

Environmental Assessment

Census of Non-Native Deer



Point Reyes National Seashore
Marin County, California
August 2000

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Glossary of Terms

The following definitions were used in completing this document:

Intensity:

Minor – impact is slight, but detectable; impacts are present, but not expected to have an overall effect.

Major – impact is severely adverse or exceptionally beneficial; substantial, highly noticeable influence.

Duration:

Short term – temporary; transitional impacts.

Long term – permanent effect.

Direct – impacts occurring at the same time and in the same place as the action.

Indirect – impacts occurring later and at a further distance from the action.

Purpose and Need

Science-based management of ungulate populations within units of the National Park Service (NPS) requires information on the abundance, age and sex composition, and distribution of the populations of interest. This is especially true for wildlife populations subjected to active management, either within or beyond the park's administrative boundaries, and in particular for those for which management may be controversial. NPS management of exotic species, particularly large ungulates such as deer, is a long-standing, frequently contentious issue germane to a number of park units throughout the United States (Wagner et al. 1995, Lyman 1998). This *Environmental Assessment* (EA) has been prepared to assist in National Park Service (NPS) planning and decision making, and to determine whether an Environmental Impact Statement (EIS) is required for the proposed helicopter census of non-native deer in wilderness and pastoral areas of Point Reyes National Seashore (PORE). As a federal unit, PORE is subject to the provisions of the National Environmental Policy Act (NEPA), the basic national charter for environmental protection. NEPA requires an assessment of the impacts associated with federal actions.

Because the proposed census involves low altitude flights over wilderness and the habitats of several federally listed species, this EA was prepared to address impacts and to determine whether further environmental review is necessary. The following EA encompasses use of a census to determine the size, age and sex composition, and geographic distribution of the exotic fallow (*Dama dama*) and axis (*Axis axis*) deer populations at Point Reyes National Seashore. The exotic deer program will be subject to additional environmental review in FY2000 and FY2001 and a management plan will be developed.

Accurate assessments of exotic deer numbers and range are prerequisites to any management decisions. Because of their ability to utilize a variety of habitats and cover, it is unlikely that PORE personnel could accurately assess the population size and range of axis and fallow deer without the use of aerial census techniques.

Environmental and Historic Compliance Provisions

Section 7 of the Endangered Species Act. Section 7 of the Endangered Species Act directs federal agencies to further the purposes of the Act. Federal agencies are required to consult with the U.S. Fish and Wildlife Service (USFWS) to ensure that any action authorized, funded or carried out by the agency does not jeopardize the continued existence of listed species or critical habitat. Informal consultation is underway on this project. Based on informal consultation, the NPS does not believe the proposed action will adversely affect any federally listed species or critical habits.

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

Wilderness Act. The Wilderness Act prohibits motorized equipment or mechanized transport in designated wilderness. While adhering to the principles of wilderness as a place insulated from the influence of civilization, the National Park Service Management Policies provide for instances where activities inconsistent with the intent of the Wilderness Act are permitted. In such contingencies as emergencies or threats to life, motorized access and use are authorized. Authority is delegated to park superintendents to establish the “administratively determined minimum tool” necessary to facilitate implementation of park management objectives within wilderness (NPS Policies 6:4, 1988). The use of motor vehicles and aircraft may be authorized if it is deemed to be necessary and essential for the achievement of management objectives.

Other environmental provisions which may affect this project:

- California Coastal Act
- Clean Water Act
- Clean Air Act

Relationship to Other Plans and Projects

General Management Plan (GMP), Point Reyes National Seashore (NPS 1980) describes the natural resource management objective of the park as:

“To enhance knowledge and expertise of ecosystem management through research and experimental programs relating to wildlife, prescribed burning techniques, exotic plant and animal reduction, regulation and control of resource use, and pollution control.”

The Statement for Management for Point Reyes National Seashore (NPS 1993) discusses the management of exotic plants and animals. The document states “In the case of our two species of exotic deer, the population is controlled by culling by park rangers.”

Point Reyes National Seashore Aviation Management Plan (NPS 1997) delineates landing areas and safety guidelines for aircraft use within park boundaries. The census proposed in Alternative A of this EA will meet all the requirements in the aviation management plan.

Issues and Impact Topics

This document, prepared by NPS, evaluates three alternatives and the impacts associated with these actions. Evaluation of the project site has identified the following issues of potential concern and provides the basis for the analysis of alternatives: vegetation, wildlife, wilderness, threatened and endangered species, park visitors, ranch operations and noise. These issues of concern were developed from review and discussion of the project. Those issues that were identified as potential concerns are evaluated in the Environmental Consequences section of the document.

Impact Topics Dismissed from Further Consideration

Cultural Resources. None of the alternatives would have any significant effects on cultural resources.

Wetlands. None of the alternatives would have any significant effects on wetland ecosystem processes or conditions.

Affected Environment

Project Site Description. Point Reyes National Seashore encompasses over 71,000 acres of coastal wilderness and pastoral land with over 80 miles of coastline (Appendix A). Three pristine coastal estuaries, Tomales Bay, Bolinas Lagoon, and Drakes Estero, are found within the park's boundaries.

The park contains over 850 species of plants and 65 species of mammals. Large mammals include tule elk, two exotic species of deer (axis and fallow), bobcat, mountain lions, and black-tailed deer. The park has 23 listed endangered or threatened species within its boundaries; this list includes the northern spotted owl, the western snowy plover, the Sonoma spineflower, and the California red-legged frog.

PORE is also adjacent to the 70,000-acre Golden Gate National Recreation Area and the Gulf of the Farallones National Marine Sanctuary. Because of extensive upwelling of cold water, the Gulf of the Farallones is one of the richest offshore biological systems in the world. Because of the biological significance of the area, Point Reyes National Seashore, Golden Gate National Recreation Area, and the Gulf of the Farallones have been designated as an international biosphere reserve. Within the reserve, there are more than 20 species of rockfish, 11 species of nesting seabirds, tens of thousands of migratory shorebirds and waterfowl, five species of pinnipeds, and close to 20 species of cetaceans.

The project area, where the census will occur, consists primarily of the 33,000-acre wilderness zone and 18,000-acre pastoral zone of the park. The boundaries of the proposed census will match park boundaries. The pastoral zone is located in the northern section of the peninsula including Tomales Point and the Point Reyes Headlands. The wilderness zone is primarily in the southern section of the park along Inverness Ridge and within Olema Valley.

Vegetation. The project area has two major land use zones: the pastoral zone and the wilderness zone. The pastoral zone is characterized by northern coastal scrub with shrubs of less than 6 feet tall interspersed with scattered grassy openings. Typical species include California sagebrush, bush lupine, coyote bush, bush monkey flower, and poison oak. Annual grasses in heavily grazed areas dominate the pastoral zone. Weedy exotic species such as scotch broom and poison hemlock are also present in the project area. The wilderness area is dominated by Bishop pine and Douglas fir forest interspersed with coast live oak, buckeye, and bay laurel. The edges of the wilderness area are characterized by northern coastal scrub.

Philip Burton Wilderness. Tomales Point and the southeastern portions of the Seashore together comprise 33,000 acres of the Phillip Burton Wilderness created by Congress in 1976 (PL 94-567 and PL 99-68). As a component of the National Wilderness Preservation System created by the Wilderness Act (PL 88-577), these areas should be managed in a manner consistent with the intent of the Act, i.e.; "...in such a manner as will leave them un-impaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character and for the gathering and dissemination of information regarding their use and enjoyment as wilderness..." Wilderness is defined by the Act as: "...an area where the earth and its community of life are untrammelled by man, where man himself is a

visitor who does not remain...retains its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions...."

Non-Native Fallow and Axis Deer. Two of the most conspicuous non-native species at PORE are fallow deer and axis deer. The native range of fallow deer is southern Europe and Asia Minor; axis deer are native to the Indian subcontinent. Twenty-seven fallow deer and eight axis deer were obtained by a local resident from the San Francisco Zoo in the 1940s and 1950s, before the establishment of the National Seashore, and released in the area for hunting. Shooting by local ranchers from 1967 to 1971 of approximately 320 exotic deer originally controlled their numbers (NPS 1989). In 1971, NPS assumed management authority over the recently authorized Seashore and all public hunting was discontinued. Growing concern from ranchers within the park's pastoral zone regarding competition between exotic deer and livestock for forage prompted studies on dietary overlap (Elliott 1982, Elliott and Barrett 1985, Wehausen and Elliott 1982). In 1976, a management policy was approved stipulating a maximum population of 350 for each species, to be accomplished by regular culling by Seashore staff (NPS 1976). Between 1968 and 1994, a total of 1388 axis deer and 1873 fallow deer were removed (Gogan et al. in prep.). Culling since 1994 has been limited.

Population monitoring of the two species has been sporadic and has consisted mostly of sample area counts (Wehausen 1973, Elliott 1973, Elliott 1976a, Elliott 1976b, Wehausen and Elliott 1982, Ranlett 1985). Aerial counts were undertaken from 1975 to 1977 (Wehausen and Elliott 1982) and line-transect censuses were conducted in 1981 and 1982 (Gogan et al. 1986).

Populations of axis and fallow deer increased to 461 and 523 respectively by 1977 (Wehausen and Elliott 1982). More recent numbers of axis deer were 328 in 1985 and 140 in 1993 (Barrett et al. 1998). No parkwide census of fallow deer has been conducted since 1977 when 523 animals were counted (Wehausen and Elliott 1982). A 1985 pastoral zone count of 114 fallow deer did not include any census of the wilderness zones in which they are known to exist (Ranlett 1985). A simulation of axis and fallow deer populations, incorporating actual numbers of animals removed, projected a return of both populations to carrying capacity (set at 525 for axis and 850 for fallow) within 10 years of the cessation of culling in 1994 (Gogan et al. in prep.). In addition, vegetation changes following an extensive wildfire in 1995 likely favored population increases in fallow deer.

Range information on the two species is also incomplete, but it appears that since 1977, whereas axis deer have expanded only to a moderate degree within the pastoral zone, fallow deer have expanded to a much greater extent throughout the wilderness zone (Gogan et al. in prep.). Observations indicate that fallow deer have become widely established in extensive areas of Douglas fir forest in the wilderness zone, partially in response to habitat changes resulting from the Vision wildfire of 1995.

A recent review of past exotic deer management at PORE suggests that because of their current limited range, large herds and preference for open habitat, axis deer cannot be adequately counted using ground surveys (Gogan et al. in prep.). A 1977 helicopter census failed to count all

axis deer in Bishop pine forests. These deer were concurrently counted in a ground census and simultaneous aerial and ground counts were recommended at the time (Elliott 1976b).

Fallow deer have proven more difficult to census because of range expansion into wilderness, smaller herd sizes and a preference for a mixture of habitat types. A 1981-1982 line transect census of fallow deer resulted in a failure to sight adequate numbers of deer in forest habitat for density estimates. A minimum of 83 km of transects in coastal scrub and 43 km in coastal prairie were required to estimate densities with a coefficient of variation of $\leq 20\%$ (Gogan et al. 1986). Aerial counting along with concurrent ground counts were recommended at that time.

Ground counts are labor intensive and require familiarity with deer habits and habitat preferences. Assigned staff members require months of reconnaissance and field training in order to reliably locate and count deer herds. Although both aerial and ground counts of axis deer in open terrain will be reasonably accurate, aerial or ground censusing of axis and fallow deer in forested areas are, by necessity, minimum counts. Re-evaluation of censusing techniques, with the potential use of additional tools such as collaring of a subsample of fallow deer and use of Peterson estimates, should be incorporated into the study plan when accurate range information is available.

The impacts of axis and fallow deer to native ecosystems are unclear but park staff and other scientists are concerned about the potential for competition for forage with the two species of native cervids, tule elk (*Cervus elaphus nannodes*) and black-tailed deer (*Odocoileus hemionus columbianus*). Past studies have demonstrated significant dietary overlap between tule elk and black-tailed deer (Gogan and Barrett 1985) and between fallow, axis and black-tailed deer (Elliott and Barrett 1985). A review of the dietary overlap studies (Fellers 1983) concluded that black-tailed deer populations would be reduced to 30-40% below carrying capacity when populations of exotic deer were maintained at 350 of each species as called for by the 1976 management policy. Anecdotal observations in recent years suggest that populations of both axis and fallow may have surpassed 1976 levels.

Concern also exists that the exotic deer may serve as disease reservoirs. A 1979 study concluded that 9.6% of axis deer and 8.1% of fallow deer within the Seashore were shedding the organism which causes paratuberculosis (Riemann et al. 1979). Paratuberculosis, or Johne's disease, is a diarrheal wasting disease of wild and domestic ungulates that has been diagnosed in PORE tule elk at Tomales Point (Jessup et al. 1981). Concerns over the transmissibility of paratuberculosis between wildlife and livestock led to a rigorous quarantine and testing protocol in the newly released free-ranging elk herd.

Recreational Use. Because of its close proximity to the San Francisco bay area, the National Seashore receives over 2.5 million visitors each year. On an average winter or fall day, 3,000 visitors utilize the park. Sir Francis Drake Highway, which transects the pastoral zone, is estimated to carry 1,000,000 visitors annually.

The park has four backcountry campgrounds each with approximately 12 sites. During peak weekends over 400 individuals may utilize the park's backcountry sites. On the average fall or

winter weekday, fewer than 50 visitors utilize the park camping facilities. All four campgrounds are located in the backcountry or wilderness areas of the park.

Adjacent Communities. The small communities of Inverness, Inverness Park, Olema, and Point Reyes Station are adjacent to the park boundaries and are home to approximately 3,500 year-round residents.

Alternatives, Including the Proposed Action

A. Proposed Action - Undertake a Parkwide Aerial and Ground Census of Exotic Deer

During four days in the fall and winter of 2000-2001, all exotic deer in the Seashore will be counted from a helicopter. Flight altitude will range from 150 to 500 feet depending on terrain, cover and group size. No landing will occur in the wilderness area, except in an emergency. Based upon an initial ground reconnaissance, the range of each non-native deer population will be mapped using GIS technology. The ranges will be divided into census units based on topographic features visible from the air. Simultaneously with the aerial counts, observers will count deer from the ground in multiple census units. Comparison of ground and aerial counts in the same census unit will provide estimates of the sightability of deer in a variety of habitats. Observability values and counts will be used to produce scientifically defensible population counts for both species of non-native deer. Cow to calf ratios and total counts will be used to produce estimates of population growth. This data, along with range and demographic information gained from ground surveys and fieldwork, will allow managers to draft an exotic deer management plan and EIS.

Total estimated airtime for all of the aerial censuses is 45 hours, conducted over 4-6 days in 2000 and 2001. During the census period, visitors will be informed of planned helicopter operations over the Seashore. Limitations on access by the visiting public are anticipated to be transitory in nature.

Under this alternative, census operations also will be coordinated with management of threatened and endangered species, such as the northern spotted owl (*Strix occidentalis*) and western snowy plover (*Charadrius alexandrius*). There are currently up to 29 pairs of northern spotted owls and approximately 150 snowy plovers within the Seashore boundaries during the fall and winter months (S. Allen, personal communication). Appropriate Section 7 consultations with U.S. Fish and Wildlife Service will be completed with regard to expected impacts of helicopter overflights to the above species of concern and to marine mammals. Timing of aerial operations will be limited to non-nesting periods for spotted owls and snowy plovers, September through February. Helicopter overflight zones will bypass pinniped haul-out locations by ¼ mile.

Under this alternative, helicopter access over the census units will be consistent with the PORE Aviation Management Plan to ensure public health and safety.

B. Undertake a Ground Census of Exotic Deer Without the Use of Aerial Surveys.

This alternative would generate only data derived from ground census methods. Such methods could include any following methods, singly or in combination:

- ◆ Total ground counts in the form of drive counts and/or field observations,
- ◆ Total counts on sample plots in the form of sample drive counts or line transects,
- ◆ Indices such as pellet counts, roadside or trail counts,
- ◆ Sampling by capture or removal such as mark-recapture or change-in-ratio methods.

Ground counts would be conducted by 10-20 trained observers familiar with the deer and terrain. Population estimates using roadside or trail counts would be conducted by 4-6 field observers driving on park roads and hiking on park trails. These counts would be hampered by lack of roads and trails in wilderness areas and poor visibility in areas of high cover. Based on previous field studies (Gogan et al. 1986), it appears unlikely that a sufficient proportion of deer could be observed from field observations or line transect observations in all habitat types for statistically valid (>80%CI) population estimates.

Field counts conducted by mark-recapture techniques would be conducted by several field teams. Accuracy of mark-recapture techniques depends on the proportion of the population that is "sampled" or marked (Lewis 1970). Therefore, this alternative would require marking of deer and capturing significant segments of the populations, possibly hundreds of animals.

Similar to Alternative A, census operations also would be coordinated with management of threatened and endangered species, such as the northern spotted owl and western snowy plover. Appropriate Section 7 consultations with U.S. Fish and Wildlife would be completed with regard to expected impacts of ground activity to the above species of concern and to marine mammals. Timing of operations will be limited to non-nesting periods for spotted owls and snowy plovers, September through February.

C. No Action

Under this alternative, the park would not collect data related to exotic deer populations. No additional activity would occur related to non-native deer populations. No helicopter or ground census activity would occur. This alternative would necessitate reliance on existing population and range data for preparation of an exotic deer management plan.

Environmental Consequences

A. Proposed Action - Undertake a Parkwide Aerial and Ground Census of Exotic Deer

The environmental consequences of the proposed action upon the affected resources are outlined in the following matrix:

Affected Resource	Positive Consequences	Negative Consequences
Vegetation	No anticipated effect.	No anticipated direct long-term effect.
Wildlife	No anticipated effect.	There will be indirect and direct short-term disturbance to medium and large mammals and birds throughout the park caused by low altitude helicopter flights. Low level helicopter activity may temporarily disturb roosting or feeding activities of birds and other wildlife. No long-term effects are anticipated.
Wilderness	No anticipated effect.	There will be a short-term disruption of the wilderness character during the aerial surveys. Helicopter time will be limited to the 45 hours of the census. There are no anticipated long-term effects.
Threatened and Endangered Species	Completion of the census will lead to better knowledge of potential impacts of non-native ungulates on threatened and endangered species.	Minor short-term impacts are anticipated to threatened and endangered species and species of concern during aerial surveys. No long-term impacts to the 59 pairs of northern spotted owls and approximately 150 western snowy plovers are anticipated or known.
Park Visitors	Long-term protection of wilderness habitat for future public use.	There will be a short-term disruption of visitor scenic enjoyment during aerial operations. The impacts will be primarily from visual and auditory intrusions. There are no known long-term impacts to park visitors, 3,000 of which visit the Seashore on an average winter day.
Ranch Operations	Completion of the census will lead to better knowledge of potential impacts of non-native ungulates on livestock grazing.	Helicopter use may directly disturb the 18 cattle operations, affecting 3,400 dairy and 1,700 beef cattle, but will be short-term in nature.

Noise	No anticipated effect.	To park visitors and adjacent communities there will be some short-term direct impacts. To mitigate this impact, the helicopter will not fly directly over Inverness, Inverness Park, Point Reyes Station or Olema. The helicopter will use non-residential routes for access from park headquarters.
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Cumulative Impacts

No other major projects or helicopter activity are planned within the wilderness area or pastoral area in the future. Tule elk research monitoring is currently underway but does not involve helicopter activity. Future tule elk management programs may involve animal capture by helicopter in the Tomales Point elk reserve. Trail repair and maintenance in the wilderness area is also underway, but involves only small field crews. Therefore, there will be no significant cumulative impacts from any other projects.

B. Conduct Exotic Deer Counts Without Aerial Censusing

The environmental consequences of this alternative action upon the affected resources are outlined in the following matrix:

Affected Resource	Positive Consequences	Negative Consequences
Vegetation	Ground surveys will provide information on habitat preferences of non-native deer. It is anticipated this data will aid in assessment of the relationship between known vegetation communities and deer.	Complete information regarding axis and fallow deer numbers and range would not be collected. Minor disturbance to vegetation at sampling sites might result from intensive use of trails during ground surveys or drive counts.
Wildlife	Short-term disruptive impacts to medium and large mammals and birds from helicopter use would not occur.	Short-term direct disruptive impacts to medium and large mammals and birds from intensive ground sampling or censusing would be anticipated. No long-term effects are anticipated.
Wilderness	Visual and auditory intrusion to the wilderness would be avoided.	Intensive ground sampling or censusing would result in heavy use of trails. Impacts would be short-term in nature. No long-term effects are anticipated.

T&E Species	No anticipated effect.	Intensive ground sampling or censusing during nesting season might result in disruption of breeding activity for up to 59 northern spotted owl pairs. No long-term effects are anticipated.
Park Visitors	No anticipated effect.	No anticipated effect.
Ranch Operations	No anticipated effect.	No anticipated effect.
Noise	No anticipated effect.	No anticipated effect.

Cumulative Impacts

Besides yearly ground elk censuses at Tomales Point, which involve 3-6 people, 3-6 horses and are undertaken for 2-3 days every fall, no other intensive ground fieldwork is planned within the wilderness or pastoral areas in the future. Trail repair and maintenance in the wilderness area is also underway, but involves only small field crews. Therefore, there will be no significant cumulative impacts from any other projects.

C. No Action

The environmental consequences of this alternative action upon the affected resources are outlined in the following matrix:

Affected Resource	Positive Consequences	Negative Consequences
Vegetation	No impacts would occur.	Complete information regarding axis and fallow deer numbers and range in relation to mapped vegetation communities would not be collected.
Wildlife	No anticipated effect	The range and population size of two species of non-native deer would remain unknown and science-based adaptive management could not occur.
Wilderness	No anticipated effect.	Unknown.
Threatened and Endangered Species	No anticipated effect.	Unknown.
Park Visitors	No anticipated effect .	No anticipated effect.

Ranch Operations	No anticipated effect.	No anticipated effect.
Noise.	No anticipated effect.	No anticipated effect.

Cumulative Impacts

There are no known or anticipated activities which have a combined impact with this alternative.

Consultation and Coordination

The plan alternatives and Environmental Assessment were prepared by the Point Reyes National Seashore Staff with assistance from the Pacific Great Basin Support Office, San Francisco.

Copies of the EA will be made available to interested private organizations, government agencies, and individuals for a minimum period of 30 days. News releases to local and regional media will announce the document's availability.

Informal consultation regarding threatened and endangered species is underway with the U.S. Fish and Wildlife Service. A list of listed species and species of concern that may occur within PORE or be affected by projects within the Seashore is attached (Appendix B).

Section 106 Historic Preservation Act compliance has been determined to not be applicable; therefore no consultation has occurred with the State Historic Preservation Office or the Advisory Council on Historic Places.

Preparers

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Summary Impact/Mitigation Matrix

Park: Point Reyes National Seashore
Project: Helicopter Census of Non-Native Deer

<u>Impact Issue</u>	<u>Prescribed Mitigation and Responsibility</u>
Vegetation	Not applicable for all alternatives.
Wildlife	Alternative A: Conducting aerial operations during non-nesting seasons for northern spotted owls. The helicopter flight path will bypass pinniped and snowy plover nest beaches by ¼ mile. Responsibility remains with Natural Resource Management Division to work with contractor helicopter crew. Alternatives B and C: No mitigation needed.
Cultural Resources	Not applicable for all alternatives.
Water Resources	Not applicable for all alternatives.
Wetlands	Not applicable for all alternatives.
Wilderness	Alternative A: Helicopter flight time will be limited to 45 hours. Alternatives B and C: No mitigation needed.
T/E Species	Alternatives A: Helicopter operations will not be carried out during nesting season for northern spotted owl and western snowy plover. Responsibility remains with Natural Resource Management Division to work with contractor helicopter crew. Alternative B: Intensive ground sampling or censusing during northern spotted owl nesting season will be restricted. Alternative C: No mitigation needed.
Park Visitors	Alternative A: Scheduling helicopter operations during the week to minimize inconvenience to the visiting public. Closing park campgrounds during aerial operations to ensure wilderness experience is not disturbed. Responsibility remains with Natural Resource Management Division to work with contractor helicopter crew. Alternatives B and C: No mitigation needed.
Ranching Operations	Alternative A: Helicopter flights at higher altitudes (≥ 500 feet) above ranch buildings and in pastoral areas to

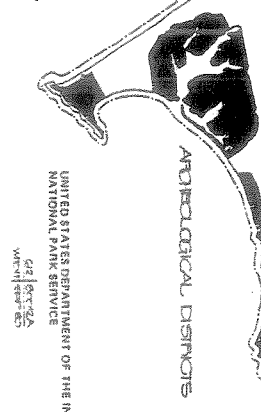
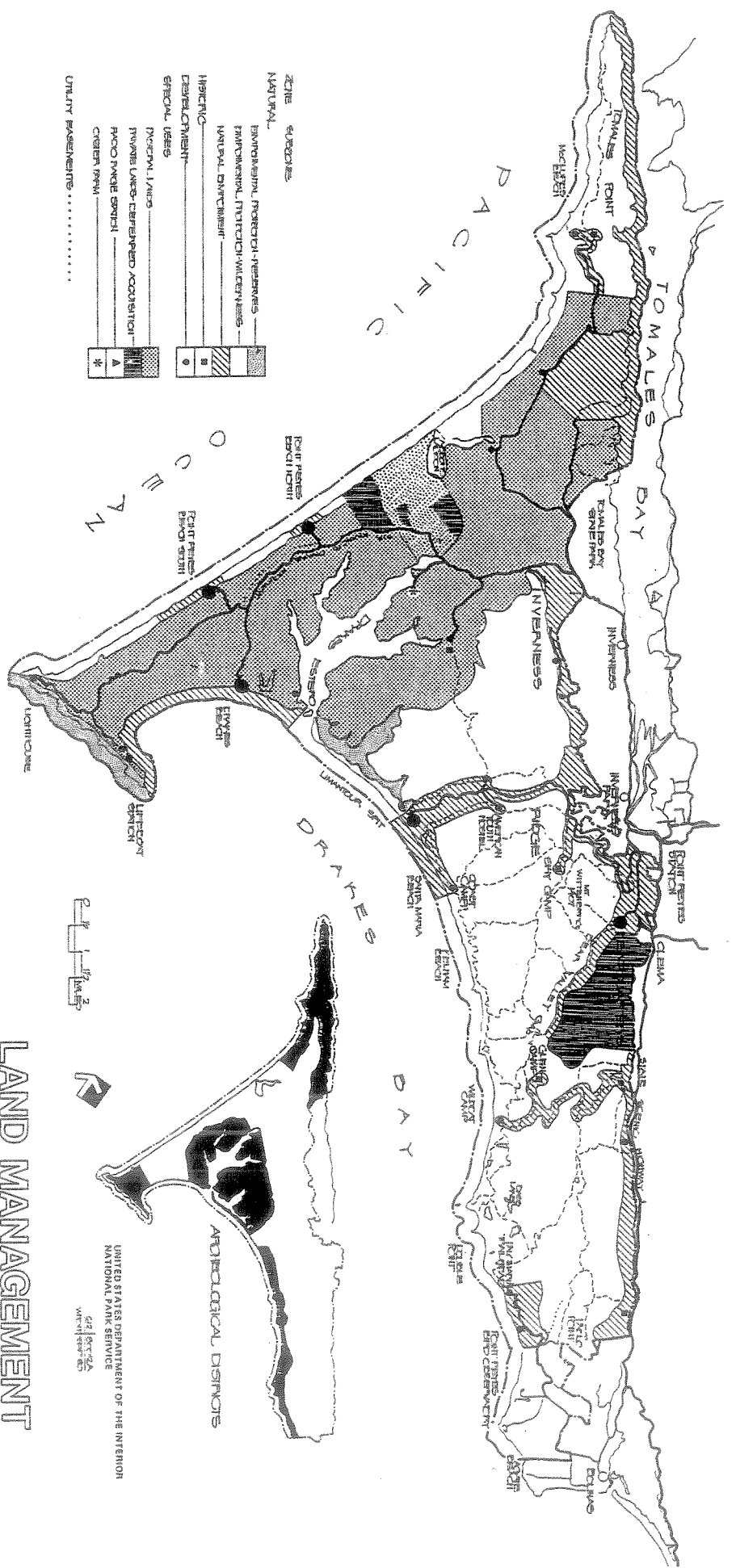
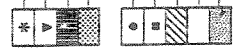
minimize disruption to grazing livestock. Notification of ranchers $\geq$ 48 hours before start of aerial operations. Responsibility remains with Natural Resource Management Division to work with contractor helicopter crew. Alternatives B and C: No mitigation needed.

Noise

Alternative A: Helicopter flight paths will avoid communities adjacent to the park and will be restricted to non-residential routes for access from park headquarters and landing zone. . Responsibility remains with Natural Resource Management Division to work with contractor helicopter crew. Alternatives B and C: No mitigation needed.

Appendix A: Location Map

- ZONE SUBCATEGORIES
 NATURAL
 ENVIRONMENTAL PROTECTED RESERVES
 HISTORICAL MONUMENTS
 NATURAL MONUMENTS
 HISTORIC
 FEDERAL MONUMENTS
 SPECIAL USES
 FEDERAL LANDS
 PRIVATE LANDS - DEFERRED ACQUISITION
 PUBLIC LANDS - SPECIAL
 OTHER LANDS
 UTILITY EASEMENTS



UNITED STATES DEPARTMENT OF THE INTERIOR
 NATIONAL PARK SERVICE
 GSA FPMR 24
 101-11.6-10

LAND MANAGEMENT AND USE ZONES POINT REYES NATIONAL SEASHORE

Appendix B: Endangered and Threatened Species List



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W2605
Sacramento, California 95825

IN REPLY REFER TO:

1-1-00-SP-1620

April 28, 2000

Natalie Gates, DVM
Point Reyes National Seashore
Point Reyes, California 94956

Subject: Species List for Point Reyes National Seashore, Point Reyes, California

Dear Dr. Gates,

We are sending the enclosed list in response to your electronic request dated April 6, 2000 for information about endangered and threatened species (Enclosure A). These lists fulfill the requirement of the Fish and Wildlife Service (Service) to provide species lists under section 7(c) of the Endangered Species Act of 1973, as amended (Act).

The animal species on the Enclosure A quad list are those species we believe may occur within, *or be affected by projects within*, the following USGS quads, where your project is planned: Bolinas, Double Point, Petaluma, San Geronimo, Novato, Point Reyes NE.

Any plants on the quad list are ones *that have actually been observed* in the project quad(s). Your list includes multiple quads. We recommend that you survey in each quad for relevant plants shown in nearby quads.

Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them. Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

If a species has been listed as threatened or endangered by the State of California, but not by us nor by the National Marine Fisheries Service, it will appear on your list as a Species of Concern. *However you must contact the California Department of Fish and Game for official information about these species.* Call (916) 322-2493 or write Marketing Manager, California Department of Fish and Game, Natural Diversity Data Base, 1416 Ninth Street, Sacramento, California 95814.

Some of the species listed in Enclosure A may not be affected by the proposed action. A trained biologist or botanist, familiar with the habitat requirements of the listed species, should determine

whether these species or habitats suitable for them may be affected. For plants, we recommend using the enclosed Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Species (Enclosure C).

Some pertinent information concerning the distribution, life history, habitat requirements, and published references for the listed species is available upon request. This information may be helpful in preparing the biological assessment for this project, if one is required. Please see Enclosure B for a discussion of the responsibilities Federal agencies have under section 7(c) of the Act and the conditions under which a biological assessment must be prepared by the lead Federal agency or its designated non-Federal representative.

Formal consultation, under 50 CFR § 402.14, should be initiated if you determine that a listed species may be affected by the proposed project. If you determine that a proposed species may be adversely affected, you should consider requesting a conference with our office under 50 CFR § 402.10. Informal consultation may be utilized prior to a written request for formal consultation to exchange information and resolve conflicts with respect to a listed species. If a biological assessment is required, and it is not initiated within 90 days of your receipt of this letter, you should informally verify the accuracy of this list with our office.

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as *critical habitat*. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal. Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, this will be noted on the species list. Maps and boundary descriptions of the critical habitat may be found in the *Federal Register*. The information is also reprinted in the *Code of Federal Regulations* (50 CFR 17.95).

Candidate species are being reviewed for possible listing. Contact our office if your biological assessment reveals any candidate species that might be adversely affected. Although they currently have no protection under the Endangered Species Act, one or more of them could be proposed and listed before your project is completed. By considering them from the beginning, you could avoid problems later.

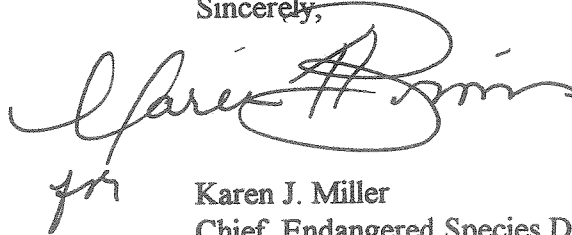
Your list may contain a section called *Species of Concern*. This term includes former *category 2 candidate species* and other plants and animals of concern to the Service and other Federal, State and private conservation agencies and organizations. Some of these species may become candidate species in the future.

If the proposed project will impact wetlands, riparian habitat, or other jurisdictional waters as

defined by the U.S. Army Corps of Engineers (Corps), a Corps permit will be required, under section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act. Impacts to wetland habitats require site specific mitigation and monitoring. You may request a copy of the Service's General Mitigation and Monitoring Guidelines or submit a detailed description of the proposed impacts for specific comments and recommendations. If you have any questions regarding wetlands, contact Mark Littlefield at (916) 414-6580.

Please contact Harry Mossman, Biological Technician, at (916) 414-6650, if you have any questions about the attached list or your responsibilities under the Endangered Species Act. For the fastest response to species list requests, address them to the attention of Mr. Mossman at this address. You may fax requests to him at 414-6710 or 6711.

Sincerely,

A handwritten signature in black ink, appearing to read "Karen J. Miller". The signature is fluid and cursive, with a large loop at the end. Below the signature, the initials "JH" are written in a smaller, simpler script.

Karen J. Miller
Chief, Endangered Species Division

Enclosures

Enclosure B

FEDERAL AGENCIES' RESPONSIBILITIES UNDER SECTIONS 7(a) and (c) OF THE ENDANGERED SPECIES ACT

SECTION 7(a) Consultation/Conference

Requires: (1) Federal agencies to utilize their authorities to carry out programs to conserve endangered and threatened species; (2) Consultation with FWS when a Federal action may affect a listed endangered or threatened species to insure that any action authorized, funded, or carried out by a Federal agency is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. The process is initiated by the Federal agency after determining the action may affect a listed species; and (3) Conference with FWS when a Federal action is likely to jeopardize the continued existence of a proposed species or result in destruction or adverse modification of proposed critical habitat.

SECTION 7(c) Biological Assessment-Major Construction Activity¹

Requires Federal agencies or their designees to prepare a Biological Assessment (BA) for major construction activities. The BA analyzes the effects of the action² on listed and proposed species. The process begins with a Federal agency requesting from FWS a list of proposed and listed threatened and endangered species. The BA should be completed within 180 days after its initiation (or within such a time period as is mutually agreeable). If the BA is not initiated within 90 days of receipt of the list, the accuracy of the species list should be informally verified with our Service. No irreversible commitment of resources is to be made during the BA process which would foreclose reasonable and prudent alternatives to protect endangered species. Planning, design, and administrative actions may proceed; however, no construction may begin.

We recommend the following for inclusion in the BA: an on-site inspection of the area affected by the proposal which may include a detailed survey of the area to determine if the species or suitable habitat is present; a review of literature and scientific data to determine species' distribution, habitat needs, and other biological requirement; interviews with experts, including those within FWS, State conservation departments, universities and others who may have data not yet published in scientific literature; an analysis of the effects of the proposal on the species in terms of individuals and populations, including consideration of indirect effects of the proposal on the species and its habitat; an analysis of alternative actions considered. The BA should document the results, including a discussion of study methods used, and problems encountered, and other relevant information. The BA should conclude whether or not a listed or proposed species will be affected. Upon completion, the BA should be forwarded to our office.

¹A construction project (or other undertaking having similar physical impacts) which is a major federal action significantly affecting the quality of the human environment as referred to in NEPA (42 U.S.C. 4332(2)C).

²"Effects of the action" refers to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action.

Enclosure C

GUIDELINES FOR CONDUCTING AND REPORTING BOTANICAL INVENTORIES FOR FEDERALLY LISTED, PROPOSED AND CANDIDATE PLANTS

(September 23, 1996)

These guidelines describe protocols for conducting botanical inventories for federally listed, proposed and candidate plants, and describe minimum standards for reporting results. The Service will use, in part, the information outlined below in determining whether the project under consideration may affect any listed, proposed or candidate plants, and in determining the direct, indirect, and cumulative effects.

Field inventories should be conducted in a manner that will locate listed, proposed, or candidate species (target species) that may be present. The entire project area requires a botanical inventory, except developed agricultural lands. The field investigator(s) should:

1. Conduct inventories at the appropriate times of year when target species are present and identifiable. Inventories will include all potential habitats. Multiple site visits during a field season may be necessary to make observations during the appropriate phenological stage of all target species.
2. If available, use a regional or local reference population to obtain a visual image of the target species and associated habitat(s). If access to reference populations(s) is not available, investigators should study specimens from local herbaria.
3. List every species observed and compile a comprehensive list of vascular plants for the entire project site. Vascular plants need to be identified to a taxonomic level which allows rarity to be determined.
4. Report results of botanical field inventories that include:
 - a. a description of the biological setting, including plant community, topography, soils, potential habitat of target species, and an evaluation of environmental conditions, such as timing or quantity of rainfall, which may influence the performance and expression of target species.
 - b. a map of project location showing scale, orientation, project boundaries, parcel size, and map quadrangle name.
 - c. survey dates and survey methodology(ies).
 - d. if a reference population is available, provide a written narrative describing the target species reference population(s) used, and date(s) when observations were made.
 - e. a comprehensive list of all vascular plants occurring on the project site for each habitat type.
 - f. current and historic land uses of the habitat(s) and degree of site alteration.
 - g. presence of target species off-site on adjacent parcels, if known.

- h. an assessment of the biological significance or ecological quality of the project site in a local and regional context.
5. If target species is(are) found, report results that additionally include:
 - a. a map showing federally listed, proposed and candidate species distribution as they relate to the proposed project.
 - b. if target species is (are) associated with wetlands, a description of the direction and integrity of flow of surface hydrology. If target species is (are) affected by adjacent off-site hydrological influences, describe these factors.
 - c. the target species phenology and microhabitat, an estimate of the number of individuals of each target species per unit area; identify areas of high, medium and low density of target species over the project site, and provide acres of occupied habitat of target species. Investigators could provide color slides, photos or color copies of photos of target species or representative habitats to support information or descriptions contained in reports.
 - d. the degree of impact(s), if any, of the proposed project as it relates to the potential unoccupied habitat of target habitat.
6. Document findings of target species by completing California Native Species Field Survey Form(s) and submit form(s) to the Natural Diversity Data Base. Documentation of determinations and/or voucher specimens may be useful in cases of taxonomic ambiguities, habitat or range extensions.
7. Report as an addendum to the original survey, any change in abundance and distribution of target plants in subsequent years. Project sites with inventories older than 3 years from the current date of project proposal submission will likely need additional survey. Investigators need to assess whether an additional survey(s) is (are) needed.
8. Adverse conditions may prevent investigator(s) from determining presence or identifying some target species in potential habitat(s) of target species. Disease, drought, predation, or herbivory may preclude the presence or identification of target species in any year. An additional botanical inventory(ies) in a subsequent year(s) may be required if adverse conditions occur in a potential habitat(s). Investigator(s) may need to discuss such conditions.
9. Guidance from California Department of Fish and Game (CDFG) regarding plant and plant community surveys can be found in Guidelines for Assessing the Effects of Proposed Developments on Rare and Endangered Plants and Plant Communities, 1984. Please contact the CDFG Regional Office for questions regarding the CDFG guidelines and for assistance in determining any applicable State regulatory requirements.

ENCLOSURE A
Endangered and Threatened Species that May Occur in
or be Affected by Projects in the Selected Quads Listed Below
Point Reyes National Seashore
April 27, 2000

QUAD : 467B BOLINAS

Listed Species

Mammals

Guadalupe fur seal, *Arctocephalus townsendi* (T)
sei whale, *Balaenoptera borealis* (E)
blue whale, *Balaenoptera musculus* (E)
finback (=fin) whale, *Balaenoptera physalus* (E)
right whale, *Eubalaena glacialis* (E)
Critical Habitat, Steller (=northern) sea-lion, *Eumetopias jubatus* (T)
Steller (=northern) sea-lion, *Eumetopias jubatus* (T)
sperm whale, *Physeter catodon* (=macrocephalus) (E)

Birds

marbled murrelet, *Brachyramphus marmoratus* (T)
western snowy plover, *Charadrius alexandrinus nivosus* (T)
bald eagle, *Haliaeetus leucocephalus* (T)
California brown pelican, *Pelecanus occidentalis californicus* (E)
northern spotted owl, *Strix occidentalis caurina* (T)

Reptiles

loggerhead turtle, *Caretta caretta* (T)
green turtle, *Chelonia mydas* (incl. *agassizi*) (T)
leatherback turtle, *Dermochelys coriacea* (E)
olive (=Pacific) ridley sea turtle, *Lepidochelys olivacea* (T)

Amphibians

California red-legged frog, *Rana aurora draytonii* (T)

Fish

tidewater goby, *Eucyclogobius newberryi* (E)
delta smelt, *Hypomesus transpacificus* (T)
Critical habitat, coho salmon - central CA coast, *Oncorhynchus kisutch* (T)
coho salmon - central CA coast, *Oncorhynchus kisutch* (T)
Central California steelhead, *Oncorhynchus mykiss* (T)

So. OR/CA coastal chinook salmon, *Oncorhynchus tshawytscha* (T)

Sacramento splittail, *Pogonichthys macrolepidotus* (T)

Invertebrates

Myrtle's silverspot butterfly, *Speyeria zerene myrtleae* (E)

Plants

Sonoma alopecurus, *Alopecurus aequalis* var. *sonomensis* (E)

Marin dwarf-flax, *Hesperolinon congestum* (T)

showy Indian clover, *Trifolium amoenum* (E) *

Proposed Species

Birds

short-tailed albatross, *Diomedea albatrus* (PE)

Candidate Species

Amphibians

California tiger salamander, *Ambystoma californiense* (C)

Species of Concern

Mammals

Point Reyes mountain beaver, *Aplodontia rufa phaea* (SC)

Pacific western big-eared bat, *Corynorhinus (=Plecotus) townsendii townsendii* (SC)

gray whale, *Eschrichtius robustus* (D)

greater western mastiff-bat, *Eumops perotis californicus* (SC)

long-eared myotis bat, *Myotis evotis* (SC)

fringed myotis bat, *Myotis thysanodes* (SC)

long-legged myotis bat, *Myotis volans* (SC)

Yuma myotis bat, *Myotis yumanensis* (SC)

Point Reyes jumping mouse, *Zapus trinotatus orarius* (SC)

Birds

tricolored blackbird, *Agelaius tricolor* (SC)

Bell's sage sparrow, *Amphispiza belli belli* (SC)

ferruginous hawk, *Buteo regalis* (SC)

little willow flycatcher, *Empidonax traillii brewsteri* (CA)

American peregrine falcon, *Falco peregrinus anatum* (D)

saltmarsh common yellowthroat, *Geothlypis trichas sinuosa* (SC)

black rail, *Laterallus jamaicensis coturniculus* (CA)

ashy storm-petrel, *Oceanodroma homochroa* (SC)

Reptiles

northwestern pond turtle, *Clemmys marmorata marmorata* (SC)

California horned lizard, *Phrynosoma coronatum frontale* (SC)

Amphibians

Northern red-legged frog, *Rana aurora aurora* (SC)

Fish

Pacific lamprey, *Lampetra tridentata* (SC)

longfin smelt, *Spirinchus thaleichthys* (SC)

Invertebrates

Opler's longhorn moth, *Adela oplerella* (SC)

sandy beach tiger beetle, *Cicindela hirticollis gravida* (SC)

globose dune beetle, *Coelus globosus* (SC)

Ricksecker's water scavenger beetle, *Hydrochara rickseckeri* (SC)

Marin elfin butterfly, *Incisalia mossii* (SC)

bumblebee scarab beetle, *Lichnanthe ursina* (SC)

Plants

Tamalpais manzanita, *Arctostaphylos hookeri ssp. montana* (SC)

Mason's ceanothus, *Ceanothus masonii* (SC)

Mt. Tamalpais thistle, *Cirsium hydrophilum* var. *vaseyi* (SC)

northcoast bird's-beak, *Cordylanthus maritimus ssp. palustris* (SC)

San Francisco gumplant, *Grindelia hirsutula* var. *maritima* (SC)

Tiburon tarweed, *Hemizonia multicaulis ssp. vernalis* (SC)

Tamalpais lessingia, *Lessingia micradenia* var. *micradenia* (SC)

Marin checkermallow, *Sidalcea hickmanii ssp. viridis* (SC)

Tamalpais streptanthus, *Streptanthus batrachopus* (SC)

QUAD : 467E DOUBLE POINT

Listed Species

Mammals

Guadalupe fur seal, *Arctocephalus townsendi* (T)

sei whale, *Balaenoptera borealis* (E)

blue whale, *Balaenoptera musculus* (E)

finback (=fin) whale, *Balaenoptera physalus* (E)
right whale, *Eubalaena glacialis* (E)
sperm whale, *Physeter catodon* (=macrocephalus) (E)

Fish

delta smelt, *Hypomesus transpacificus* (T)
Critical habitat, coho salmon - central CA coast, *Oncorhynchus kisutch* (T)
So. OR/CA coastal chinook salmon, *Oncorhynchus tshawytscha* (T)
Sacramento splittail, *Pogonichthys macrolepidotus* (T)

Proposed Species

Birds

short-tailed albatross, *Diomedea albatrus* (PE)

Species of Concern

Mammals

gray whale, *Eschrichtius robustus* (D)

Birds

ashy storm-petrel, *Oceanodroma homochroa* (SC)

Fish

longfin smelt, *Spirinchus thaleichthys* (SC)

QUAD : 484B PETALUMA

Listed Species

Mammals

salt marsh harvest mouse, *Reithrodontomys raviventris* (E)

Birds

bald eagle, *Haliaeetus leucocephalus* (T)
northern spotted owl, *Strix occidentalis caurina* (T)

Amphibians

California red-legged frog, *Rana aurora draytonii* (T)

Fish

tidewater goby, *Eucyclogobius newberryi* (E)
delta smelt, *Hypomesus transpacificus* (T)
coho salmon - central CA coast, *Oncorhynchus kisutch* (T)
Central California steelhead, *Oncorhynchus mykiss* (T)

So. OR/CA coastal chinook salmon, *Oncorhynchus tshawytscha* (T)

Invertebrates

Myrtle's silverspot butterfly, *Speyeria zerene myrteae* (E)

California freshwater shrimp, *Syncaris pacifica* (E)

Plants

Baker's larkspur, *Delphinium bakeri* (E)

showy Indian clover, *Trifolium amoenum* (E) *

Candidate Species

Amphibians

California tiger salamander, *Ambystoma californiense* (C)

Species of Concern

Mammals

Point Reyes mountain beaver, *Aplodontia rufa phaea* (SC)

Pacific western big-eared bat, *Corynorhinus (=Plecotus) townsendii townsendii* (SC)

greater western mastiff-bat, *Eumops perotis californicus* (SC)

long-eared myotis bat, *Myotis evotis* (SC)

fringed myotis bat, *Myotis thysanodes* (SC)

long-legged myotis bat, *Myotis volans* (SC)

Yuma myotis bat, *Myotis yumanensis* (SC)

Point Reyes jumping mouse, *Zapus trinotatus orarius* (SC)

Birds

tricolored blackbird, *Agelaius tricolor* (SC)

western burrowing owl, *Athene cunicularia hypugea* (SC)

ferruginous hawk, *Buteo regalis* (SC)

little willow flycatcher, *Empidonax traillii brewsteri* (CA)

American peregrine falcon, *Falco peregrinus anatum* (D)

Reptiles

northwestern pond turtle, *Clemmys marmorata marmorata* (SC)

California horned lizard, *Phrynosoma coronatum frontale* (SC)

Amphibians

Northern red-legged frog, *Rana aurora aurora* (SC)

foothill yellow-legged frog, *Rana boylei* (SC)

Fish

Pacific lamprey, *Lampetra tridentata* (SC)

longfin smelt, *Spirinchus thaleichthys* (SC)

Invertebrates

Sonoma arctic skipper, *Carterocephalus palaemon ssp* (SC)

Ricksecker's water scavenger beetle, *Hydrochara rickseckeri* (SC)

Plants

alkali milk-vetch, *Astragalus tener var. tener* (SC) *

QUAD : 484C SAN GERONIMO

Listed Species

Birds

marbled murrelet, *Brachyramphus marmoratus* (T)

bald eagle, *Haliaeetus leucocephalus* (T)

northern spotted owl, *Strix occidentalis caurina* (T)

Amphibians

California red-legged frog, *Rana aurora draytonii* (T)

Fish

tidewater goby, *Eucyclogobius newberryi* (E)

delta smelt, *Hypomesus transpacificus* (T)

coho salmon - central CA coast, *Oncorhynchus kisutch* (T)

Central California steelhead, *Oncorhynchus mykiss* (T)

So. OR/CA coastal chinook salmon, *Oncorhynchus tshawytscha* (T)

Invertebrates

Myrtle's silverspot butterfly, *Speyeria zerene myrtleae* (E)

California freshwater shrimp, *Syncaris pacifica* (E)

Plants

Tiburon paintbrush, *Castilleja affinis ssp. neglecta* (E)

Marin dwarf-flax, *Hesperolinon congestum* (T) *

Candidate Species

Amphibians

California tiger salamander, *Ambystoma californiense* (C)

Species of Concern

Mammals

- Point Reyes mountain beaver, *Aplodontia rufa phaea* (SC)
- Pacific western big-eared bat, *Corynorhinus (=Plecotus) townsendii townsendii* (SC)
- greater western mastiff-bat, *Eumops perotis californicus* (SC)
- long-eared myotis bat, *Myotis evotis* (SC)
- fringed myotis bat, *Myotis thysanodes* (SC)
- long-legged myotis bat, *Myotis volans* (SC)
- Yuma myotis bat, *Myotis yumanensis* (SC)
- Point Reyes jumping mouse, *Zapus trinotatus orarius* (SC)

Birds

- tricolored blackbird, *Agelaius tricolor* (SC)
- ferruginous hawk, *Buteo regalis* (SC)
- little willow flycatcher, *Empidonax traillii brewsteri* (CA)
- American peregrine falcon, *Falco peregrinus anatum* (D)

Reptiles

- northwestern pond turtle, *Clemmys marmorata marmorata* (SC)
- California horned lizard, *Phrynosoma coronatum frontale* (SC)

Amphibians

- Northern red-legged frog, *Rana aurora aurora* (SC)
- foothill yellow-legged frog, *Rana boylei* (SC)

Fish

- Pacific lamprey, *Lampetra tridentata* (SC)
- longfin smelt, *Spirinchus thaleichthys* (SC)

Invertebrates

- sandy beach tiger beetle, *Cicindela hirticollis gravida* (SC)
- globose dune beetle, *Coelus globosus* (SC)
- Ricksecker's water scavenger beetle, *Hydrochara rickseckeri* (SC)
- Marin elfin butterfly, *Incisalia mossii* (SC)

Plants

- fragrant fritillary, *Fritillaria liliacea* (SC)
- Tiburon tarweed, *Hemizonia multicaulis* ssp. *vernalis* (SC)
- northcoast semaphore grass, *Pleuropogon hooverianus* (SC)

QUAD : 484D NOVATO

Listed Species

Mammals

salt marsh harvest mouse, *Reithrodontomys raviventris* (E)

Birds

western snowy plover, *Charadrius alexandrinus nivosus* (T)

bald eagle, *Haliaeetus leucocephalus* (T)

California brown pelican, *Pelecanus occidentalis californicus* (E)

California clapper rail, *Rallus longirostris obsoletus* (E)

northern spotted owl, *Strix occidentalis caurina* (T)

Amphibians

California red-legged frog, *Rana aurora draytonii* (T)

Fish

tidewater goby, *Eucyclogobius newberryi* (E)

delta smelt, *Hypomesus transpacificus* (T)

coho salmon - central CA coast, *Oncorhynchus kisutch* (T)

Central California steelhead, *Oncorhynchus mykiss* (T)

winter-run chinook salmon, *Oncorhynchus tshawytscha* (E)

Central Valley spring-run chinook salmon, *Oncorhynchus tshawytscha* (T)

Sacramento splittail, *Pogonichthys macrolepidotus* (T)

Invertebrates

California freshwater shrimp, *Syncaris pacifica* (E)

Plants

Marin dwarf-flax, *Hesperolinon congestum* (T)

Proposed Species

Fish

Critical Habitat, Central Valley spring-run chinook, *Oncorhynchus tshawytscha* (PX)

Candidate Species

Amphibians

California tiger salamander, *Ambystoma californiense* (C)

Fish

Central Valley fall/late fall-run chinook salmon, *Oncorhynchus tshawytscha* (C)

Species of Concern

Mammals

- Point Reyes mountain beaver, *Aplodontia rufa phaea* (SC)
- Pacific western big-eared bat, *Corynorhinus (=Plecotus) townsendii townsendii* (SC)
- greater western mastiff-bat, *Eumops perotis californicus* (SC)
- long-eared myotis bat, *Myotis evotis* (SC)
- fringed myotis bat, *Myotis thysanodes* (SC)
- long-legged myotis bat, *Myotis volans* (SC)
- Yuma myotis bat, *Myotis yumanensis* (SC)
- Suisun ornate shrew, *Sorex ornatus sinuosus* (SC)
- Point Reyes jumping mouse, *Zapus trinotatus orarius* (SC)

Birds

- tricolored blackbird, *Agelaius tricolor* (SC)
- Bell's sage sparrow, *Amphispiza belli belli* (SC)
- ferruginous hawk, *Buteo regalis* (SC)
- little willow flycatcher, *Empidonax traillii brewsteri* (CA)
- American peregrine falcon, *Falco peregrinus anatum* (D)
- saltmarsh common yellowthroat, *Geothlypis trichas sinuosa* (SC)
- black rail, *Laterallus jamaicensis coturniculus* (CA)
- San Pablo song sparrow, *Melospiza melodia samuelis* (SC)

Reptiles

- northwestern pond turtle, *Clemmys marmorata marmorata* (SC)
- California horned lizard, *Phrynosoma coronatum frontale* (SC)

Amphibians

- foothill yellow-legged frog, *Rana boylei* (SC)
- western spadefoot toad, *Scaphiopus hammondi* (SC)

Fish

- Pacific lamprey, *Lampetra tridentata* (SC)
- longfin smelt, *Spirinchus thaleichthys* (SC)

Invertebrates

- Ricksecker's water scavenger beetle, *Hydrochara rickseckeri* (SC)
- Marin elfin butterfly, *Incisalia mossii* (SC)

Plants

northcoast bird's-beak, *Cordylanthus maritimus ssp. palustris* (SC)

fragrant fritillary, *Fritillaria liliacea* (SC)

QUAD : 485A POINT REYES NE

Listed Species

Birds

marbled murrelet, *Brachyramphus marmoratus* (T)

bald eagle, *Haliaeetus leucocephalus* (T)

northern spotted owl, *Strix occidentalis caurina* (T)

Amphibians

California red-legged frog, *Rana aurora draytonii* (T)

Fish

tidewater goby, *Eucyclogobius newberryi* (E)

Critical habitat, coho salmon - central CA coast, *Oncorhynchus kisutch* (T)

coho salmon - central CA coast, *Oncorhynchus kisutch* (T)

Central California steelhead, *Oncorhynchus mykiss* (T)

So. OR/CA coastal chinook salmon, *Oncorhynchus tshawytscha* (T)

Invertebrates

Myrtle's silverspot butterfly, *Speyeria zerene myrtleae* (E)

California freshwater shrimp, *Syncaris pacifica* (E)

Plants

Baker's larkspur, *Delphinium bakeri* (E)

Candidate Species

Amphibians

California tiger salamander, *Ambystoma californiense* (C)

Species of Concern

Mammals

Point Reyes mountain beaver, *Aplodontia rufa phaea* (SC)

Pacific western big-eared bat, *Corynorhinus (=Plecotus) townsendii townsendii* (SC)

greater western mastiff-bat, *Eumops perotis californicus* (SC)

long-eared myotis bat, *Myotis evotis* (SC)

fringed myotis bat, *Myotis thysanodes* (SC)

long-legged myotis bat, *Myotis volans* (SC)

Yuma myotis bat, *Myotis yumanensis* (SC)

Point Reyes jumping mouse, *Zapus trinotatus orarius* (SC)

Birds

tricolored blackbird, *Agelaius tricolor* (SC)

ferruginous hawk, *Buteo regalis* (SC)

little willow flycatcher, *Empidonax traillii brewsteri* (CA)

American peregrine falcon, *Falco peregrinus anatum* (D)

saltmarsh common yellowthroat, *Geothlypis trichas sinuosa* (SC)

black rail, *Laterallus jamaicensis coturniculus* (CA)

Reptiles

northwestern pond turtle, *Clemmys marmorata marmorata* (SC)

California horned lizard, *Phrynosoma coronatum frontale* (SC)

Amphibians

Northern red-legged frog, *Rana aurora aurora* (SC)

foothill yellow-legged frog, *Rana boylei* (SC)

Fish

Pacific lamprey, *Lampetra tridentata* (SC)

Invertebrates

Sonoma arctic skipper, *Carterocephalus palaemon ssp* (SC)

sandy beach tiger beetle, *Cicindela hirticollis gravida* (SC)

globose dune beetle, *Coelus globosus* (SC)

William's bronze shoulderband snail, *Helminthoglypta arrosa williamsi* (SC)

Ricksecker's water scavenger beetle, *Hydrochara rickseckeri* (SC)

Plants

Mason's ceanothus, *Ceanothus masonii* (SC)

fragrant fritillary, *Fritillaria liliacea* (SC)

San Francisco owl's-clover, *Triphysaria floribunda* (SC)

KEY:

(E) <i>Endangered</i>	Listed (in the Federal Register) as being in danger of extinction.
(T) <i>Threatened</i>	Listed as likely to become endangered within the foreseeable future.
(P) <i>Proposed</i>	Officially proposed (in the Federal Register) for listing as endangered or threatened.
(PX) <i>Proposed Critical Habitat</i>	Proposed as an area essential to the conservation of the species.
(C) <i>Candidate</i>	Candidate to become a <i>proposed</i> species.
(SC) <i>Species of Concern</i>	May be endangered or threatened. Not enough biological information has been gathered to support listing at this time.
(D) <i>Delisted</i>	Delisted. Status to be monitored for 5 years.
(CA) <i>State-Listed</i>	Listed as threatened or endangered by the State of California.
(*) <i>Extirpated</i>	Possibly extirpated from this quad.
(**) <i>Extinct</i>	Possibly extinct.
<i>Critical Habitat</i>	Area essential to the conservation of a species.