribute to the impacts experienced by some sensitive species, however, as the EIS and the literature and expert opinion document. Other factors outside the Seashore that also adversely impact these same species are briefly described in the cumulative impact sections of the EIS. The non-native deer management plan/EIS is not the appropriate document for a full and detailed discussion of the status and cause of decline of all listed species found in the Seashore. Instead, the primary purpose of the EIS is to define management prescriptions for non-native deer management. The appropriate focus of the impact discussion (Chapter 4) is on the probable environmental consequences related to implementing each of the five deer management alternatives.

TE 4000 - Threatened and Endangered Species: Impact of Proposal and Alternatives

The EIS is non-compliant with the Endangered Species Act and NEPA because it does not consider impacts to listed species from the proposed management actions, such as culling, and the EIS overstates the potential impacts to listed species from non-native deer as opposed to the effects of ranching activities.

Response The EIS is compliant with both the Endangered Species Act (Section 7) and NEPA and has fully analyzed possible impacts of management actions to sensitive and listed species.

*Chapter 5 – Consultation and Coordination
Response to Comments*

For NEPA compliance, see Chapter 4, *Methodology*, for a description of how impacts to threatened and endangered species were assessed and defined. An adverse impact is defined in the document as “likely to result in unnatural changes in the abundance or distribution of a special-status species. This could occur through direct disturbance, mortality, decreased reproduction, or through destruction or alteration of habitat.” All impacts of the Preferred Alternative (E) that were not negligible (defined as “imperceptible or not measurable (undetectable)” in the document) were described in Chapter 4, Alternative E, *Impacts on Special Status Species*. There were no impacts of the Preferred Alternative to special status species that were deemed by the NPS to be more than negligible in intensity. Specific limitations to management actions, designed to prevent any possible impacts to these species are described in Chapter 2, description of Alternative E:

- Culling would be conducted by specially trained NPS staff or contractors,
- Culling would take place throughout the Seashore, with the exclusion of northern spotted owl breeding areas during owl nesting season (February 1 – August 1) and a ¼-mile coastal buffer zone, to minimize disturbance to marine mammals and protected shorebirds,
- In remote and sensitive locations where removal of a carcass is difficult, it will be left to recycle nutrients into the ecosystem,
- Culling or capture (for contraception) would not take place in creeks or riparian areas.

It is not the purview of this EIS to compare management of non-native deer and its impacts to those of ranching. These are separate issues which have separate NEPA and planning processes. There may be additive impacts of non-native deer populations and cattle to some Seashore resources, and these are analyzed in the cumulative effects sections of this EIS and will be part of the EIS for the park’s revised General Management Plan, which is currently in the early stages of a two-year planning process. During this process, the issue of cattle ranching will be directly addressed and evaluated.

TE 4000 - Threatened and Endangered Species: Impact of Proposal and Alternatives

The NPS failed to comply with requirements to undergo Section 7 consultation for the Non-Native Deer Management Plan.

Response For Endangered Species Act (ESA) compliance, see Chapter 5, Consultation and Coordination. Section 7 of the act defines federal agency responsibilities for consultation with the US Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) and requires concurrence from these two agencies with any NPS determination that intended management actions will not adversely affect listed species. The National Park Service initiated the consultation process with USFWS and NMFS on March 26, 2003 and completed both processes May 3, 2005.

On March 10, 2005, in a letter to the USFWS, the NPS requested concurrence with its finding that the proposed plan would not be likely to adversely affect the proposed critical habitat for the California red-legged frog or adversely affect nine plant and animal species found in the planning area. In a memo dated April 7, 2005, the USFWS explained that their assessment of potential effect was based on the project constraints described in the consultation letter including: 1) no actions would take place in creeks, waterways or riparian areas, 2) culling would be conducted by specifically trained staff, 3) carcasses would be removed when possible, and where not possible, left to decay naturally, and 4) that if project work descriptions or time frames change from those provided in the consultation letter, those changes would be submitted to the USFWS for review. In the April 7, 2005 memo, the USFWS concurred with the NPS findings that measures in the proposed plan would be sufficient to reduce any direct, indirect and cumulative effects to the nine listed species and proposed critical habitat to an insignificant or

*Chapter 5 – Consultation and Coordination
Response to Comments*

discountable level. With the issuance of the memo, the USFWS concluded its consultation process for the Non-native Deer Management Plan EIS.

On March 28, 2005, NPS transmitted a letter to NMFS regarding potential project effects on listed fish species and fish habitat during implementation of the plan. The NPS clarified that management actions would not take place in creeks, waterways, or riparian areas and therefore the proposed project would not likely to adversely effect central California coast ESU coho salmon, central California coast ESU steelhead, California coastal ESU Chinook salmon, Designated Critical Habitat for central California coast ESU coho salmon, and Essential Fish Habitat for coho salmon and Chinook salmon. NMFS concurred with NPS findings in a letter to the NPS on May 3, 2005, ending the informal consultation process.

VE 4100 – Visitor Experience: Non-Native Deer

AL 1200 – Alternative B (1)

AL 1300 – Alternative C (1)

The commenter favors an alternative that would maintain some level of non-native deer so the public would be able to view them.

Commenters stated that the plan/EIS should more fully address the viewing of non-native deer as an important and unique part of the visitor experience at Pt. Reyes National Seashore.

Response See Chapter 4, Impacts to Visitor Experience (Alternatives D and E) for details of the impacts of removing all non-native deer to visitor wildlife viewing. The removal of all non-native deer would result in minor, long-term, adverse effects to wildlife viewing opportunities, particularly for those interested in fallow deer. This was determined in accordance with the definitions of minor, moderate and major impacts to visitor experience (see Chapter 3, *Methodology*). Minor impacts are measurable and mild and would be detectable by a few visitors; moderate impacts are clearly detectable by many visitors. There is no indication from public comment or visitor satisfaction surveys completed yearly by the Seashore that the adverse impacts to wildlife viewing would be anything other than minor in intensity.

In addition to this, the laws, regulations and policies that guide management at Point Reyes are those that guide all units of the National Park System, whose mission is to insure the continued unimpaired availability to the public of the natural processes and historic features for which they were established. The Seashore's enabling legislation indicates the primary purpose of the park is to preserve a portion of the California Coast that was rapidly vanishing due to development at the time the legislation was passed. NPS units are considered to be of national significance. The observation of exotic animals is inconsistent with these mandates, and is better accommodated by game or zoological parks.

WH 1000 - Wildlife and Wildlife Habitat: Guiding Policies, Regulations and Laws

How is it determined that fallow and axis deer are non-native?

The DEIS does not consider that after 50 years at the park the ecosystem has long since adjusted itself to non-native deer and that certain species may be dependent on them and could be impacted.

GA 1200 - Impact Analysis: Native Deer

Why is the management plan directed at non-native deer instead of both non-native deer and native deer?

*Chapter 5 – Consultation and Coordination
Response to Comments*

Response The National Park Service (Point Reyes is a unit of the National Park Service) is governed by a set of laws, regulations and policies including its 2001 “Management Policies,” and it is this set of rules, as well as standard biological and ecological peer-reviewed literature, that park units use to manage resources. These policies (in section 4.4.1.3) clearly define “native species” as all species that have occurred or now occur as a result of natural processes on lands designated as units of the national park system. “Exotic species” are those species that occupy park lands directly or indirectly as the result of deliberate or accidental human activities.

The mechanisms which allow species to evolve with their surroundings, i.e. natural selection, genetic drift, mutation, and gene flow, require many generations and large stretches of “evolutionary time”. The evolutionary timescale is on the order of thousands of years. Fifty years, the length of time during which non-native deer have lived on park lands, is a fraction of the time required by most species (particularly long-lived ones) to co-adapt and co-evolve.

The crucial distinctions between natural evolution of native species and introductions of non-native species is the time scale over which it occurs and lack of human manipulation. A species of plant or animal is generally considered to be “native” if it occupied or migrated to an area over this long period of evolutionary time. The distribution and migration of species is considered to be a natural occurrence if it occurs without the intentional or inadvertent influence of humans. Native species inhabiting the national parks either co-evolved at that location over millennia or migrated there over time.

Under natural conditions, the adaptation of species to their environment and to each other over time results in an ecological accommodation and balance. Human activities have compressed that relationship both spatially and temporally resulting in an upset in the evolutionary balance and a disruption of natural processes. Natural barriers such as oceans, deserts and mountains that allowed the development of unique ecosystems, such as the California coastal ecosystem, have been breached over the past five hundred years by rapidly accelerating human trade and travel. Species entering a new ecosystem as a result of these deliberate or inadvertent human activities often have a competitive advantage over native species in that they have no natural predators to enforce balance in their new environments. Introduced species often consume or prey on native ones, overgrow them, transmit new diseases to them, compete with them, or hybridize with them. Invaders can change entire ecosystems by altering hydrology, nutrient cycling, and other ecosystem processes.

This is the case with axis and fallow deer at Point Reyes National Seashore. Axis deer and fallow deer both evolved, over many thousands of years, in India and Asia Minor, respectively. In their native ranges, the vegetation, wildlife and other living species co-evolved with them, to form a stable ecological balance. None of the species present in the natural California coastal ecosystem evolved with axis and fallow deer or appear to be dependent on them in any way. However, the ways in which non-native deer affect native ecosystems are numerous but subtle. Unlike native black-tailed deer, they congregate in massive herds and cause compaction and erosion of soils, denudation of vegetation and damage to woodland and riparian habitats. The species which depend on these areas, including species of concern and migratory birds, are in turn adversely impacted by a loss of habitat. Non-native deer compete with native deer for food and cause decreased survivability of black-tailed deer in the fall and during droughts. These are the scientific or ecological reasons why the plan addresses non-native deer. Also, because there is no evidence or indication that removal of all non-native deer in the Seashore would result in loss of any species native to the California coastal ecosystem, it was not considered in the impact analysis. Conversely, black-tailed deer and the other species that are indirectly and adversely affected by axis and fallow deer have co-evolved over many centuries and do have a niche in the California coastal ecosystem that is represented in the park. They are part of an intricate web of natural resources including other native species, and their absence would be felt in many different parts of this web.

*Chapter 5 – Consultation and Coordination
Response to Comments*

For a full explanation of the adverse impacts of non-native deer see FEIS Chapter 4, Environmental Consequences, Alternative A.

WH 1100 – Wildlife and Wildlife Habitat: Ethical Issues

The non-native deer are in the park because of human action and the NPS has an ethical responsibility to find a non-lethal solution.

PO 4000 – Park Operations: Impact of Proposal and Alternatives

The proposed management plan is cruel and inhumane.

Response The Preferred Alternative does include non-lethal management in the form of contraception; however fertility control by itself will not accomplish the objectives of the plan and is infeasible as the sole method of non-native deer control (see Chapter 2, *Alternatives and Actions Considered but Rejected*). In fact, one of the reasons Alternative E was selected over Alternative D, the only other alternative that would fully meet park objectives, is because it would make the maximum feasible use of this non-lethal method of controlling deer numbers. This is despite the fact that Alternative D offers benefits in the form of less cost, a shorter duration, fewer impacts on park resources, and fewer safety risks for park staff who administer the contraceptive. NPS believes that by selecting Alternative E, we have made the greatest possible use of non-lethal methods, given these constraints.

The issues of the plan being cruel or inhumane were common themes in several comments. Humaneness is a person's perception of harm or pain inflicted on an animal, and although at times it can be quite obvious when an animal is in distress or pain, at other times it is not. For example, the American Veterinary Medical Association (AVMA) considers gunshot to be a preferred means of euthanasia in wildlife when it is delivered by sharpshooters skilled enough to be consistently accurate. Particularly if a shot is delivered using a relatively soundless weapon so to not disturb other deer or wildlife, death is quick and relatively painless.

Whether an animal should be killed at all is a matter of the social values an individual holds (see Chapter 4, Impacts on Visitor Experience). The interpretation of what constitutes harm or suffering to an animal varies from person to person, with different people perceiving the humaneness of any given action differently (USDA 1997). For example, Kellert (1976) identified a number of distinct attitudes toward wildlife including naturalistic, ecological, humanistic, moralistic, scientific, aesthetic, utilitarian, dominionistic, and negativistic (see Table 5 in the document for definitions). While people typically possess more than one view of animals, most people hold a predominant view. For example, farmers tend to have a utilitarian attitude towards animals, while scientists tend to take a scientific view (Kellert 1976).

Animal welfare advocates promote the minimization of pain and suffering to animals and their organizations promote the well-being and quality of life of individual animals, irrespective of the animals' role in an ecosystem. In contrast to the animal welfare movement, the animal rights movement is premised on the equality of humans and animals. There are no specific federal directives for NPS in regards to animal welfare or animal rights. NPS management of wildlife, as described in *Management Policies* (NPS 2001), is based on Aldo Leopold's biocentric land ethic, a holistic approach to environmental ethics that values ecosystems in their own right. NPS wildlife management focuses on the role of animal populations and species within the ecosystem, rather than on individual animals.

Impacts to individual animals within a species are analyzed in the document in the context of pain and suffering caused by proposed actions to wildlife, specifically, non-native deer (see Chapter 4, Alternative

*Chapter 5 – Consultation and Coordination
Response to Comments*

E, Impacts to Wildlife). All proposed alternatives include provisions to prevent unnecessary animal suffering (see Chapter 2, Actions Common to All Alternatives). Recommendations for humane animal treatment developed by the American Veterinary Medical Association (AVMA) are included in all alternatives. As noted above, the AVMA considers, in some circumstances, gunshot to be the only practical and acceptable method of euthanasia in wildlife, when delivered by personnel sufficiently skilled to be accurate and experienced in the proper and safe use of firearms (AVMA 2001). Because pain and suffering are not scientifically measurable in animals, the judgment of professionals like veterinarians and the AVMA, as well as wildlife biologists and wildlife veterinarians, is used to assess the likelihood of suffering in the EIS.

All actions which involve direct management of individual animals, ranging from aerial surveillance to live capture, contraception and lethal removal, will be conducted in a manner which minimizes stress, pain, and suffering to every extent possible (see Chapter 2, *Actions Common to All Alternatives*). Culling would be conducted by NPS staff or contractors specifically trained in wildlife sharpshooting. Efforts would be made to deliver immediately lethal shots to target animals and sharpshooters would be required to complete range qualifications specifically designed for ensuring humane and effective wildlife removal.

Using the recommendations of the AVMA, every effort will be made to minimize the degree of human contact during all procedures that require handling of wild ungulates, including contraception. In addition, managers will attempt to “reduce pain and distress to the greatest extent possible during the taking of an animal’s life” (AVMA 2001). As a matter of general policy in all wildlife management activities, Seashore managers always endeavor to minimize animal suffering, eliminate unnecessary pain to every extent possible and comply with the recommendations of the AVMA. A detailed description of AVMA recommendations can be found on the AVMA website: www.avma.org/resources/euthanasia.pdf.

In addition, regardless of whether a non-native species is introduced directly by humans or expands its range into a unit of the National Park Service, NPS is required to preserve unimpaired the natural and cultural resources and values of the national park system for future generations. Legally, through the NEPA process, NPS must choose a Preferred Alternative which will best fulfill the park’s statutory mission and responsibilities, considering economic, environmental, and technical factors. NPS must also choose the alternative that best accomplishes the purpose and need for federal action (as stated in the Purpose and Need section). See Chapter 2 (Preferred Alternative) for the reasons why Alternative E was chosen as the Preferred Alternative.

WH 2000 – Wildlife and Wildlife Habitat: Methodology and Assumptions

The model (Barrett) used to predict population trends is not accurate and has been demonstrated to be faulty before, for example when used to estimate carrying capacity of the tule elk range.

Response Two models, independently created by two experts in the field of wildlife population biology, were included in the data used to evaluate the effect of the 5 alternatives on non-native deer populations. Comparing these models to previous models developed for predicting carrying capacity in tule elk (Howell et al 2000, Gogan 1986) is inappropriate because they have very different equations, variables, assumptions and overall objectives.

The two models used in this EIS use different equations but come to very similar conclusions about the expected effect of No Action, fertility control and culling on fallow and axis deer numbers. Dr. Reginald Barrett, of the University of California, Berkeley developed the model described in Appendix A. Dr. N. Thompson Hobbs, of Colorado State University, developed the model described in Appendix B. The commenter questions the assumptions used in the Barrett model.

*Chapter 5 – Consultation and Coordination
Response to Comments*

The strength of any model depends on the suitability of its basic equation and the reliability of its assumptions. For Dr. Barrett's model, the mathematical formulas are based on expert opinion and the published literature concerning fallow and axis deer population dynamics. The assumptions of the model are based on field observations, necropsy data from hundreds of deer, and unpublished and peer-reviewed published data on both species (including reproductive, age and sex-specific mortality rates and sex ratios). The published literature used includes PRNS-specific references (Gogan et al 2001; Wehausen and Elliott 1982). Several experts in the fields of wildlife biology and wildlife contraception reviewed the Barrett and Hobbs modeled and found the assumptions and conclusions to be sound.

The Hobbs and Barrett models are important to the document but did not constitute the sole basis for the comparison of alternatives or choosing the Preferred Alternative. NPS managers relied on current information on impacts of non-native deer, published literature on deer and grazing impacts, and the opinions of wildlife biology experts, as well as the two models, to develop and evaluate action alternatives.

WH 4000 – Wildlife and Wildlife Habitat: Impact of Proposal and Alternatives

Commenters state the EIS underestimates the impact of proposed management actions on native deer, including: increased human intrusion into deer habitat, noise, stress from shooting, and increased predation due to a decrease in non-native deer population. The EIS should more fully describe these impacts.

Response All known or measurable impacts to native species of proposed actions were analyzed in Chapter 4, *Impacts to Wildlife*. Proposed management actions involving culling or use of helicopters to capture and contracept non-native deer would not cause measurable impacts for native species. Measurable or perceptible impacts are those resulting in unnatural changes in survival or reproduction, viability of a population or species, unnatural distribution of available resources or habitat.

Addressing the commenter's specific concerns, native black-tailed deer do not routinely co-mingle with fallow deer, therefore inducement of physiological stress from non-native deer control and contraception activities is insignificant. (See discussion of stress in response to AL 1410). Other native wildlife would also not experience more than negligible impacts (as noted in the description of each action alternative B-E). Culling would take place throughout the Seashore, with the exception of northern spotted owl breeding areas during owl nesting season (February 1 – August 1), and a ¼-mile coastal buffer zone, to minimize disturbance to marine mammals and protected shorebirds. Spreading the effect throughout the 90,000-acre project area means any helicopters used would hover in any given area only a short period of time and only occasionally. While wildlife may be temporarily disturbed, the effect is so short-lived as to be undetectable.

Predator densities should not change appreciably due to reduction in non-native deer populations as there is little indication that non-native deer are a significant prey species for native predators. As noted above, predators are likely at their carrying capacity at the seashore, and even the potential glut of prey offered by non-native deer has not increased their numbers. Clearly the sharp increase in non-native deer numbers in the past decade is a strong indication that native predators are doing little to limit non-native deer populations. Consequently, any compensatory increase in predation of native deer, resulting from reduction of non-native deer, is considered a negligible change.

WH 4000 – Wildlife and Wildlife Habitat: Impact of Proposal and Alternatives

The EIS needs to disclose impacts of non-native deer to riparian and wetland vegetation.

*Chapter 5 – Consultation and Coordination
Response to Comments*

Response Impacts of non-native deer to riparian and wetland vegetation is addressed in a broader context under several impact area topics -- soils, water resources, vegetation, wildlife and special status species -- in Chapter 4, Alternative A (No Action). Since release of the Draft EIS, a study completed in the Seashore in 2005 by U.S. Geological Survey demonstrates clearly the extent and serious magnitude of impacts to riparian areas of rutting (reproductive) behaviors in male fallow deer. (Study results are detailed in Chapter 3, *History of Research on Non-Native Deer*.) Fallow bucks defend specific territories, or leks, during the rut season and the same areas are traditionally used year after year. Bucks scrape craters in the leks, sometimes 0.6 meters deep, and rub against trees and vegetation, breaking branches and girdling young trees. While engaged in breeding behaviors, fallow deer indirectly affect fish and other aquatic life by damaging riparian plants, resulting in: increased erosion and sediment delivery to the stream, reduced cover, and potentially warmer water in streams due to exposure to sunlight. Increased numbers of fallow deer would increase the scope and intensity of this impact to riparian vegetation. Some of these fish (coho and Chinook salmon and steelhead trout) are listed as threatened under the federal Endangered Species Act. An unmanaged and expanding population of non-native deer would reduce the success and potential effectiveness of ongoing and planned riparian restoration projects for salmon because in restoration areas, revegetation efforts and natural regrowth would be severely retarded due to heavy grazing, trailing and antler thrashing. These impacts are unique to fallow deer. Neither native tule elk nor native black-tailed deer form leks.

As described in Chapter 1, *Required Impact Topics*, riparian areas are frequented by fallow deer herds and are analyzed along with other natural resource impacts (i.e. in the *Vegetation* section of Chapter 4) in the document. Because they do not frequent wetland habitat to any measurable degree, non-native deer do not otherwise affect wetlands or floodplains.

WH 4000 – Wildlife and Wildlife Habitat: Impact of Proposal and Alternatives

If lethal removal proceeds, it should be monitored to ensure humane treatment and visitor safety, and shooters should use non-lead bullets.

Response As noted in response to comments above, all actions which involve direct management of individual animals, ranging from aerial surveillance to live capture and lethal removal, would be conducted in a manner which minimizes stress, pain, and suffering to every extent possible. Culling would be conducted by NPS staff or contractors specifically trained in wildlife sharpshooting. Efforts would be made to deliver immediately lethal shots to target animals and sharpshooters would be required to complete range qualifications specifically designed for ensuring humane and effective wildlife removal. NPS will use recommendations of the American Veterinary Medical Association (AVMA) for humane treatment of animals. Also, every effort will be made to minimize the degree of human contact during all procedures that require handling of wild ungulates, including contraception and culling.

Deer management proposals analyzed in the document include the use of firearms, aircraft, and chemical sterilant drugs, all of which can affect health and safety of visitors and staff. Existing regulations including the NPS Management Policies (2001) and several NPS Director's Orders address these activities (see Chapter 1 in the FEIS, Relationship to Other Plans, Laws and Regulations) and will be implemented to ensure human health and safety during project implementation. Among other things, these policies and regulations contain specific language regarding how to ensure public health and safety within areas of NPS jurisdiction and specify when appropriate certifications related to it are required (e.g., use of firearms, aviation).

Because deer carcasses may be used as food for the California Condor Recovery Program, use of non-lead ammunition is likely. Control and monitoring components of the Non-Native Deer Management

*Chapter 5 – Consultation and Coordination
Response to Comments*

Plan will be specified in a detailed implementation plan that will address operational, scientific and resource protection aspects of the program. National Park Service mandates and policies for resource protection and public safety will be incorporated. Mechanisms for monitoring and evaluating efficacy of methodologies employed are described in the monitoring plan attached to the FEIS as an appendix (C).

WH 4000 – Wildlife and Wildlife Habitat: Impact of Proposal and Alternatives

The DEIS makes unrealistic speculations, relies on anecdotal information and studies of questionable relevance to support the contention that non-native deer impact resources.

Response It is unclear whether the commenters are questioning the information used to support the need for reducing or eliminating non-native deer, or that used in the impact analysis. Although both come from a variety of sources including the scientific literature and the best professional judgment of experts both in and out of the National Park Service, the need for action is not based solely on this information. Rather it is a combination of scientific information, results of monitoring inside the Seashore and the requirement to adhere to the laws, policies and regulations of the National Park Service. The relevant laws and policies are described in the EIS (see *Regulatory Background* in chapter 1, for example) and in responses to comments above (ON 1000 for example), but include the requirement to return ecosystems to as natural conditions as possible and to eliminate non-native species if possible.

In terms of the analysis of impacts, NEPA requires agencies to use the best available information, particularly when the potential for major impacts exists. If information, such as locale-specific data, is unavailable, NEPA requires agencies to inform the public if this deficit will result in inability to predict impacts accurately. Fallow and axis deer have been most extensively studied close to their evolutionary point of origin or in areas where they have been introduced for a long period of time. As they are usually considered a non-native, non-game species in the U.S., wildlife conservation agencies here have little incentive to invest in intensive studies and instead focus efforts upon protection and maximization of native game species. Nevertheless, there is a reasonable amount of data on the impacts of fallow and axis deer to ecosystems, both at PRNS and elsewhere in the U.S. These data are summarized in Chapter 3 (History of Research on Non-Native Fallow and Axis Deer at Point Reyes National Seashore and Golden Gates National Recreation Area) as well as in the Impacts sections of each alternative (Chapter 4). Anecdotal data was included for the sake of completeness but was not the sole basis for the impact analysis. Additional data, such as documented impacts to Seashore riparian and woodland habitats, documented dietary overlap with native deer, and documented presence of transmissible diseases, were important in calculating impacts. As described in the Methodology section of Chapter 4, all of these sources of information, including scientific literature about these species in their native lands, anecdotal observations, the best professional judgment of wildlife biologists, as well as research completed at the Seashore and elsewhere have been used to conduct the analysis of impacts of increasing fallow and axis deer populations and range on other wildlife species. In the professional judgment of park scientists, as well as wildlife experts from other agencies and institutions, the data available on non-native deer are sufficient to determine their impacts to Seashore ecosystems.

WH 4000 – Wildlife and Wildlife Habitat: Impact of Proposal and Alternatives

Commenters ask that PRNS consider the range of impacts of the non-native deer on PRNS natural resources including competition for forage w/ native deer and elk, damage to riparian areas and woodlands, potential effects to California red-legged frogs and salmon, and impacts to visitor safety from aggressive fallow deer.

Response The impacts of each alternative to these resources are discussed and analyzed in the *Impacts* chapter of the EIS, in the sections on wildlife, species of special concern, vegetation and human health

*Chapter 5 – Consultation and Coordination
Response to Comments*

and safety. In the analysis of impacts to human health and safety of increasing non-native deer numbers and range (see Chapter 4, Alternative A), the document discusses the minor adverse impacts to human safety for staff, Seashore visitors and Marin County inhabitants. These impacts are due to increased risk of deer-vehicle collisions and NPS use of helicopters for monitoring deer. There have been no reports of fallow deer aggression directed towards Seashore staff or visitors and therefore the risk of direct physical harm to visitors by increasing numbers of aggressive deer is considered negligible.

WV 1000 – Wilderness Values: Impact on Wilderness

The DEIS does not address the impacts of the culling activities and the resultant increased human intrusion onto habitat which is counter to the goals of wilderness and special status species management.

Response The FEIS does address the impacts of culling and capture operations on wilderness as part of the resource impact topics such as impacts to water quality, soils, vegetation and visitor experience. Additional text describing wilderness experience and character has been added to the Affected Environment chapter (Visitor Experience) and the Environmental Consequences chapter (Impacts on Visitor Experience of Alternatives A through E). Preservation of wilderness character includes management actions to restore conditions conducive to wildness and naturalness and includes restoration of natural processes. With the Wilderness Act, Congress recognized the concept of Minimum Requirement analysis and use of the administratively determined “Minimum Tool” to achieve objectives for managing wilderness as wilderness. Management activities within wilderness are controlled by these two concepts to limit intrusions upon wilderness character. Actions taken under the Preferred Alternative (E) would be limited in time, place and scope to adhere with to the requirement of Minimum Requirement. See Appendix A, Minimum Requirement Decision Guide, for an analysis of proposed actions to minimize negative impacts to wilderness character and values. As noted in the guide, long-term removal of all non-native deer would result in beneficial impacts to wilderness hydrologic processes, soils, vegetation, native wildlife and special status species. Based on what is known of visitor use patterns in Seashore wilderness areas, these adverse impacts are estimated to affect few visitors per year. As described in the document, the direct temporary adverse impacts of the Preferred Alternative to the wilderness experience would be outweighed by the beneficial long-term effects of increased protection of wilderness habitat necessary for the preservation of integral values of wilderness.