



# United States Department of the Interior

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IN REPLY REFER TO:  
PAS 2193.3197.3817

June 22, 2005

William J. Douros, Superintendent  
United States Department of Commerce  
National Oceanic and Atmospheric Administration  
Monterey Bay National Marine Sanctuary  
299 Foam Street  
Monterey, California 93940

Subject: Biological Opinion for the Authorization of Fireworks Displays Within the Monterey Bay National Marine Sanctuary, San Mateo, Santa Cruz, Monterey, and San Luis Obispo Counties, California (1-8-02-F-33)

Dear Mr. Douros:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based upon our review of the National Oceanic and Atmospheric Administration's (Administration) proposed authorization of fireworks displays within the Monterey Bay National Marine Sanctuary (Sanctuary) in San Mateo, Santa Cruz, Monterey, and San Luis Obispo Counties, California. At issue is the authorization of public and private fireworks displays and their effect on 19 federally listed species, the designated critical habitat for four of these species, and the proposed critical habitat for one of these species (Table 1). This document was prepared in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Your May 10, 2002, request for formal consultation was received by us on May 15, 2002.

This biological opinion is based on the following information: (1) information contained with the Administration's consultation request; (2) a 86 page report entitled "Assessment of Pyrotechnic Displays and Impacts within the Monterey Bay National Marine Sanctuary 1993 - 2001" (Administration 2002); (3) a 12 page document entitled "Monterey Bay National Marine Sanctuary Fireworks Guidelines June 2004" (Administration 2004); (4) maps depicting the boundaries of areas where fireworks would be authorized within the Sanctuary; (5) various written and oral communications between the Service and staff from the Sanctuary; and (6) various reports and publications, as indicated by the citations herein. A complete administrative record of this consultation is on file in our office.

Table 1. Federally listed species discussed in this biological opinion (Listing Status: T = threatened, E = endangered).

<b>Mammals</b>		Listing Status	Critical Habitat
Southern sea otter	<i>Enhydra lutris nereis</i>	T	
<b>Birds</b>			
Brown pelican	<i>Pelecanus occidentalis</i>	E	
Western snowy plover	<i>Charadrius alexandrinus nivosus</i>	T	Designated
Marbled murrelet	<i>Brachyramphus marmoratus marmoratus</i>	T	
California least tern	<i>Sterna antillarum browni</i>	E	
California condor	<i>Gymnogyps californianus</i>	E	
California clapper rail	<i>Rallus longirostris obsoletus</i>	E	
<b>Reptiles</b>			
San Francisco garter snake	<i>Thamnophis sirtalis tetrataenia</i>	E	
<b>Amphibians</b>			
California red-legged frog	<i>Rana aurora draytonii</i>	T	Proposed
<b>Fish</b>			
Tidewater goby	<i>Eucyclogobius newberryi</i>	E	
<b>Invertebrates</b>			
Smith's blue butterfly	<i>Euphilotes enoptes smithi</i>	E	
<b>Plants</b>			
Beach layia	<i>Layia carnosa</i>	E	
Coastal dunes milk-vetch	<i>Astragalus tener</i> var. <i>titi</i>	E	
Monterey gilia	<i>Gilia tenuiflora</i> ssp. <i>arenaria</i>	E	
Menzies' wallflower	<i>Erysimum menziesii</i>	E	
Monterey spineflower	<i>Chorizanthe pungens</i> var. <i>pungens</i>	T	Designated
Robust spineflower	<i>Chorizanthe robusta</i> var. <i>robusta</i>	E	Designated
Santa Cruz tarplant	<i>Holocarpha macradenia</i>	T	Designated
Tidestrom's lupine	<i>Lupinus tidestromii</i>	E	

Mr. Scott Kathey of your staff has informed my staff that the Administration will not issue permits for fireworks activities in the Pebble Beach area. Therefore, this area will not be mentioned further in our biological opinion. Mr. Kathey has also informed us that the coastal waters of Santa Cruz inland from the Collision Regulations at Sea (COLREG) demarcation line are excluded from the Sanctuary. Because the area will likely be included within the Sanctuary in the not too distant future, we will address it in our biological opinion.

The Service has reviewed the known distribution of the species listed in Table 1, and made an assessment of the likelihood of the presence of these species or their preferred habitats in the areas where fireworks may be authorized. The following list of taxa are not currently known to occur within the areas where fireworks are proposed, or suitable habitat for these plant and animal taxa is absent: marbled murrelet, California condor, California clapper rail, coastal dunes milk-vetch, Santa Cruz tarplant, beach layia, and robust spineflower. Therefore, the potential effect of the proposed action on these taxa will not be discussed further in this document.

Nesting activities by the California least tern have not been documented in Monterey County since 1956, and an average of 8-12 individuals of the subspecies have been observed on an annual basis along the Monterey Bay coastline since the early 1960s (Roberson 2002). Nearly all of the observed migrants within Monterey County were reported at or north of the mouth of the Salinas River. We are not aware of records that suggest California least terns have nested during the past five decades in areas where fireworks are proposed. The potential effect of the proposed action on the California least tern will not be discussed further in this document because it is unlikely that migrating California least terns or their nests occur in areas where fireworks events are being proposed.

The tidewater goby is known to occur within 1/2 mile of some of the areas where the use of fireworks may be authorized. However, the Service does not believe that the proposed action is likely to adversely affect this species because fireworks would be launched over the ocean, and it is unlikely that fireworks debris or spectator-related activities are likely to create effects that would adversely affect the estuary habitat where the tidewater goby may occur. Therefore, the potential effect of the proposed action on the tidewater goby will not be discussed further in this document.

Spectators tend to gather in close proximity to fireworks launch sites to view pyrotechnics displays. With the expectation of public fireworks displays that are hosted by the City of Monterey, we believe that fireworks spectators will congregate within 1 mile of a launch site to view fireworks. On April 13, 2004, the Service published a rule in the Federal Register that proposed critical habitat for the California red-legged frog (69 *Federal Register* (FR) 19620). The proposed critical habitat unit for the California red-legged frog that is closest to the City of Monterey (Unit 18 - Carmel River Unit) is at least 2.5 miles south of that city and is not likely to be visited by spectators during fireworks displays; therefore, we do not believe this proposed critical habitat unit is likely to be affected as a result of fireworks events. With the exception of the critical habitat unit near Cambria (Unit 21 - San Simeon Unit/Morro Bay Unit), all of the other proposed critical habitat units near the proposed fireworks launch sites are at least 1 mile

from the proposed unit boundaries. Therefore, we believe it is unlikely that spectators are likely to gather in or near those proposed critical habitat units. We note that portions of the proposed Unit 21 near Cambria overlap the boundary of a conditional fireworks display area at a distance of at least 0.4 mile from the fireworks launch site, but we also note that one of the measures that Sanctuary staff have proposed to avoid and minimize adverse effects includes a commitment to not issue fireworks permits in areas where critical habitat occurs. Because of this avoidance and minimization measure, we do not anticipate that private fireworks displays from nontraditional launch points will be permitted in areas where California red-legged frog critical habitat occurs. Because the fireworks event at Cambria is relatively small, we do not anticipate that a public fireworks event at this location is likely to create adverse effects 0.4 mile from the fireworks launch, and thereby affect the proposed San Simeon/Morro Bay unit. In summary, we do not believe that fireworks events are likely to adversely affect proposed critical habitat for the California red-legged frog. Therefore, it will not be discussed further in this document.

The Service has reviewed the effects to designated critical habitat for the robust spineflower and Santa Cruz tarplant that may result from the proposed action. Because no critical habitat for these plants exists along the coastline where fireworks may be launched or in areas where spectators may gather, none will be affected.

Unless new information reveals effects of the proposed action in a manner or to an extent not considered in this biological opinion, no further consultation is necessary on the marbled murrelet, California condor, California clapper rail, coastal dunes milk-vetch, Santa Cruz tarplant, beach layia, robust spineflower, California least tern, and tidewater goby, critical habitat for the robust spineflower and Santa Cruz tarplant, and proposed critical habitat for the California red-legged frog.

## CONSULTATION HISTORY

In March 2001, staff from the Sanctuary sent a letter to Ms. Anne Badgley of the Service and Dr. Rebecca Lent of the National Oceanic and Atmospheric Administration - Fisheries requesting "consultation on fireworks impacts to species within the Sanctuary and protected by the Endangered Species Act and the Marine Mammal Protection Act." When the March 2001 letter was sent, the Sanctuary was developing, but had not finalized, formal guidelines that were designed to minimize and avoid adverse effects to listed species. Service staff did not initiate formal consultation as requested in March 2001 because the formulation of the guidelines was deemed necessary to avoid or minimize adverse effects to listed plant and animal taxa and their critical habitats.

Staff from the Service's Ventura Fish and Wildlife Office (VFWO) have participated in multiple telephone conversations and meetings with staff from the Sanctuary, California Department of Fish and Game (CDFG), and California Department of Parks and Recreation (CDPR) in an effort to exchange information and to discuss potential effects associated with fireworks displays. Staff from the VFWO have also met with representatives from the cities of Monterey, Sand City, and

Seaside in an effort to understand law enforcement activities that occur during fireworks displays that are launched in the city of Monterey.

On June 17, 2003, we sent Scott Kathey of your staff a portion of a draft biological opinion that described how the proposed activity may affect listed taxa. The text that was sent to Mr. Kathey included a description of the proposed action and draft terms and conditions that were designed to reduce the level of incidental take of listed species. On July 3, 2003, staff from the Service, Mr. Kathey, and Karl Gleaves (Administration General Counsel) participated in a conference call to discuss the content of a draft biological opinion involving the authorization of fireworks displays. The Sanctuary staff expressed concerns that some of the terms and conditions contained within the draft biological opinion would require that the Sanctuary monitor and regulate activities on lands they do not have the authority to administer. These lands include terrestrial habitats above the mean high tide level. Therefore, in this final biological opinion, we have included only terms and conditions that the Administration has the authority to enforce.

## BIOLOGICAL OPINION

### DESCRIPTION OF THE PROPOSED ACTION

The action being considered in this biological opinion is the authorization of fireworks displays within particular portions of the Sanctuary. The Administration has determined that fireworks will only be authorized within four areas. These areas include the Half Moon Bay area, northern Monterey Bay, southern Monterey Bay, and an area near the city of Cambria. The precise boundaries of the four areas were delineated on maps that were appended to the "Monterey Bay National Marine Sanctuary Fireworks Guidelines June 2004" document (Administration 2004). Within each of the four areas, there may be as many as three separate launch sites. For the purposes of this biological opinion, public fireworks displays will be considered to be events that are hosted by a municipal, city, or similar sponsor, and are designed to provide an event that is viewed by the general public. Private fireworks displays will be considered to be events that are hosted by a private person or organization. A private fireworks display will not be conducted for the benefit of the general public, and will instead be done for the enjoyment of 200 or fewer invited guests.

During public fireworks displays, pyrotechnic devices will be discharged within the immediate vicinity of the launch sites described below. To the extent practicable, the launch site used during private fireworks displays would be the same as that for public fireworks events. Establishment of new launch sites not already identified within the fireworks permitting guidelines (Administration 2004) will require further coordination between the Service and the Administration.

A brief description of the four conditional display areas where fireworks would be authorized, the nature of public fireworks displays at each location, and the type of spectator activities that typically occur in or near each area, is described below.

### **Half Moon Bay Area**

Pillar Point Harbor: This harbor has routinely been used for public fireworks displays on the 4th of July. The launch site is on a sandy beach inside, and adjacent to, the east outer breakwater near the harbor. Fireworks displays in this area normally last 20 minutes. Aerial shells are aimed to the southwest of the launch site. The portion of Half Moon Bay that extends from Pillar Point east to the above-mentioned launch site is not currently considered to be part of the Sanctuary because it is considered to be an inner harbor area.

### **Northern Monterey Bay Area**

Fireworks displays may be authorized at three locations within the northern Monterey Bay area. These three locations are as follows:

Santa Cruz: A public fireworks display is normally held in this area in early October each year. The launch site is on a sandy beach adjacent to the Santa Cruz boardwalk and the San Lorenzo River, and is situated near a large coastal city. Aerial shells are aimed to the south of the launch site. The area where spectators are likely to congregate during a fireworks display extends along the beach approximately 1/2 to 1 mile east and west of the fireworks launch site.

Capitola: A public fireworks display has only occurred at this site one time since 1993. The event occurred on May 23, 1999. This display was the largest fireworks display ever conducted in the Sanctuary, and the launch site was on the Capitola municipal pier. The fireworks display included 1,700 high level shells that reached an altitude of 200-1,000 feet and 1,800 low-level pyrotechnic devices that were ignited within 200 feet of the ground during the event. The aerial shells were aimed above the pier, and the event lasted 25 minutes. If a future fireworks display occurs at this site, spectators are likely to congregate along the beach approximately 1/2 to 1 mile northeast and southwest of the fireworks launch site.

Aptos: Public fireworks events have occurred at this site on an annual basis during the month of October. The launch site is on the Aptos pier and includes part of a grounded cement barge at Seacliff State Beach. The aerial shells are aimed above and to the south of the pier. The fireworks event lasts approximately 20 minutes. The area where spectators are likely to congregate during the fireworks display extends along the beach approximately 1/2 to 1 mile southeast and northwest of the pier.

### **Southern Monterey Bay Area**

Fireworks displays may be authorized at two locations within the southern Monterey Bay area. These locations are as follows:

Monterey: Each 4th of July, the City of Monterey hosts a public fireworks event that routinely uses 750 shells that reach an altitude of 200-1,000 feet and an equal number of low-level pyrotechnic devices that reach a height of less than 200 feet. The launch site consists of a barge

anchored in Monterey Bay approximately 1,000 feet east of Municipal Wharf II and 1,000 feet north of Del Monte Beach. The aerial shells are aimed above and to the northeast of the barge. The City's fireworks display normally lasts 20 minutes and is accompanied by music that is broadcast from speakers on Wharf II. The area where spectators are likely to congregate during the fireworks display may occur along the beach as far as one mile west and 5 to 8 miles east and northeast of the fireworks launch site. Several dozen to a few hundred small boats filled with spectators typically are present in the City's harbor during the event.

Since 1999, a public fireworks event has also intermittently occurred near the city of Monterey during a New Year's Eve festival. Fireworks during this event are also launched from a barge. This aerial display lasts approximately 8 minutes.

Private fireworks displays were authorized from a launch site on Del Monte Beach in 1993, 1998, and 2000. The 1993 display involved the launch of shells that reached a height of 200-1,000 feet. Other displays have used shells that only reached a height of 200 feet or less, and lasted approximately 7 minutes.

Pacific Grove: This site hosts the annual "Feast of Lanterns" fireworks display in late July. The fireworks launch site for this public event is at the top of a rocky coastal bluff adjacent to an urban recreation trail and public road. The aerial shells are aimed to the northeast of the launch site. The small aerial display lasts approximately 20 minutes and is accompanied by music broadcast from speakers at Lover's Cove. The area where spectators are likely to congregate during the event extends along the beach approximately 1/2 to 1 mile southeast and northwest of the fireworks launch site.

### **Cambria Area**

Shamel County Park: This location has been used on an annual basis during 4th of July fireworks displays. The launch site for this public event is on a sandy beach at Shamel County Park. The aerial display at this site lasts approximately 20 minutes. The aerial shells are aimed to the west of the launch site. The area where spectators are likely to congregate along the beach extends approximately 1/2 to 1 mile north and south of the fireworks launch site.

Sanctuary staff has developed a series of guidelines that are designed to minimize potential impacts that result from fireworks events that are authorized within the Sanctuary (Administration 2004). The guidelines will be used by Sanctuary staff as they process requests for fireworks permits. The portions of the guidelines that are pertinent to the conservation of listed species, or have the potential to affect listed species, are summarized as follows:

1. Fireworks events will generally not be authorized within the following areas of the Sanctuary offshore to the limit of State waters:
  - Sanctuary overflight restriction zones.

- Areas with designated critical habitat for listed species, or nesting habitat for listed breeding bird species.
  - Significant marine mammal haulout or pupping areas.
  - Significant marine bird roosting or nesting areas.
  - Areas with low human visitation, areas where fireworks displays have not traditionally occurred, or remote areas where a fireworks display would create unnatural noise or light effects.
2. The Sanctuary will designate conditional display areas where fireworks displays can be authorized, subject to specific conditions and limitations. These areas include the locations of historical annual public displays.
  3. Ocean areas beyond the seaward limit of State waters will qualify as conditional display areas for permitting of very rare and limited pyrotechnic events from vessels.
  4. The Sanctuary will consider authorization requests for fireworks displays in conditional display areas only. The Sanctuary will consider such requests on a case-by-case basis, giving priority to public displays that have occurred on a historical basis.
  5. The number of displays within conditional display areas will be limited to prevent cumulative negative environmental effects from fireworks proliferation.
  6. The Sanctuary will identify authorized fireworks launch sites within conditional display areas. These sites will be based upon past practice and evaluation of the environmental factors and potential impacts at each considered site.
  7. The Sanctuary will complete formal consultation with the Service concerning potential impacts of fireworks displays on federally listed species.
  8. The Sanctuary has established an annual quota for the maximum number of fireworks displays that can be conducted at each conditional display area. The quota will be as follows:

<u>Display Area</u>	<u>Public Displays</u>	<u>Private Displays</u>
Half Moon Bay	2 events	2 events
Northern Monterey Bay	3 events	3 events
Southern Monterey Bay	3 events	3 events
Cambria	2 events	2 events

9. Public and private display quotas will remain fixed and cannot be substituted or traded within or between conditional display areas. For example, a maximum of three public displays could be authorized in the southern Monterey Bay area. A fourth public display could not be authorized by reducing the private display quota by one.



10. Any increase in quotas or expansion of conditional display areas will require consultation and review between the Sanctuary, NOAA Fisheries, the Service, and other applicable Federal and state natural resource trustee agencies.
11. The Sanctuary acknowledges the following fireworks displays as annual historic public events that will receive priority permit consideration:

<u>Display Area</u>	<u>Event Name</u>
Half Moon Bay	Half Moon Bay Independence Day Display
Northern Monterey Bay	Santa Cruz City Birthday Display
Southern Monterey Bay	Monterey Independence Day Display
	Pacific Grove Feast of Lanterns Display
	Monterey First Night Display
Cambria	Cambria Independence Day Display

12. Fireworks will not be authorized for display between March 1 and June 30 to minimize potential impacts to breeding wildlife. This restriction will be applicable to the entire Sanctuary.
13. The authorization of public displays will generally be issued on a 5-year basis.
14. Authorizations for private fireworks displays will typically not be issued for multiple years unless the display sponsor can demonstrate that an event has historically occurred on an annual basis and can guarantee the event will continue to occur in a consistent manner, time, and format. For example, a fireworks display with a consistent combination of pyrotechnic devices that has occurred for several consecutive years at the same location and time of year could be considered for a multi-year permit.
15. All fireworks permit applications will provide a complete description of the proposed fireworks display and the event date. Applications cannot be submitted on a speculative basis. For example, a business can not request approval for three private displays that it hopes to sell to potential customers at some future time. Speculative or incomplete applications will be rejected.
16. The Sanctuary will, at a minimum, consider the following factors before issuing authorizations:
  - Frequency between displays and potential cumulative effects.
  - Fireworks launch site location relative to biological resources.
  - Seasonal sensitivity of marine life in the area.
  - Size and type of display and its impact on the marine environment.
  - Size, type, and number of fireworks effects scheduled for display.
  - Duration of display.

17. Sanctuary permits will contain a variety of conditions that are designed to minimize potential impacts from fireworks displays. These conditions may:
  - Limit the location, timing, and duration of the display.
  - Limit the number of aerial “salute” devices used in the display, *i.e.*, devices that create loud sound bursts.
  - Delay the use of aerial “salute” devices until 5 minutes after the commencement of the display to afford wildlife time to depart the fireworks launch site.
  - Require removal of plastic labels and wrappings from pyrotechnic devices.
  - Prohibit use of any aerial mortar containing non-biodegradable components exceeding 5 percent of the mortar’s mass.
  - Require recovery of all related debris from the launch site and affected beaches.
  - Require monitoring and reporting.
  - Require post-show cleanup of debris.
18. The Sanctuary will add a special condition to all fireworks permits requiring permittees to work with the Service and state resource protection agencies to develop and implement safeguards that assure that shoreline habitat for listed and sensitive species is not compromised by fireworks spectators.
19. The Sanctuary will specify in each fireworks permit whether any special monitoring requirements apply.
20. If Sanctuary staff determine that a proposed fireworks display may cause impacts to listed taxa in upland areas that are not under the jurisdiction of the Administration, the Sanctuary may add a special condition to a permit requiring the permittee(s) to collaborate with the Service to develop and implement safeguards that are designed to avoid and minimize effects to those taxa during fireworks events.

The guidelines effectively remove fireworks impacts from 95 percent of the Sanctuary’s coastal areas. They also place an annual quota and multiple permit conditions on the displays that will be authorized within the remaining 5 percent of the coast under the Administration’s jurisdiction. The guidelines also impose a Sanctuary-wide prohibition on all fireworks displays between March 1 and June 30.

#### STATUS OF THE SPECIES

The status of the southern sea otter, brown pelican, western snowy plover, San Francisco garter snake, California red-legged frog, Smith’s blue butterfly, Monterey gilia, Menzies’ wallflower, Monterey spineflower, and Tidestrom’s lupine are described below.

### **Southern Sea Otter**

The southern sea otter was listed as federally threatened in 1977 (42 *FR* 2965). Critical habitat for the taxon has not been designated. A revised southern sea otter recovery plan was published in 2003 (Service 2003a).

Description: The southern sea otter is the second largest member of the family Mustelidae, weighing between 40-80 pounds and attaining lengths of about 60 inches (Greg Sanders, Service, pers. comm. 2003). Males are larger than females.

Habitat Affinities: Southern sea otters generally forage in both rocky and soft-sediment communities in water depths of 66 feet or less, although individuals occasionally will move into deeper water (reviewed in Riedman and Estes 1990). Most southern sea otters remain within 1.2 miles of shore and are most often found in association with kelp forests (Riedman and Estes 1990). Rocky habitats that are topographically heterogeneous and support kelp forests are likely to support the greatest diversity and abundance of food resources. Southern sea otters typically do not come ashore unless they are sick or injured.

Life History: Prey items of the southern sea otter include a variety of marine invertebrates including abalone (*Haliotis* sp.). Because of their ability to eat large quantities of marine invertebrates, sea otters play an extremely important role in the nearshore marine community.

Unlike most other marine mammals, sea otters have little subcutaneous fat; they depend on their clean, dense, water-resistant fur for insulation against the cold. Sea otters also maintain a high level of internal heat production to compensate for the lack of blubber. Consequently, their energetic requirements are high and they are estimated to consume an amount of food equivalent to 23 to 33 percent of their body weight per day. Contamination of the fur by oily substances can destroy the insulating properties of the fur and lead to hypothermia and death. The loss of the insulating properties of the fur greatly heightens the adverse effects of an oil spill on southern sea otters and is one of the reasons that increased tanker traffic and the potential for oil spills was considered in the listing of the taxon.

Generally, the home ranges of southern sea otters consist of several heavily used areas with travel corridors between them. Animals often remain in an area for a long period of time and then suddenly move long distances; these movements can occur at any time of the year. Male southern sea otters have larger home ranges and are less sedentary than females. Juvenile males move further from natal groups than do juvenile females, likely due to territorial and aggressive behavior exhibited toward juvenile males by older males. Most male southern sea otters leave the central portion of the range and travel to its ends during the pupping season, which occurs primarily in the winter and spring (Riedman and Estes 1990).

Southern sea otters mate and pup throughout the year. A peak period of pupping occurs from January to March, and a secondary pupping season occurs in late summer and early fall. Parental care is provided solely by the female.

Historic and Current Range: Southern sea otters once ranged from the central coast of Baja California north to at least northern California, although they may have ranged as far north as Prince William Sound in Alaska (Riedman and Estes 1990; Wilson *et al.* 1991). Prior to being protected from hunting for their pelts in 1911, southern sea otters were reduced to only a remnant colony near Bixby Creek along the Big Sur coast. Since 1911, the species has expanded north and south from the Bixby Creek colony. Currently, the range of the southern sea otter extends from about Half Moon Bay to Point Conception, with a small translocated colony at San Nicolas Island in southern California.

Rangewide Trends and Current Threats: Historically, the number of southern sea otters was estimated at about 16,000 individuals (Laidre *et al.* 2001). By the end of the 19th century, the southern sea otter had been hunted nearly to extinction throughout its range. Southern sea otters along the central coast of California increased from as few as 50 animals in 1911 to an estimated 1,789 individuals in 1976. Limitations on set-net fisheries imposed by the CDFG contributed to population increases in the late 1970s and early 1980s (Estes 1990). Population counts declined from 1995 through 1999 but have since increased. During the spring of 2004, a total of 2,825 southern sea otters were counted along the California coastline.

Threats to the California population of the southern sea otter include risk of disease, exposure to environmental contaminants, intentional take (shooting), and potential entanglement in fishing gear. Oil spills, which could occur at any time, threaten the southern sea otter with catastrophic decimation or localized extinction (Service 2003a).

### **Brown Pelican**

The brown pelican was federally listed as endangered in 1970 (35 *FR* 16047). The recovery plan for the brown pelican describes the biology, reasons for decline, and actions needed for recovery of the species (Service 1983). Critical habitat for the brown pelican has not been designated.

Description: The California brown pelican is one of six recognized subspecies of the brown pelican. The brown pelican is a large bird recognized by the long, pouched bill that is used to catch surface-schooling fishes. The California brown pelican weighs up to 10 pounds and has a wingspan of up to 8 feet.

Habitat Affinities: The brown pelican is a conspicuous resident along the coasts of California and Baja California. Brown pelicans nest in colonies on small coastal islands that are free of mammalian predators and human disturbance. They are associated with an adequate and consistent food supply and areas with appropriate roosting sites for both resident and migrant brown pelicans (Service 1983). During the non-breeding season, brown pelicans roost communally in areas that are near adequate food supplies, have some type of physical barrier to predation and disturbance, and that provide some protection from environmental stresses such as wind and high surf. Offshore rocks, breakwaters, and jetties are often used for roosting.

Life History: Brown pelicans are gregarious birds; they nest, forage, and roost communally. Brown pelicans forage for fish from the air, diving from heights of up to 60 feet. The offshore zone within 20-30 miles of colonies is critical for food supplies, especially when young are being fed. Northern anchovies (*Engraulis mordax*) are the principal prey of brown pelicans, although other surface-schooling fish, including Pacific sardines (*Sardinops sagax*), are also eaten (Anderson *et al.* 1980, 1982; Anderson and Gress 1984). Nest sites are generally on steep, rocky slopes. Nests are constructed on the ground or in brush of whatever materials are available, including grasses, sticks, feathers, and seaweed. The brown pelican nesting season typically begins in February and lasts until August. Chicks take about 13 weeks to fledge, at which time they weigh about 20 percent more than adults. Brown pelicans reach breeding age in about 3 to 5 years. Communal roost sites are essential habitat for brown pelicans at all times of year (Service 1983; Jaques and Anderson 1987). Pelicans spread out to a larger number of roosts by day and gather into a smaller number of highest quality roosts at night.

Historic and Current Range: The breeding distribution of the California brown pelican ranges from the Channel Islands of southern California southward to the islands off Nayarit, Mexico. When not breeding, California brown pelicans may range as far north as Vancouver Island, British Columbia, Canada, and south to Colima, Mexico. The maximum breeding population of the California brown pelican throughout its range may number about 55,000 to 60,000 pairs. The largest breeding group is located in the Gulf of California, comprising approximately 68 percent of the total breeding population. Only two breeding colonies exist in the United States. These are located on West Anacapa and Santa Barbara Islands. Prior to 1959, intermittent nesting was observed as far north as Point Lobos in Monterey County.

Rangewide Trends and Current Threats: Brown pelican numbers and breeding success fluctuate greatly with the available food supply. Brown pelicans experienced widespread reproductive failures in the 1960s and early 1970s. Extremely low productivity in the early 1970s was attributed to eggshell thinning caused by high concentrations of DDE, a metabolite of DDT. Other factors implicated in the decline of the California subspecies include human disturbance at nesting colonies and food shortages. Brown pelicans have not reached productivity targets identified for recovery; this is thought to be due to the increasing effect of human disturbance and its effect on the breeding success of colonies. Current threats to the brown pelican include residual DDT levels in southern California, habitat degradation and mortality from oil spills, and human disturbance at roosting and breeding sites.

### **Western Snowy Plover**

The Pacific coast population of the western snowy plover was federally listed as threatened on March 5, 1993 (58 *FR* 12864). A draft recovery plan for the western snowy plover has been completed (Service 2001).

Critical habitat for western snowy plover was designated for 28 units along the coasts of Washington, Oregon, and California on December 7, 1999 (64 *FR* 68508). The primary constituent elements for western snowy plover critical habitat include space for individual and

population growth, and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, and rearing of offspring; and habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species. The primary constituent elements are found in areas that support or have the potential to support intertidal beaches (between mean low water and mean high tide), associated dune systems, and river estuaries. Important components of the beach/dune/estuarine ecosystem include surf-cast kelp, sparsely vegetated foredunes (beach area immediately in front of a sand dune), interdunal flats (flat land between dunes), spits, washover areas, blowouts (a hole or cut in a dune caused by storm action), intertidal flats (flat land between low and high tides), salt flats, flat rocky outcrops, and gravel bars. Several of these components (sparse vegetation, salt flats) are mimicked in artificial habitat types used less commonly by snowy plovers (*i.e.*, dredge spoil sites and salt ponds and adjoining levees).

Critical habitat for western snowy plover was repropose for 35 units along the coasts of Washington, Oregon, and California on December 17, 2004 (69 FR 75608). The proposed rule was prepared pursuant to a court order issued in July 2003, partially vacating critical habitat established for the Pacific coast population of the western snowy plover and remanding the previous designation of critical habitat for preparation of a new analysis of the economic impacts (*Coos County Board of County Commissioners et al. v. Department of the Interior et al.*).

Description: The western snowy plover is one of 12 subspecies of the snowy plover. The taxon occurs within the family Charadriidae. The western snowy plover is a small, pale-colored shorebird with dark patches on either side of the upper breast.

Habitat Affinities: Western snowy plovers prefer coastal beaches that are relatively free from human disturbance and predation. Sand spits, dune-backed beaches, beaches at creek and river mouths, and salt pans at lagoons and estuaries are the preferred habitats for nesting western snowy plovers. Several of these components (*e.g.*, sparse vegetation, salt flats) are mimicked in artificial habitat types used less commonly by western snowy plovers.

Life History: The breeding season for western snowy plovers extends from March to late September, with birds at more southerly locations breeding earlier. Most nesting occurs on unvegetated or moderately vegetated, dune-backed beaches and sand spits. Other less commonly used nesting habitats include salt pans, dredge spoils, and salt pond levees. Nest site fidelity is common, and mated birds from the previous breeding season frequently reunite. During courtship, males defend territories and usually make multiple scrapes. Females choose which scrape becomes the nest site by laying eggs (typically three but up to six) in them. Both sexes incubate eggs, with the female tending to incubate during the day and the male at night (Warriner *et al.* 1986). Western snowy plovers often reneest if eggs are lost. Hatching lasts from early April through mid-August, with chicks fledging approximately one month after hatching. Adult western snowy plovers tend chicks while feeding, often using distraction displays to lure predators and people away from chicks. Females generally desert mates and broods by the sixth day after hatching, and thereafter the chicks are typically accompanied by only the male. While males rear broods, females obtain new mates and initiate new nests (Page *et al.* 1995).

Western snowy plovers tend to be gregarious during the winter months. Western snowy plovers are primarily visual foragers, feeding on invertebrates in the wet sand and surf-cast kelp within the intertidal zone, in dry sandy areas above the high tide, on salt pans, on spoil sites, and along the edges of salt marshes, salt ponds, and lagoons.

Historic and Current Range: The California population of western snowy plovers comprises at least 90 percent of the listed Pacific coast population (Page, pers. comm. 2001). Western snowy plovers bred at 53 coastal locations in California prior to 1970. Between 1970 and 1981, western snowy plovers stopped breeding in parts of San Diego, Ventura, and Santa Barbara counties, most of Orange County, and all of Los Angeles County (Page and Stenzel 1981). By 1991, 78 percent of the remaining breeding population in coastal California nested at only 8 sites: San Francisco Bay, Monterey Bay, Morro Bay, Callendar-Mussel Rock dunes area, Point Sal to Point Conception area (Vandenberg Air Force Base), Oxnard lowlands, Santa Rosa Island, and San Nicolas Island (Page *et al.* 1991). Western snowy plovers had abandoned all historic breeding sites in Santa Barbara County south of Point Conception (Page and Stenzel 1981), presumably due to disturbance or habitat destruction (Lafferty 2000). However, western snowy plovers have recently nested at Coal Oil Point following the year round protection of their breeding and wintering habitat (Lafferty *et al.* 2003). Page *et al.* (1991) estimated that 1,371 western snowy plovers bred in coastal California in 1991; however, by 2000, this number was 976. The breeding population in 2002, 2003, and 2004 was estimated at 1,387, 1,444, and 1,904 individuals, respectively (Page 2004).

During the non-breeding season, western snowy plovers may remain at breeding sites or may migrate to other locations. Most winter south of Bodega Bay, California. Many birds from the interior population winter on the central and southern coast of California.

Rangewide Trends and Current Threats: The Pacific coast population of the western snowy plover has experienced a widespread loss of nesting habitat and reduced reproductive success at many nesting locations due to urban development and the encroachment of European beachgrass (*Ammophila arenaria*). Human activities such as walking, jogging, unleashed pets, horseback riding, and off-road vehicles can destroy the western snowy plover's cryptic nests and chicks. These activities can also hinder foraging behavior, cause separation of adults and their chicks, and flush adults off nests and away from chicks, thereby interfering with essential incubation and chick-rearing behaviors. Predation by coyotes (*Canis latrans*), foxes, skunks, common ravens (*Corvus corax*), gulls (*Larus* sp.), and raptors has been identified as a major factor limiting western snowy plover reproductive success at many Pacific coast sites.

Critical Habitat Within the Proposed Action Area: The Sanctuary consultation request included maps that depicted the boundary of the four conditional fireworks display areas. We have compared these maps with maps that depict the boundaries of the critical habitat units for the western snowy plover, and have determined that Unit 5 (Fort Ord/Seaside Beaches) of Critical Habitat Area 7 (Monterey Bay Beaches) (CA-7, Unit 5) and Unit 4 (Salinas River Beach) (CA-7, Unit 4), which includes the beaches between the city of Monterey and Elkhorn Slough, are the only critical habitat units that could potentially be affected by activities related to fireworks

events. We have reached this determination because we believe these are the only units that would likely be visited by concentrations of fireworks spectators that could have adverse effects to western snowy plover critical habitat.

### **San Francisco Garter Snake**

The San Francisco garter snake was listed as an endangered taxon on March 11, 1967 (32 *FR* 4001). A recovery plan for the taxon was published in 1985 (Service 1985). No critical habitat has been designated or proposed for this listed species.

Description: The San Francisco garter snake is identified by a burnt-orange head, yellow to a greenish-yellow dorsal stripe edged in black, and its red lateral stripe which may be continuous or broken with black blotches and edged in black. The belly color varies from greenish-blue to blue. Large adults can reach 3 feet (0.9 m) in length (Service 2003b).

Habitat Affinities: Ideal habitat for the San Francisco garter snake is a pond with a densely vegetated edge near an open hillside where the garter snake can sun itself, feed, and find cover in rodent burrows. However, considerably less ideal habitats can be used, including a variety of temporary ponds and other seasonal, freshwater wetlands (Fox 1951). The taxon is generally excluded from any brackish-marsh habitat because its preferred prey, the California red-legged frog, does not survive in saline water (Service 2003b).

The San Francisco garter snake is extremely shy, difficult to locate and capture, and quick to flee to water or cover when disturbed. Adult San Francisco garter snakes may seek cover in rodent burrows during summer months when ponds become dry. Along the coast, San Francisco garter snakes hibernate during the winter, but further inland, if the weather is suitable, they may be active year-round (Service 2003b). Information on seasonal movements of the taxon is scant (Service 1985). However, it is known that some adults may spend considerable time near the hibernacula site after emergence from it. For example, they have been recorded breeding at entrances to these burrows shortly after emergence from hibernation (Keel, pers. comm.) and may spend the majority of each day during the active season in or near the same burrows. Breeding occurs in the spring or late fall and the San Francisco garter snake bears live young from May through October; average litter size is about 12-18 (Service 2003b; Stebbins 1985). Although primarily a diurnal species, captive San Francisco garter snakes housed in an outside enclosure have been observed foraging at night on warm evenings.

Life History: California red-legged frogs and Pacific treefrogs (*Hyla regilla*) are the primary prey for various age-classes of San Francisco garter snakes. Adult San Francisco garter snakes feed primarily on these frogs, but may also feed on juvenile bullfrogs (*Rana catesbeiana*). In laboratory studies, Larsen (1994) fed adult San Francisco garter snakes second-year bullfrog tadpoles and found that only the largest adults could eat and digest them; smaller adults regurgitated partially-digested tadpoles, apparently unable to fully digest them. Larsen (1994) also observed that when smaller adult San Francisco garter snakes were fed bullfrogs and other frogs of comparable size, they were often unable to hold and eat them. Newborn and juvenile



San Francisco garter snakes apparently depend most heavily upon Pacific treefrogs as prey (Larsen 1994) and young snakes may not survive if they are unavailable (Service 2003b).

Historic and Current Range: The San Francisco garter snake is known from eight locations in San Mateo and Santa Cruz Counties (Service 1985). Historically, this snake was found on the San Francisco Peninsula, from about the San Francisco County line south along the eastern and western bases of the Santa Cruz Mountains, at least to the Upper Crystal Springs Reservoir, and along the San Mateo County coast to Ano Nuevo Point (Barry 1978). However, at many of the historical locations where this taxon was collected, suitable habitat has been totally eliminated due to urbanization (Service 1985).

The Recovery Plan for the San Francisco garter snake identifies six remaining populations in San Mateo County considered essential to the long-term survival of the species: Pescadero Marsh Natural Preserve, Ano Nuevo State Reserve, San Francisco State Fish and Game Refuge, San Francisco Airport/Millbrae Site, Sharp Park Golf Course at Laguna Salada, and Cascade Ranch (Service 1985). The Service also has a goal of establishing and protecting at least four additional garter snake populations within the historical range (Service 1985) in San Mateo County. The populations in Santa Cruz County have been discovered since the recovery plan for the subspecies was published; the known occurrences in this county are located at Hinman Pond and Waddell Creek (Bill McIver, Service, pers. comm. 2005). Additional breeding sites may occur on private property that has not been surveyed for the presence of the taxon.

Rangewide Trends and Current Threats: Many of the threats that led to the listing of the San Francisco garter snake in 1967 continued to impact the taxon in 1985, when the Recovery Plan was prepared. Primary threats then and now include loss of habitat from agricultural, commercial and urban development and over-collection by reptile fanciers and breeders (Service 1985). In addition, the decline of the California red-legged frog (an essential prey species) and the introduction and continuing spread of bullfrogs into San Francisco garter snake habitat, have over time, become additional serious factors in the taxon's decline (Service 2003b). Bullfrogs are capable of preying on both San Francisco garter snakes and California red-legged frogs. Extirpation of California red-legged frogs in San Francisco garter snake habitat may result in localized extinction of garter snakes (Service 2003b). On the other hand, providing new or enhanced California red-legged frog habitat within the potential range of the San Francisco garter snake may facilitate the recovery of both of these listed species.

### **California Red-legged Frog**

The California red-legged frog was federally listed as threatened on May 29, 1996 (61 *FR* 25813). A recovery plan for the taxon was published in 2002 (Service 2002).

Description: The California red-legged frog is a relatively large ranid frog, ranging from 1.5 to 5 inches from the tip of the snout to the vent (Stebbins 1985). From above, it can appear brown, gray, olive, red or orange, often with a pattern of dark flecks or spots. The back is bordered on either side by an often prominent ridge (*i.e.*, a dorsolateral fold) running from the eye to the hip.

The undersides of adults are white, usually with patches of bright red or orange on the abdomen and webbed hind legs.

Habitat Affinities: California red-legged frogs have been found at elevations that range from sea level to about 5,000 feet. They use a variety of habitat types, which include various aquatic systems and upland habitats. Breeding sites of the California red-legged frog are in aquatic habitats. Larvae, juveniles, and adult frogs have been collected from streams, creeks, ponds, marshes, deep pools, and backwaters within streams, creeks, lagoons, and estuaries. Breeding adults are often associated with dense, shrubby riparian or emergent vegetation and areas with deep (>2.3 feet) still or slow-moving water (Hayes and Jennings 1988). California red-legged frogs frequently breed in artificial impoundments such as stock ponds. While California red-legged frogs successfully breed in streams, high spring flows and cooler water temperatures in these habitats make these sites more risky for eggs and tadpoles. When riparian vegetation is present, California red-legged frogs spend considerable time resting and feeding in it. The moisture and camouflage provided by riparian plants may provide foraging habitat and protection from predation.

Life History: California red-legged frogs usually breed from November through March, but earlier breeding has been recorded in southern localities (Storer 1925). Female California red-legged frogs deposit egg masses on emergent vegetation, and the masses float on the surface of the water (Hayes and Miyamoto 1984). Eggs hatch in 6 to 14 days (Storer 1925). Larvae undergo metamorphosis 3.5 to 7 months after hatching (Storer 1925, Wright and Wright 1949, Jennings and Hayes 1990).

The diet of California red-legged frogs is highly variable. Tadpoles probably eat algae (Jennings *et al.* 1992). Hayes and Tennant (1985) found invertebrates to be the most common food item for adults. Vertebrates, such as Pacific treefrogs and California mice (*Peromyscus californicus*), represented over half of the prey mass eaten by larger California red-legged frogs (Hayes and Tennant 1985). Hayes and Tennant (1985) found juvenile California red-legged frogs to be active diurnally and nocturnally, whereas adults were largely nocturnal.

At any time of the year, juvenile and adult California red-legged frogs may move from breeding sites. They can be encountered living within streams at distances exceeding 1.9 miles from the breeding site and have been found up to 100 feet from water in adjacent dense riparian vegetation for up to 77 days (Rathbun *et al.* 1993). During periods of wet weather, starting with the first rains of fall, some individuals may make overland excursions through upland habitats. Most of these overland movements occur at night. California red-legged frogs often disperse from their breeding habitat to forage and seek summer habitat. This could include boulders or rocks and organic debris such as downed trees or logs, industrial debris, and agricultural features, such as drains, watering troughs, spring boxes, abandoned sheds, or hay-ricks.

Historic and Current Range: The historical range of the California red-legged frog extended coastally from the vicinity of Point Reyes National Seashore, Marin County, California and inland from the vicinity of Redding, California southward to northwestern Baja California,

Mexico (Storer 1925, Jennings and Hayes 1985, Hayes and Krempels 1986). The California red-legged frog has sustained a 70 percent reduction in its geographic range as a result of several factors acting singly or in combination (Jennings *et al.* 1992). The greatest numbers of California red-legged frogs occur in Monterey and San Luis Obispo Counties (61 *FR* 25813).

Rangewide Trends and Current Threats: Habitat loss and alteration, over-exploitation, and introduction of exotic predators were significant factors in the decline of California red-legged frogs in the early to mid-1900s. Reservoir construction, expansion of introduced predators, grazing, and prolonged drought fragmented and eliminated many of the Sierra Nevada foothill populations. Bullfrogs prey on California red-legged frogs (Twedt 1993) and interfere with their reproduction (Jennings and Hayes 1990). The presence of non-native fish has been negatively correlated with the abundance of California red-legged frogs (Hayes and Jennings 1988, Fisher and Shaffer 1996).

The operation of motor vehicles along roads adversely affects amphibians. Kuhn (1987, in Reh and Seitz 1990) estimated that 24 to 40 cars per hour killed 50 percent of the common toads (*Bufo bufo*) that were migrating across a road. Heine (1987, in Reh and Seitz 1990) documented that 26 cars per hour could result in the mortality of all of the toads that attempted to cross the roads that were studied. The extent to which vehicles affect populations of California red-legged frogs is unknown, but it is likely that these animals are routinely killed on roads that receive moderate to high levels of vehicle traffic. Other activities also identified as potential threats include routine road maintenance, placer mining, livestock grazing, and heavy recreational use.

### **Smith's Blue Butterfly**

The Smith's blue butterfly was federally listed as endangered on June 1, 1976 (41 *FR* 22043). A recovery plan for the taxon was published in 1984 (Service 1984). Critical habitat for the subspecies has not been designated.

Description: The Smith's blue butterfly is a small blue butterfly in the family Lycaenidae. These butterflies usually have a wingspan that is less than one inch in size.

Habitat Affinities: The Smith's blue butterfly is dependent upon its host species, seacliff buckwheat (*Eriogonum parvifolium*) and coast buckwheat (*Eriogonum latifolium*), during all life stages. Smith's blue butterflies co-occur with coast and seacliff buckwheat plants that grow in coastal dune, cliffside chaparral, coastal scrub, and coastal grassland communities.

Life History: Synchronous with peak flowering of buckwheat plants, adult Smith's blue butterflies emerge from their pupal cases for a single flight season extending from mid-June to early September. Individual adults live approximately one week, during which time they locate mates, court, and copulate. Females oviposit singly in individual flower heads. Larvae hatch four to eight days after oviposition and feed on buckwheat flowers as they grow and molt through five instars. Between mid-August and early September, larvae pupate, although the location where pupation occurs has not been adequately documented. Researchers have

surmised that likely sites for pupation include: in the heads of flowers, adjacent to leaf or stem axils, in the duff, or several inches below the soil surface (Shields 1975, Arnold 1980, Pratt and Emmel 1998). Larvae overwinter as pupae and emerge as adults the following flight season. Like many other lycaenid butterflies, Smith's blue butterfly larvae are tended by ants during the third through fifth instars. The larvae produce a sugary secretion upon which the ants feed. In return, the ants are presumed to provide the larvae with protection from predation or parasitism. The importance of such ant associations for the Smith's blue butterfly is currently unknown.

Historic and Current Range: The range of the Smith's blue butterfly includes an 80 linear mile long strip along the coast of central California extending from the mouth of the Salinas River south to San Carpoforo Creek in northern San Luis Obispo County. Its known range also extends inland at least 10 miles through the Carmel River Valley. The Smith's blue butterfly was originally described in 1948 from specimens collected at Burns Creek on the Big Sur Coast near California State Highway 1 (Mattoni 1954).

Smith's blue butterflies are known to occur at the Salinas River National Wildlife Refuge, Marina State Beach, and the coastal portion of the former Fort Ord. Smith's blue butterfly and its habitat also occur on private lands in the Marina dune complex and along the coast and in the East Dunes of Sand City. Smith's blue butterflies historically occurred at Monterey State Beach, but they have not been observed south of Sand City in recent years (Diane Gunderson, Service, pers. comm., 2003). Barriers to dispersal, including Highway 1, now exist and may preclude Smith's blue butterflies from recolonizing suitable patches of buckwheat between Sand City and the city of Monterey. Smith's blue butterflies are notably absent from the Monterey Peninsula, although, historically, they have been observed just north of the Peninsula at the Naval Postgraduate School and south of the Monterey Peninsula at Point Lobos State Reserve.

Recently, Pratt and Emmel (1998) concluded that the subspecies of Smith's blue butterfly should be split into two separate subspecies, *Euphilotes enoptes smithi* and *E. e. arenacola*. The authors have concluded that *E. e. smithi* feeds exclusively on seacliff buckwheat from the vicinity of Marina south to northern San Luis Obispo County, has a later flight period than *E. e. arenacola*, and is different in appearance. The authors also concluded that *E. e. arenacola* feeds exclusively on coast buckwheat and occurs from the vicinity of Marina north to the Salinas River. The Service has not acted upon this taxonomic split to date and will continue to consider the Smith's blue butterfly as occurring from the mouth of the Salinas River to San Carpoforo Creek in northern San Luis Obispo County.

Rangewide Trends and Current Threats: Long-term monitoring has not occurred for any population of the Smith's blue butterfly. Most of the knowledge of the distribution of Smith's blue butterfly is the result of singular observations made sometime in the past 30 years. Therefore, the number, size, and persistence of colonies throughout the range of the subspecies are poorly understood.

Vegetation within the range of the Smith's blue butterfly is very dynamic, especially where stands of seacliff buckwheat occur. Seacliff buckwheat seedlings depend upon disturbances such

as landslides and other erosional features for the development of site conditions favorable for germination and establishment. Landslides and mass wasting are common along the Monterey coast and provide the disturbances required by seacliff buckwheat; conversely, these geologic activities can also destroy existing colonies of buckwheat. The Smith's blue butterfly may benefit from some human disturbance when these anthropogenic disturbances mimic natural processes. The quality of buckwheat habitat likely changes over relatively brief periods due to natural succession processes and, increasingly, by the invasion of non-native plants. Over time, especially when disturbances are rare, stands of seacliff buckwheat are likely to be displaced by larger native shrubs on all but the harshest sites.

The role of these dynamic processes in creating and maintaining habitat for the Smith's blue butterfly is poorly understood. Most likely, Smith's blue butterflies abandon areas where seacliff buckwheat is replaced by alternative vegetation or larger native shrubs. Then, adults would disperse and colonize new areas that contain adequate patches of buckwheat plants. Arnold (1991) found that the density and age class distribution of the seacliff buckwheat and coast buckwheat appear to be important determinants for the establishment and persistence of Smith's blue butterfly populations in some locations. Adult Smith's blue butterflies are neither strong nor active fliers; therefore colonies may become isolated if suitable habitat is not available nearby for dispersal and colonization.

The decline of the Smith's blue butterfly is attributed to degradation and loss of habitat as a result of urban development, recreational activities in dune habitats, sand mining, military activities, fire suppression in chaparral habitat, and encroachment of exotic plant species. Aggressive, disturbance-oriented invader species such as kikuyu grass (*Pennisetum clandestinum*), pampas grass (*Cortaderia jubata*), Cape ivy (*Delaireria odorata*), and French broom (*Genista monspessulana*) are found on sites otherwise suitable for seacliff buckwheat and the Smith's blue butterfly. In sand dunes along Monterey Bay, non-native iceplant (*Carpobrotus* spp.) has covered hundreds of acres of formerly suitable habitat for the Smith's blue butterfly.

Loss of habitat for Smith's blue butterfly in the coastal dunes north of the Monterey peninsula has been particularly significant. More than 50 percent of the dunes within the Marina/Sand City complex have been destroyed or significantly altered (Service 1984). Development projects including hotels, housing, and shopping centers have occurred throughout this dune complex. Highway 1 also bisects the dune system. Much of the habitat for Smith's blue butterfly south of the Monterey peninsula is privately owned and could be proposed for development in the future, especially in the vicinity of the Carmel Highlands. In addition to permanent loss of habitat, secondary effects from urban development including introduction of exotic plant species and increased recreational usage can result in habitat degradation.

Recreational use of protected and unprotected lands is resulting in adverse effects to habitat and individuals of Smith's blue butterfly. Pedestrians, equestrians, bicyclists, and off-highway vehicular users trample buckwheat plants, cause erosion, and facilitate the establishment of invasive plants. Construction and maintenance of trails can result in the removal of host plants that may be used by the Smith's blue butterfly.

Several colonies of Smith's blue butterflies and some potential habitat areas are currently protected from at least some of the threats which led to listing of the taxon. For example, large amounts of land that have supported known colonies of the Smith's blue butterfly are owned and managed by resource agencies that include the California Department of Parks and Recreation, U.S. Fish and Wildlife Service, Monterey Peninsula Regional Park District, and U.S. Forest Service.

### **Monterey Gilia**

Monterey gilia, a small, erect annual plant in the phlox family, was listed as a federally endangered subspecies on June 22, 1992 (57 FR 27858). A recovery plan that includes this taxon has been prepared (Service 1998). Critical habitat for Monterey gilia has not been designated.

Habitat Affinities: Monterey gilia grows in sandy soils that occur with dune scrub and maritime chaparral habitat in coastal Monterey County. This taxon is associated with dune scrub vegetation that grows on transgressive sedimentary (rocks laid down by episodic changes in sea level) and aeolian (wind-blown) deposits of the late Wisconsin Pluvials (*i.e.*, Flandrian dunes), occurring on rear dunes, near the dune summit in level areas, and on depressions or slopes in the dunes. Suitable habitat associated with Monterey gilia usually has a north, east, or west aspect, and in wet years can occur on slopes with a southern aspect. The elevational range for this taxon is from sea level to about 800 feet (California Natural Diversity Data Base (CNDDB) 2003). The taxon favors sites with limited exposure to strong winds, salt spray, and waves. It grows in open areas and wind-sheltered openings in low-growing dune scrub and maritime chaparral vegetation or in areas where the sand has experienced some disturbance, such as along trails and roads. The taxon is usually tolerant of small amounts of drifting sand.

Low-growing central dune scrub species associated with Monterey gilia are silver beach lupine (*Lupinus chamissonis*), beach sagewort (*Artemisia pycnocephala*), mock heather (*Ericameria ericoides*), and coast buckwheat. Within open, sparsely vegetated dunes, Monterey gilia is associated with Monterey spineflower, knotweed (*Polygonum paronychia*), slender fescue (*Vulpia octoflora*), blue toadflax (*Linaria canadensis*), and popcorn-flower (*Plagiobothrys leiocarpa*).

Life History: Seeds of Monterey gilia are dispersed by wind throughout dune openings. Dispersal of seeds is inhibited by dense stands of low-growing dune scrub. This taxon is thought to be primarily self-pollinating based on non-exserted stamens, no observations of pollinators, and highly viable seed. Dorrell-Canepa (1994) has studied the ecology and growth of Monterey gilia. She found that seeds, in the field, germinate from December to February, and fruit is set from the end of April to the end of May. Dorrell-Canepa (1994) has compared the survival of seeds directly planted in dunes to those started in the greenhouse and outplanted as seedlings. She found that greenhouse germination was almost 100 percent, as compared to 6 to 15 percent

of seed sown in dunes. She attributed the low field germination rates to variability in precipitation rates.

Rabbit herbivory has been observed to significantly affect the survival of young seedlings and adult plants of Monterey gilia. Mice or voles may also graze the taxon, but if the basal rosette is not entirely consumed the plant may recover and set seed.

Historic and Current Range: Monterey gilia is endemic to the Monterey Bay and Peninsula dune complexes. Its distribution occurs in discontinuous locations. Monterey Bay occurrences are known to occur between the City of Monterey and Moss Landing. Monterey Peninsula populations are located in the vicinity of Spanish Bay and Asilomar State Beach.

As of 1998, the 15 known natural locations of Monterey gilia contained approximately 110,000 individuals (Service 1998). Populations occur on property managed by the U.S. Department of Defense (*i.e.*, former Fort Ord), City of Sand City, CDPR, and the Pebble Beach Company. The largest populations are thought to occur at the former Fort Ord. The closure of Fort Ord will result in the transfer of lands supporting this taxon to the Bureau of Land Management (BLM), University of California, and the CDPR. These areas will be managed as habitat reserve areas that will benefit the plant taxon.

Rangewide Trends and Current Threats: Monterey gilia is threatened by the degradation of suitable habitat caused by the encroachment of invasive non-native plant species, trampling by equestrians and pedestrians, and habitat loss due to commercial or residential development. Off-road vehicle activities have historically degraded the habitat of the taxon.

The recovery plan that includes the taxon specifically states that the population of Monterey gilia at the Naval Postgraduate School should be protected and managed with a goal of sustaining 10,000 to 40,000 individuals.

### **Menzies' Wallflower**

Menzies' wallflower, a biennial to short lived perennial in the mustard family, was federally listed as endangered on June 22, 1992 (57 FR 27848). Critical habitat for Menzies' wallflower has not been designated. A recovery plan that includes the species has been completed (Service 1998).

The species is now recognized to have four subspecies which are geographically distinct, *E. menziesii* ssp. *menziesii* (Menzies' wallflower), *E. menziesii* ssp. *yadonii* (Yadon's wallflower), *E. menziesii* ssp. *eurekense*, and *E. menziesii* ssp. *concinnum*. The Service's listing addressed ssp. *menziesii*, ssp. *eurekense*, and ssp. *yadonii* and did not list what is now *E. menziesii* ssp. *concinnum*, which at the time of listing was considered *E. concinnum*. The subspecies *E. menziesii* ssp. *eurekense* occurs in Humboldt County and therefore does not occur in the proposed action area. *E. menziesii* is distinguished by flower stalks that are 1.2-3.5 inches long, and the longest fruits are usually less than 3.1 inches. The leaves of *E. menziesii* are generally

lobed or irregularly toothed and the flowers are a rich yellow color. *E. menziesii* ssp. *yadonii* differs from the other subspecies because it blooms in summer (June-August), whereas the other subspecies bloom in winter or spring, and tends to be perennial with a branched caudex. The flower petals of *E. menziesii* ssp. *yadonii* are a rich yellow color.

Habitat Affinities: *Erysimum menziesii* is discontinuously distributed in the coastal foredunes at four disjunct dune systems. These dunes are located in Humboldt Bay in Humboldt County; Ten Mile River in Mendocino County; and Monterey Bay and Monterey Peninsula in Monterey County. *E. menziesii* ssp. *yadonii* occurs in coastal dunes, foredunes, and coastal strand habitats. *E. menziesii* ssp. *menziesii* occurs in coastal strand, coastal dunes, central dune scrub, and northern dune scrub (CNDDDB 2003).

The habitat characteristics associated with *Erysimum menziesii* in Monterey County are different from the northern California populations. The species is generally distributed in clusters or patches (Botanica Northwest Associates 1992). In northern California, the species occurs in northern foredune or dune mat community, on the flanks or crests of dunes, open sand areas, sparsely vegetated dunes, and the borders of lupine scrub (Botanica Northwest Associates 1992). The species can tolerate some sand movement. The associated vegetation (sand verbena - beach bursage series) community is composed of low-growing suffrutescent (obscurely shrubby) perennial and herbaceous native species (Sawyer and Keeler-Wolf 1995).

In Monterey, *Erysimum menziesii* occurs on coastal strand close to the high tide line but where it is protected from wave action. The species experiences high exposure to strong wind, salt spray, and occasional wave action from storms and high tides. The substrate where *Erysimum menziesii* grows consists of loose sand lacking in organic matter and minerals (Thomas Reid and Associates 1987). Habitat also occurs in recent bluff scrub and open sparsely vegetated dunes. Associated species along the Monterey Peninsula include beach primrose (*Camissonia cheiranthifolia*), beach-bur, sea rocket (*Cakile maritima*), knotweed, sand verbena (*Abronia latifolia*) and ice-plant. Monterey County occurrences of *Erysimum menziesii* typically do not co-occur with European beachgrass.

Life History: *Erysimum menziesii* reproduces by seed, and the seeds are dispersed by wind. Subspecies *yadonii* can be perennial, but will not fruit more than twice. *Erysimum menziesii* seeds germinate after the first rains in fall or early winter. The vegetative rosette stage of the life cycle can persist for up to 8 years, and flowering may be a function of rosette size (Pickart, *in litt.*, 1995).

Insects that pollinate *Erysimum menziesii* are thought to include bees, bumblebees, butterflies, and moths (Price 1986). The species is self-compatible. Therefore, the reproduction of this species involves selfing and facultative out-crossing (Price 1986). Subspecies *yadonii* is pollinated by a solitary bee species (*Emphoropsis miserabilis*) (Pickart 1988). The seeds are dispersed over time because they can remain attached after dehiscence (Pickart 1988).



The geographic distribution of wallflower populations is dynamic because the seeds can be moved or washed away by strong winds, storm events, or high tides, then be re-deposited in a new location in the coastal strand.

Historic and Current Range: *Erysimum menziesii* occurs in Monterey County from Point Piños south to Cypress Point and in the Marina Dunes, in Mendocino County, and in Humboldt County.

*Erysimum menziesii* ssp. *menziesii* is located in Monterey and Mendocino Counties. It occurs in ten isolated populations along the Monterey Peninsula from Point Pinos to Cypress Point. The Mendocino County populations range from Ten Mile River south to Fort Bragg. Extant Monterey County populations occur in Pacific Grove, Asilomar State Park, Spyglass Hill, Point Piños Lighthouse, Signal Hill Road, Bird Rock Road (east of 17 Mile Drive), and Spanish Bay Golf Course. The largest recorded population of *Erysimum menziesii* ssp. *menziesii* occurs on 1,426 acres at the Ten Mile River site in Mendocino County.

*E. menziesii* ssp. *yadonii* is restricted to six populations in the vicinity of the Marina Dunes, two populations at Marina State Beach, and other occurrences at the RMC Pacific Material Inc. property 0.5 mile south of the Salinas River Lagoon.

Rangewide Trends and Current Threats: *Erysimum menziesii* is threatened by competition from non-native species, industrial and residential development, and trampling by recreational users such as pedestrians, equestrians, and hang-gliders. Off-road vehicle recreation has historically degraded the habitat of *Erysimum menziesii*. Crucifer rust (*Albugo candida*) may also have an impact on the listed plant, but the degree of this threat is currently unknown. In Monterey County, additional threats include browsing by deer, recreational land uses, coastal erosion, sand mining activities, and the deposition material that has been dredged from adjacent water bodies.

### **Monterey Spineflower**

Monterey spineflower, a small, prostrate annual in the buckwheat family, was listed as threatened on February 4, 1994 (59 *FR* 5499). A recovery plan that includes this taxon was completed in 1998 (Service 1998).

Critical habitat for the Monterey spineflower was designated on May 29, 2002 (67 *FR* 37498). The primary constituent elements of the critical habitat for the Monterey spineflower include: (1) sandy soils associated with active coastal dunes, coastal bluffs with a deposition of windblown sand, inland sites with sandy soils, and interior floodplain dunes; (2) plant communities that support associated species, including coastal dune, coastal scrub, grassland, maritime chaparral, oak woodland, and interior floodplain dune communities, and have a structure with openings between the dominant elements (e.g., scrub, shrub, oak trees, clumps of herbaceous vegetation); (3) no or little cover by non-native species which compete for resources available for growth and reproduction of Monterey spineflower; and (4) physical processes, such as occasional soil disturbance, that support natural dune dynamics along coastal areas.

Habitat Affinities: At coastal sites ranging from the Monterey Peninsula north to Manresa State Beach, Monterey spineflower is found in active coastal dune systems and on coastal bluffs where windblown sand has been deposited. The distribution of suitable habitat is subject to dynamic shifts caused by patterns of dune mobilization, stabilization, and successional trends in coastal dune vegetation that causes an increase in vegetative cover. Accordingly, individual colonies of Monterey spineflower shift in distribution and size over time. Other native plants associated with Monterey spineflower include beach bur (*Ambrosia chamissonis*), beach sagewort, mock heather, Monterey Indian paintbrush (*Castilleja latifolia*), and beach pea (*Lathyrus littoralis*). At some locations, Monterey spineflower occurs in close proximity to occurrences of Monterey gilia, Menzies' wallflower, Smith's blue butterfly, and the western snowy plover.

Monterey spineflower readily grows where suitable sandy substrates occur and competition with other plant species is minimal. Where Monterey spineflower occurs within native plant communities, along the coast as well as at more interior sites, it occupies microhabitat sites found between scrub and shrub stands with little cover from other herbaceous species. Where Monterey spineflower occurs within grassland communities, the density of Monterey spineflower may be inversely proportional to the density of other herbaceous species.

At more inland sites, Monterey spineflower occurs on sandy, well-drained soils in a variety of plant communities, most frequently maritime chaparral, valley oak woodland, and grassland. Within grassland communities, Monterey spineflower occurs along roadsides, in firebreaks, and in other disturbed sites, while in oak woodland, chaparral, and scrub communities, it occurs in sandy openings between shrubs. In older stands with a high cover of shrubs, Monterey spineflower is restricted to roadsides, firebreaks, and trails that bisect these communities. Prior to the onset of human use within the taxon's range, Monterey spineflower may have been restricted to openings within these communities created by animal movement corridors, herbivory, and wildfires. The southwestern edge of Monterey spineflower habitat on the former Fort Ord was once likely continuous with habitat found in the community of Del Rey Oaks and at the Monterey Airport. Other inland sites that support Monterey spineflower are located in the area between Aptos and La Selva Beach in Santa Cruz County and near Prunedale in northern Monterey County. At some of these locations, Monterey spineflower occurs in close proximity with the federally endangered Yadon's piperia (*Piperia yadonii*) and robust spineflower.

Life History: Monterey spineflower is a short-lived annual taxon that germinates during the winter months and flowers from April through June. Although its pollination ecology has not been studied, Monterey spineflower is likely visited by a wide array of pollinators; observations of pollinators on other *Chorizanthe* taxa that occur in Santa Cruz County have included leaf cutter bees (megachilids), flies, sphecid wasps, and at least six species of butterflies. Each flower produces one seed. Depending on plant vigor, each Monterey spineflower plant could produce dozens or hundreds of seeds. The importance of pollinator activity in seed set has been demonstrated by the production of seed with low viability where pollinator access was limited (Harding Lawson Associates 2000). The plants turn a rusty hue as they dry through the summer months, eventually shattering during the fall. Seed dispersal is facilitated by the involucre spines, which attach the seed to passing animals. While animal vectors most likely facilitate

dispersal between colonies and populations, the prevailing coastal winds undoubtedly play a role in scattering seed within colonies and populations.

Historic and Current Range: Monterey spineflower occurs from the Monterey Peninsula northward along the coast to southern Santa Cruz County, and inland to the coastal plain of the Salinas River Valley. The recovery plan states that 29 occurrences are presumed extant on property managed by the U.S. Department of Defense, County of Monterey, City of San Jose, CDPR, and the Pebble Beach Company and other private entities. The largest populations are thought to occur on the undeveloped areas of former Fort Ord.

Monterey spineflower was recently found on a dune located within the Salinas River floodplain near Soledad in Monterey County (CNDDDB 2003). Two sites that were known to historically be occupied by Monterey spineflower occur near there. The plant has likely been extirpated from these two sites due to the conversion of natural habitat to agricultural land and channelization activities along the Salinas River.

Rangewide Trends and Current Threats: Residential development, agricultural land conversion, recreational use, sand mining, dune stabilization, and competition with non-native plants, such as European beach grass and iceplant have all reduced the populations and habitat of the Monterey spineflower. Habitat loss and conversion from agricultural and residential development, activities at military institutions, and invasion by non-native plants were identified as the primary threats to the Monterey spineflower at the time of the taxon's listing (59 *FR* 5505). Hikers and equestrians may trample these plants at various locations throughout its range. Most of the historical locations of the Monterey spineflower in the Salinas River Valley have probably been extirpated by conversion of grassland and valley oak woodland habitats to agricultural fields.

The measures that are necessary to recover the Monterey spineflower are described in the recovery plan that includes this taxon (Service 1998). These measures also apply to the Monterey gilia. The recovery plan that includes the Monterey spineflower states that the threatened status of the taxon should be reviewed when: (1) the former Fort Ord disposal and reuse process has been completed and the relevant management agencies develop, fund, and implement permanent protection plans for the taxon's habitat, including permanent programs that suppress iceplant; and (2) beach-dune occurrences on CDPR and private lands throughout its current range from Santa Cruz to the Monterey Peninsula are covered under a permanent protection plan.

Critical Habitat Within the Proposed Action Area: Within the conditional fireworks areas, two critical habitat units for the Monterey spineflower have been designated. These include the Marina Unit (Unit C) and Asilomar Unit (Unit D).

### **Tidestrom's Lupine**

Tidestrom's lupine was federally listed as an endangered species on June 22, 1992 (57 FR 27848). Critical habitat for Tidestrom's lupine has not been designated. A recovery plan that includes this species has been completed (Service 1998).

Description: Tidestrom's lupine is a member of the pea family (Fabaceae). It is a creeping perennial herb. The prostrate habit, number of leaflets (mostly three), small leaflet size between 0.5-0.8 inch long, and dense hairs on the foliage distinguish Tidestrom's lupine from other lupines in the species' geographic range.

Habitat Affinities: Tidestrom's lupine occurs on partially stabilized coastal dunes that are less than 25 feet in height. Several occurrences of the species on the Monterey Peninsula occur on remnant dunes in the yards of private residences. The species occurs in the mild maritime climate of the central California coast and it is associated with coastal dune plant communities.

Life History: The life history of Tidestrom's lupine is largely unknown or the information is unpublished. Flowering occurs from May through June. Tidestrom's lupine is probably pollinated by bees (Moldenke 1976). Within populations, plants have highly clustered distributions. Most lupine species have seeds that accumulate at the base of the plant. This trend and large seed size is consistent with localized seed dispersal and limited long-distance seed dispersal by abiotic factors. Seeds of lupine species are generally long lived and probably form a persistent dormant seed bank. For seeds to germinate under natural conditions, the seed coat probably must be degraded (although not necessarily scarified, e.g., "sandblasting" by windblown sand). Tidestrom's lupine grows in stable to slightly mobile dunes, far from "sandblasting" habitats, so very slow microbial decomposition of the seed coat is the more likely route to germination. The species is not associated with accreting foredunes, suggesting it has very low burial tolerance compared with larger dune plants of the pea family (e.g., *Lupinus chamissonis* and *Lathyrus littoralis*, which grow in highly mobile dunes).

Historic and Current Range: Tidestrom's lupine occurs in two disjunct areas which include the Monterey Peninsula in Monterey County and an area between northwestern Marin County and Sonoma County. Clark and Fellers (1986) identified three occurrences of this species in Point Reyes National Seashore. Surveys by California Native Plant Society staff have expanded the known limits of the species to include seven colonies in the dunes of Point Reyes National Seashore (Soost, *in litt.*, 1996). The southernmost occurrence of the species is located at Pebble Beach in Monterey County. The occurrence, which is cited as occurrence number 11 in the CNDDDB (2003), is a transplanted occurrence which was part of a dune that was created as mitigation for golf course construction. Tidestrom's lupine is known from 19 extant occurrences.

Rangewide Trends and Current Threats: The major threats to Tidestrom's lupine include invasion of its habitat by non-native plants such as iceplant and European beachgrass, the loss of habitat due to development, and trampling by hikers and equestrians. Livestock grazing may

have been a threat in the past, but the only population that was grazed by livestock in recent years was a small one at Dillon Beach, which is probably extirpated. Two occurrences of Tidestrom's lupine on the Monterey Peninsula were eliminated by construction of a golf course. Other occurrences on privately owned sites in Monterey are potentially threatened by residential and recreational development. At the time of the species' listing, the occurrences in Asilomar State Park and Point Reyes National Seashore were subject to trampling by hikers, a problem now corrected by controlled pedestrian routes. Additionally, cattle grazing on the dune system near Dillon Beach presents a potential threat of trampling to Tidestrom's lupine.

## ENVIRONMENTAL BASELINE

Ongoing activities that may affect listed taxa that occur at each of the four areas where fireworks may be authorized are described in the Administration's "Assessment of Pyrotechnic Displays and Impacts within the Monterey Bay National Marine Sanctuary 1993 - 2001" document (Administration 2002). Additional information that describes how listed species may be affected by ongoing activities is derived from species-specific references that are cited herein. Public fireworks displays have routinely been held near many, if not most, of the cities mentioned below for a period of at least 5 to 10 years. The environmental baseline for each area where fireworks may be authorized is described below.

### **Half Moon Bay**

Pillar Point Harbor: The harbor at Half Moon Bay is a home base for a major commercial fishing fleet that operates at all times of the day and night throughout the year. The harbor also supports a considerable volume of recreational boat traffic. The beaches to the south of the fireworks launch site are used by beach goers and water sport enthusiasts. The area is also used by recreational fishermen, surfers, swimmers, and personal water craft operators. The area is subjected to daily traffic noise from California Highway 1 which runs along the coast and is the primary travel route through the Half Moon Bay area. Pillar Point Harbor has been used on an annual basis for fireworks displays on the 4th of July.

Brown pelicans are present in the harbor where they roost on piers and other structures, or rest on the calm waters within the breakwater. Southern sea otters are not abundant in the area where fireworks displays would occur, though some individuals may be present.

Western snowy plovers are known to nest and winter on Half Moon Bay beaches. The draft recovery plan for the western snowy plover (Service 2001) identifies that 24-45 western snowy plovers winter along the 1.4 miles of beach there. A small number of western snowy plovers also breed along the beaches at Half Moon Bay State Beach. The number of nests in this area has increased in recent years. During 2003, 25 eggs hatched from 13 nests and in 2004, 37 eggs hatched from 21 nests (unpublished data, CDPR). Although the number of nesting western snowy plovers has increased at this location, they have experienced poor fledging rates. The cause of the low fledging rates is unknown, but it is suspected that a variety of mammalian and avian predators are impacting eggs and chicks there.

The fireworks launch site and spectator viewing area is located within the South San Francisco Bay Recovery Unit for the California red-legged frog; this unit is described in the recovery plan for the species (Service 2002) and includes western San Mateo County. The importance of this region to the California red-legged frog is demonstrated by several recent records of the species in the CNDDB (2003). One record in the 2002 version of the CNDDB consists of four adult California red-legged frogs that were seen in Corinda Los Trancos Creek about 1.7 miles northeast of the fireworks launch site. Two other recent California red-legged frog records in the CNDDB include one adult observed in 1997 in a deeper pool of Albert Canyon Creek, a tributary to Pilarcitos Creek, and about 1.4 miles northeast of the fireworks launch site; and several (>7) sub-adults and egg masses observed at a newly created and enhanced freshwater wastewater treatment facility near Pilarcitos, about 0.6 mile northwest of the Half Moon Bay fireworks launch site. Thus, even though activities in the vicinity of the launch site may not have suitable breeding habitat for the California red-legged frog, the area could be used as a dispersal and movement corridor by California red-legged frogs that occupy nearby drainages.

The Service considers western San Mateo County to be of sufficient sensitivity to the California red-legged frog that it was excluded from the January 26, 1999 *Programmatic Formal Consultation (with the Corps) on Issuance of Permits under Section 404 of the Clean water Act for Projects that May Affect the California Red-legged Frog* (Service 1999). This exclusion is due to the fact that California red-legged frogs and San Francisco garter snakes have important interrelationships, share similar habitats and needs, and may still coexist in this particular geographic area. These facts elevate the importance of western San Mateo County in the context of conserving these species.

The focal point for the recovery of the San Francisco garter snake is San Mateo County, where most of the observations of the California subspecies have been documented. The Recovery Plan for the San Francisco garter snake identifies six remaining populations in San Mateo County considered essential to the long-term survival of the subspecies: Pescadero Marsh Natural Preserve, Ano Nuevo State Reserve, San Francisco State Fish and Game Refuge, San Francisco Airport/Millbrae Site, Sharp Park Golf Course at Laguna Salada, and Cascade Ranch (Service 1985). The populations in Santa Cruz County have been discovered since the recovery plan for the subspecies was published; the known occurrences in this county are located at Hinman Pond and Waddell Creek (Bill McIver, Service, pers. comm. 2005). Additional breeding sites may occur on private property that has not been surveyed for the presence of the taxon.

The CNDDB records for the Half Moon Bay and Montara Mountain U.S. Geological Survey 7.5-minute quadrangle maps list two occurrences of the San Francisco garter snake in the vicinity of the Half Moon Bay fireworks launch site. One record from 1988 is from near the mouth of Pilarcitos Creek, about 0.8 mile to the northwest of the fireworks launch site. A second record, from the general survey conducted by Barry (1978), is from Dennison Creek, about 5.8 miles to the northwest of the fireworks launch site. Because of the difficulty in detecting the presence of the San Francisco garter snake (due to its extreme shyness) and despite the lack of specific surveys that have been done for the subspecies in the area where fireworks have been proposed,

these nearby sightings of the San Francisco garter snake strongly suggest that the upland areas near the Half Moon Bay fireworks launch site or spectator viewing area site may be appropriate habitat for the subspecies.

### **Northern Monterey Bay Area**

Santa Cruz: The Santa Cruz harbor area supports a large volume of recreational boat traffic. The beaches to the west of the fireworks launch site are adjacent to a large coastal amusement park complex and are used extensively by beach goers and water sport enthusiasts. Boaters, fishermen, swimmers, surfers, and other recreational users use the harbor area. The fireworks launch site is on a sandy beach adjacent to a boardwalk and the San Lorenzo River.

Capitola: The proposed fireworks launch site and spectator viewing area near Capitola are immediately adjacent to a small urban community. The beaches to the east and west of the launch site are used on a daily basis by beach goers and water sport enthusiasts. Boaters, fishermen, swimmers, surfers, and other recreational users use the area where fireworks debris may enter the water. A mooring area for small boats and a popular public beach are located east of the pier where fireworks have historically been launched.

Aptos: The area where fireworks displays have historically been viewed near the City of Aptos is used as a recreational beach. The beaches to the east and west of the launch site are used on a daily basis by beach goers and water sport enthusiasts. The area where fireworks debris would enter the water is used by boaters, recreational fishermen, swimmers. At the seaward end of the Aptos Pier is a 400-foot grounded cement barge.

The environmental baseline for the Santa Cruz, Capitola, and Aptos areas is similar and will therefore be described in a single narrative. Brown pelicans routinely use piers and rock outcrops in the three areas as roosting sites; the Service does not have current data that indicates how many brown pelicans are likely to occur in the vicinity of Santa Cruz, Capitola, and Aptos, but there is a potential that a few dozen of these birds may be present near the fireworks launch sites at any given time

Southern sea otters may also occur in the vicinity of the fireworks launch sites at Santa Cruz, Capitola, and Aptos. The average number of independent southern sea otters (*i.e.*, weaned juveniles and adults) that were counted during spring otter censuses between Pigeon Point and Capitola to the east and west of Santa Cruz, respectively, between 1999 and 2002 was 121 animals (Brian Hatfield, U.S. Geological Survey, pers. comm. 2003). The average number of independent southern sea otters that were counted during spring otter censuses between the towns of Capitola and Seaside west and east of Aptos, respectively, between 1999 and 2002 was 124 animals (Brian Hatfield, pers. comm. 2003). The average number of independent southern sea otters seen along the entire California coastline during this same period was 1,905 individuals. Therefore, the Santa Cruz, Capitola, and Aptos areas did not possess a major fraction of the independent southern sea otters that were present along the California coastline between 1999 and 2002. It is likely that 10 or fewer southern sea otters were present near the

fireworks launch sites in Santa Cruz, Capitola, and Aptos areas in past years. Southern sea otters near the fireworks launch sites are most likely to be present around nearshore kelp forests that are offshore from the launch sites.

### **Southern Monterey Bay Area**

Monterey: Commercial and recreational boats operate in the Monterey harbor area on a 24-hour basis. Up to 30 boats may moor in the area between the barge that is used to launch fireworks and the Municipal Wharf II. During previous annual fireworks events, all the moorings in the harbor have been completely occupied by boats. The shoreline area near the fireworks launch site is utilized by thousands of people each week. These people engage in boating, kayaking, scuba diving, fishing, swimming, and harbor maintenance activities. The public beaches where spectators have typically gathered for previous fireworks displays are routinely groomed by staff that work for the City of Monterey. The beach is frequented by the general public and their domestic pets on a daily basis, therefore the beaches are subject to a relatively high level of human use.

Non-breeding California brown pelicans appear in the greatest numbers along the central California coast during the late summer and fall. Brown pelicans in the Monterey harbor area roost on the local breakwater; wharfs, piers, and structures; and on exposed rocks. Brown pelicans rest on the breakwater approximately 700 yards northwest of the area where fireworks have historically been launched. It is not uncommon for several dozen brown pelicans to be on the breakwater during a given year's fireworks event (Douglas Threlhoff, Service, pers. obs. 2002).

Several southern sea otters are typically seen on a daily basis within the Monterey harbor. One or more of these animals have been seen near the fireworks launch site during previous fireworks displays. Southern sea otters may occasionally be present outside the harbor northwest of the Monterey breakwater; these individuals routinely forage and rest within the area where fireworks debris may enter the water and along the shoreline to the north. Up to five southern sea otters may be present in the harbor area in early July (Scott Kathey, Sanctuary, pers. comm. 2002).

Biologists from the Point Reyes Bird Observatory (PRBO) have monitored nesting western snowy plovers at Monterey Bay since 1984. These monitoring efforts provide an estimate of the number of nests and chicks that are present in five geographic areas. These areas include:

1. Monterey North, which includes the beach between the City of Monterey and Stilwell Hall on Fort Ord.
2. Reservation Road, which includes the beach between Stilwell Hall and Reservation Road on the northern boundary of Fort Ord.
3. Marina South, which includes the area between Reservation Road and a dredge pond on the southern portion of land that is owned by RMC Pacific Materials Inc.



4. Marina Middle, which includes an area between the aforementioned dredge pond and a location near the middle of the RMC Pacific Materials Inc. property.
5. Marina North, which includes an area that is bounded by the middle of the RMC Pacific Materials Inc. property and the southern boundary of land which is owned by the Martin family and the Big Sur Land Trust.

Census data for western snowy plovers that occurred in these five areas were collected by PRBO staff between 1999 and 2004 (Page *et al.* 1999, 2000, 2001, 2002a, 2002b, 2003, and 2005). These data are summarized in Table 1, and provide an index of the number of nests or plover chicks that potentially could be affected by spectators that attend fireworks events. These data suggest that the number of western snowy plover nests and chicks on or south of the Fort Ord boundary where the majority of fireworks spectators would gather to view the City of Monterey's public fireworks display is likely to be relatively low, *i.e.*, one or two nests and two chicks. The area where spectators might have gathered to view the Monterey fireworks near the city of Marina, *i.e.*, the Marina south, middle, and north areas, between 1999 and 2004 may have contained as many as 12-58 nests and 26-105 chicks in any given year between 1999 and 2004.

Table 1. Total number of western snowy plover nests and chicks along the southern Monterey Bay coastline, 1999-2004. ND = no data

Location	number of nest attempts						number of chicks					
	1999	2000	2001	2002	2003	2004	1999	2000	2001	2002	2003	2004
Monterey North	2	1	0	ND	ND	ND	2	2	0	ND	ND	ND
Reservation Road	0	0	0	ND	1	8	0	0	0	ND	0	23-24
Marina South	2	2	4	5	7	12	3	3	7	9	6-7	20-25
Marina Middle	7	11	9	14	19	27	15	30-32	19-23	36-37	42-45	53-55
Marina North	3	3	7	8	7	11	8	9	19	18	16-17	24-25

Data collected by PRBO staff suggests that an average of 259 adult western snowy plovers nested annually in the Monterey Bay - northern Santa Cruz County area between 1997 and 2004 (Page *et al.* 2005). The vast majority of these birds occurred at, or were north of, Reservation Road on former Fort Ord, *i.e.*, the majority of the observed western snowy plovers were north of the areas where fireworks spectators are likely to gather.

Although the number of nesting western snowy plovers in the Monterey Bay region has increased in recent years, there has been a contraction of their range within the region due to habitat loss and increasing levels of human disturbance. CDPR has recently issued Western Snowy Plover Management Guidelines to help advance their efforts to protect habitat and improve nesting success on their lands. These guidelines should help minimize adverse effects

to western snowy plovers on CDPR lands, but they will not likely eliminate them. CDPR and the local entities have been approached by us to enter into the habitat conservation planning process to minimize and mitigate the effects of ongoing or proposed actions, but little progress has been made on such efforts.

The beaches within three miles of the City of Monterey do not present optimal nesting habitat for the western snowy plover because large numbers of people routinely use these beaches. The likelihood of successful nesting and chick survival in these high-use beach areas is therefore small. In 2002, the CDFG or CDPR fenced a number of western snowy plover nests along various beaches in central California in an effort to minimize disturbances that were associated with human and pet use of beach areas. The closest western snowy plover nest that was fenced in 2002 in relation to where the City of Monterey fireworks have been launched occurred 8.7 miles north of the fireworks launch site (Elizabeth Harlen, CDPR, pers. comm. 2002).

The Fort Ord/Seaside Beaches critical habitat unit for the western snowy plover includes the beaches along the southern half of Monterey Bay from the city of Monterey at the south end of the subunit to the southern half of the beaches on former Fort Ord (64 *FR* 68508). This critical habitat subunit overlaps approximately 265 linear feet of the Southern Monterey Bay conditional fireworks display area. Numbers of spectators gather along the beaches within the cities of Monterey, Seaside, and Sand City which encompasses an area of critical habitat that extends from approximately 0.5 to 4 miles north from the launch site. Beaches in this area receive a relatively high level of public use each year, and it is likely that a minimum of several hundred thousand visitors use these beaches each year. North of there, former Fort Ord's access restrictions prevent concentrations of spectators on the beach. However, Marina State Beach to the north of former Fort Ord in the Salinas River Beach unit has had approximately 100 fireworks spectators gather for 4<sup>th</sup> of July displays. This area is approximately 7 miles north of the launch site. The presence of large numbers of beach users on a monthly and year-around basis creates a chronic level of human activity that probably precludes large numbers of western snowy plovers from using the critical habitat unit. The Fort Ord/Seaside Beaches unit has experienced a reduction in breeding pairs in recent years, but still supports wintering flocks of western snowy plovers. Based on aerial photography that was taken in 2002, the critical habitat unit possessed as many as 1,000 to 2,000 spectators during the City of Monterey 4<sup>th</sup> of July fireworks event in that year (Douglas Threlhoff, Service, pers. obs. 2002). North of former Fort Ord in the Salinas River Beach unit, a minimum of 100 spectators were observed during the 2002 fireworks display that occurred in the city of Monterey; most of these fireworks spectators were concentrated at or adjacent to Marina State Beach. This beach receives a high level of public use and annual visitation for the beach is in excess of 1,300,000 people (Scott Kathey, Sanctuary, pers. comm. 2002).

The Smith's blue butterfly is known to occur at Marina State Beach, former Fort Ord, and Sand City. Arnold (1986) found Smith's blue butterfly to be widely but patchily distributed at Marina State Beach wherever buckwheat plants were present (Arnold 1986). The distribution of Smith's blue butterfly at Marina State Beach likely changes from year-to-year as new patches of buckwheat become established and older patches senesce or are out-competed by exotic plants

(Arnold 1986). At the time of his study in 1986, Arnold identified six sites that contained Smith's blue butterflies at Marina State Beach. These areas collectively measured 112 acres in size. Within these sites, 413 adult Smith's blue butterflies were captured and nearly 80 larvae were observed in areas with both high and low densities of coast buckwheat. Dozens of Smith's blue butterflies have also been observed along the south side of Reservation Road on the former Fort Ord (CDPR 2001). Potential habitat for the Smith's blue butterfly is abundant along the coastal portion of the former military base, and the species is known to use seacliff and coast buckwheat as host plants in this area. Surveys for the subspecies in 1997 detected a total of 634 adults between Reservation Road and the northern boundary of the RMC Pacific Materials Inc. property (Thomas Reid Associates 1999). The highest concentrations of Smith's blue butterflies were noted in the back dune areas at the northern and southern ends of the RMC Pacific Materials Inc. property. Suitable habitat, consisting of both seacliff buckwheat and coast buckwheat, occurs south of Fort Ord through Sand City to the City of Monterey. However, Smith's blue butterflies have not been observed south of Sand City in recent years. The subspecies was historically found at Monterey State Beach. The Dune/Research Area of the Naval Postgraduate School contains a substantial colony of seacliff buckwheat that could act as habitat for the Smith's blue butterfly. Despite efforts by the Navy to reduce threats and enhance habitat, Smith's blue butterflies have not been observed at the Naval Postgraduate School since 1981. Barriers to the dispersal of Smith's blue butterflies, including Highway 1, now exist and may preclude the subspecies' ability to recolonize suitable patches of buckwheat known to occur between Sand City and the city of Monterey.

Sand dune environments northeast of the city of Monterey possess or may possess occurrences of several listed plant taxa, including Monterey gilia, Monterey spineflower, and Menzies' wallflower. Unless otherwise noted, all of the listed plant occurrences mentioned in the paragraphs below were derived from the CNDDB (2003). Only those listed plant occurrences which are known to occur within 1/2 mile of a shoreline area where fireworks spectators are likely to gather are discussed.

Monterey gilia is known to be present: (1) on the Naval Postgraduate School less than one mile east of the City of Monterey's fireworks launch site; (2) on a privately owned property called Del Monte Shore Dune Crest Villas adjacent to the Naval Postgraduate School; (3) in the vicinity of Sand City 2.3 miles northeast of the Monterey fireworks launch site; (4) at former Fort Ord 3 - 6.5 miles northeast of the Monterey fireworks launch site; and (5) at Marina State Beach and near the City of Marina seven miles north and east of the City's fireworks launch site.

Monterey spineflower is known to be present at the following locations: (1) on the Naval Postgraduate School less than one mile east of the City's fireworks launch site; (2) on a privately owned property called Del Monte Shore Dune Crest villas adjacent to the Naval Postgraduate School; (3) at former Fort Ord 3 - 6.5 miles northeast of the City of Monterey fireworks launch site; and (4) at various sites 3.5 - 8 miles northeast of the City's fireworks launch site along the coastline near the Marina Dunes and the city of Marina.

The Marina critical habitat unit for the Monterey spineflower contains 1,780 acres. The unit consists of coastal beaches, dunes, and bluffs that extend from the mouth of the Salinas River to the city of Monterey. With the exception of a small portion of land between Del Monte Boulevard and Highway 1 in Sand City, the Marina critical habitat unit is almost entirely west of Highway 1. The Marina unit includes approximately 55,000 linear feet of shoreline; the southern-most 1,500 feet of the shoreline area of the unit overlaps the southern Monterey Bay conditional fireworks display area. However, concentrations of spectators gather along the beaches within the cities of Monterey, Seaside, and Sand City which encompasses an area of critical habitat that extends 4 miles north from the launch site. The unit includes lands on former Fort Ord. State lands, which comprise 3 percent of the unit, include Marina State Beach and Monterey State Beach. Private lands account for 53 percent of the unit. Federal lands at the Naval Postgraduate School are not included within the critical habitat unit. The Marina critical habitat unit currently supports a population of Monterey spineflower that numbers in the tens of thousands of individuals. This critical habitat unit is important because it supports one of the four known populations of Monterey spineflower found along the coast, and because it provides connectivity between the coastal populations and the more interior populations found at former Fort Ord.

The minimum number of fireworks spectators that gathered within the Monterey spineflower Marina critical habitat unit on July 4, 2002, included at least 2,100 people. Aerial photography that was collected in that year suggested that at a minimum, the following number of people were present along sandy beach areas during the 2002 event: Monterey State Beach unit A (444 spectators), Naval Postgraduate School (367 spectators), Del Monte Beach (328 spectators), Monterey State Beach unit B (427 spectators), Sand City property (95 spectators). At least 450 additional fireworks spectators were present on private property within the critical habitat unit. Officials from the City of Monterey believe the number of people that were present in the Marina critical habitat unit during the July 4, 2002, fireworks event was greater than 2,100 people.

At least some of the fireworks spectators that gathered in the Monterey spineflower Marina critical habitat unit on July 4, 2002, were present in areas that contained two of the primary constituent elements that are associated with the critical habitat. These elements include areas that possess openings between dominant perennial or herbaceous vegetation, or areas that do not possess non-native species that compete with Monterey spineflower.

Menzies' wallflower is known to be present just north of the northern boundary of the Southern Monterey Bay conditional fireworks zone at Marina State Beach, at Marina Dunes, and on private property that is owned by RMC Pacific Materials Inc. These areas have a relatively low potential to attract spectators that may gather to view fireworks that are discharged in the Monterey harbor area.

Pacific Grove: The fireworks launch site that has historically been used in Pacific Grove is located in the center of an urban area adjacent to a public beach. The shoreline to the east and west of the launch site is lined with residences and a public road and pedestrian trail. The area where spectators would gather to watch fireworks is used by boaters, fishermen, swimmers,

surfers, divers, and people exploring tide pools. A popular day use area is located immediately north of the fireworks launch site.

Southern sea otters and their pups routinely forage and rest within the area where fireworks would be launched. Southern sea otters loaf at Point Cabrillo approximately three quarters of a mile southeast of the fireworks launch site. Brown pelicans also routinely occur at this same site.

Monterey gilia is known to be present at Asilomar State Beach one mile south of the western boundary of the conditional fireworks display area that includes Pacific Grove.

Monterey spineflower is known to be present near Point Pinos along the northwest tip of the Monterey Peninsula. The northern boundary of the Asilomar critical habitat unit for Monterey spineflower is 0.1 mile south of the conditional fireworks display area boundary that includes Pacific Grove. We do not have any data on the amount of fireworks spectator use this 310-acre unit receives.

Menzies' wallflower is present at Asilomar State Park, 0.1 - 0.6 mile south of the southern boundary of the Southern Monterey Bay conditional fireworks zone, and at a location near the Point Pinos lighthouse. Less than 100 individuals of the subspecies were present at these two locations during the 1980s (CNDDDB 2003). There is some potential that spectators may gather at Asilomar State Park or the Point Pinos lighthouse if a large private fireworks display was held along the southern boundary of the Southern Monterey Bay conditional fireworks zone. Menzies' wallflower was historically present at Pacific Grove inside the conditional fireworks zone, but the taxon is likely extirpated from this location (Service 1998).

Tidestrom's lupine occurs near Point Pinos along the northwest tip of the Monterey Peninsula and at Asilomar State Beach; both locations are less than one mile from the boundary of the Southern Monterey Bay conditional fireworks zone.

### **Cambria Area**

Shamel County Park: The area where fireworks are launched at this park is immediately adjacent to a recreational beach. Boaters, fishermen, swimmers, surfers, and people visiting the beach use this area. The shoreline south of the fireworks launch site is lined with hotels, abuts a residential neighborhood, and is part of San Simeon State Beach.

The California red-legged frog is known to occur in Santa Rosa Creek 0.1 mile from the proposed fireworks launch site. Santa Rosa Creek occurs within the Estero Bay core area that is described in the recovery plan for the California red-legged frog. Core areas represent areas that, when protected and managed for California red-legged frogs, will allow for the long-term viability of existing populations and the re-establishment of populations within their historic range.

Southern sea otters are routinely present in and around the Cambria fireworks launch site. Brown pelicans are also likely to occur in shoreline areas at or near the fireworks launch site.

Potential habitat that could be used by western snowy plovers is present 1.5 miles north of the fireworks launch site, and this taxon has recently started to nest in the area. The first western snowy plover nest in this area was observed in 2002. Another nest occurred in 2003, none were detected in 2004, and five have been detected thus far during 2005 (Regena Orr, CDPR, pers. comm. 2005).

## EFFECTS OF THE ACTION

Fireworks displays within the Monterey Bay National Marine Sanctuary are likely to cause a number of direct and indirect impacts that could adversely affect listed plant and animal taxa. These impacts may occur within marine-nearshore aquatic habitats and inland terrestrial habitats. The magnitude of the effects associated with public and private fireworks displays will primarily be influenced by the number and type of pyrotechnics charges that are ignited and the number of spectators that gather to witness a particular event. The effects analysis provided below primarily focuses on public fireworks displays because these events are more likely to be associated with a larger number of impacts. Private fireworks displays have the potential to create some of the same adverse effects that are associated with public displays, but the geographic extent and magnitude of the effects associated with private fireworks displays are likely to be smaller than public events because fewer people will attend private events. The public fireworks display near the city of Monterey is discussed in detail because the Sanctuary has made a greater effort to document the fireworks-related effects that occur in this area. This event also occurs in an area that possesses a greater number of listed species relative to other areas where fireworks may occur, that event attracts a larger number of spectators than other areas where fireworks may be permitted, and the spectators are dispersed over a large area, i.e., up to 4 miles from the fireworks launch site. Descriptions of the effects that are associated with the proposed fireworks events are described below.

**Effects Associated with Marine - Nearshore Aquatic Habitats or Species:** Public fireworks displays routinely last 20 minutes. These events may include up to 700 aerial shells that will reach a height of 200 to 1,000 feet and 750 pyrotechnic devices that burn or explode within 200 feet of the ground. Private fireworks displays will routinely last seven to ten minutes and have a maximum of 300 aerial shells and 550 low-level pyrotechnic devices.

Pyrotechnic devices used during fireworks events produce noise, light, sparks, smoke, paper, cardboard, plastic, and cotton string debris. Public fireworks events tend to attract and concentrate small boats that are used by spectators as they watch fireworks displays. The effects that are associated with sound and light, debris, and increased use of small boats during fireworks events are described in more detail below.

Sound and Light Effects: Salutes, bursting charges, and set pieces produce varying degrees of sound and light. Salutes are defined as aerial shells and other pyrotechnic devices whose

primary effects are noise and a flash of light. A bursting charge is defined as a device whose primary function is to scatter incendiary components into a pre-designed spatial pattern. These charges may also produce an audible noise and flash of light. Set piece devices are confined to the ground, and produce a visual and/or audible effect. Set pieces employ bright flares and sparkling effects, and they may emit limited sound effects such as cracking, popping, or whistling.

Loud explosive and crackling sounds during fireworks events stem primarily from salutes and bursting charges that explode at least a few hundred feet above the launch site. People and wildlife on the ground and on the surface of the ocean may feel the sound waves and the accompanying rapid shift of ambient atmospheric pressure during fireworks events. The aerial shells that are launched during fireworks events produce flashes of light that can be brilliant (*i.e.*, exceeding 30,000 candela), and these light effects can occur in rapid succession.

Public or private fireworks displays may be attended by spectators who launch personal fireworks that consist of bottle rockets, roman candles, sparklers, and fire crackers. The light and sound effects associated with these devices create smaller effects than the devices that are launched by companies that host public fireworks displays.

The sound and light effects associated with fireworks displays are likely to affect brown pelicans. This species may experience abrupt changes in behavior that involve flushing from roosts. Monitoring by Sanctuary staff demonstrate that the majority of the brown pelicans on the pier in Monterey harbor abandon their roosts within a matter of seconds or minutes following the start of the City's public fireworks event (Administration 2002). Many of these birds do not immediately return to their roosts until a period of hours or a few days following the cessation of the fireworks event. Individual birds may be startled by sound and light effects during fireworks displays and experience injuries or mortalities that involve collisions with boat masts or aerial wires or cables that are present in the harbor area. Sanctuary staff have not conducted in-depth monitoring activities that are designed to detect the presence of dead or injured brown pelicans in the vicinity of fireworks launch sites.

Southern sea otters may experience temporary changes in behavior that affect their resting or foraging activities as fireworks events occur. The Service is not aware of information at the present time that demonstrates that southern sea otters are injured or killed, or experience long-term changes in behavior, as a result of fireworks displays.

Debris-related Effects: Sanctuary staff have documented the presence of a substantial number of fireworks casings in the ocean immediately following pyrotechnic displays (Administration 2002). Other fireworks debris that may enter the ocean includes cardboard cylinders, disks, and shell case fragments; paper strips and wadding; plastic wadding, disks, and tubes; aluminum foil; cotton string; and even whole unexploded shells (*i.e.*, duds or misfires). It is likely that paper strips, cardboard, and cotton string are biodegradable and do not persist for long periods of time in the ocean environment. Other materials that include aluminum, plastic, and unexploded shells are likely to persist in the marine environment for a period of weeks or months if they are not

washed ashore and removed by personnel. The Service is not aware of documentation that suggests southern sea otters or brown pelicans ingest fireworks-related debris. We also do not know if this material poses a hazard to southern sea otters or brown pelicans.

Chemical residue is produced during fireworks displays in the form of smoke, airborne particulates, and fine solids. A study conducted in Florida in 1992 indicates that chemical residues do result from fireworks displays and can be measured under certain circumstances (DeBusk *et al.* 1992). The manner in which wildlife is affected by chemical residues that may be present in pyrotechnic devices has not been investigated.

Increased Boat Traffic: Public fireworks events are likely to attract and concentrate small boats that are used as observation platforms. The presence and use of these watercraft has a small potential to increase the likelihood that southern sea otters may be inadvertently killed or injured if they are struck by moving boats that are concentrated in a small area. Southern sea otters occur on a regular basis in several of the harbors where fireworks events occur. We believe the potential for water-craft related injuries or deaths is correlated with the speed of watercraft. Because the speed of boats in the harbor areas during fireworks events is constrained by the number of boats that are present, we do not believe boats are likely to strike southern sea otters during fireworks events, and we are not aware of documentation that demonstrates that a boat has inadvertently killed or injured a southern sea otter during a fireworks event.

Municipal fireworks displays that concentrate watercraft near roosting sites used by brown pelicans may have the potential to disturb the normal loafing behavior of these animals and cause them to flush and relocate to another area. This effect would develop as concentrations of people in the watercraft create noise and activity levels that disturb and flush loafing birds.

**Effects Associated With Inland Terrestrial Habitats or Species:** Monterey gilia, Menzies' wallflower, Monterey spineflower, and Tidestrom's lupine may be adversely affected by activities that are associated with fireworks events. In the "Effects of the Action" portion of this biological opinion, these plants will be referred to as "dune plants." The Smith's blue butterfly, California red-legged frog, San Francisco garter snake, and western snowy plover may also be adversely affected by various activities that occur during fireworks events. The potential effect of fireworks activities on listed plant and animal taxa can be summarized as follows:

Increased Use of Beach Areas: Aerial photography taken during the July 4, 2002, public fireworks event in Monterey suggests a minimum of 6,885 people were present along sandy beaches or dune habitats between the City's harbor and a point 3.2 miles northeast of the City's harbor 1-1 1/2 hours before the fireworks were launched (Service files). These people were attracted to the beach because this area provides a vantage point for viewing fireworks. The largest concentration of people occurred between the City's harbor and the Naval Postgraduate School. The photography suggests that multiple bon fires were lit on the beach during the event, and that multiple dogs were brought by their owners. Planning Department staff from the City of Monterey estimate that as many as 50,000-60,000 people may have been on the Monterey Bay beaches immediately prior to the start of the 2002 fireworks event. The discrepancy between the



number of people observed along the beach in the aerial photography and the estimate of the number of fireworks spectators that was developed by the City of Monterey staff may be explained by 1) the fact that the photos were taken one half to one hour before the fireworks started and more people went to the beach as darkness progressed, or 2) the City staff's estimates included people that were in the greater Monterey area, and some of these people were not necessarily along sandy shorelines or dune habitats during the fireworks event. In any case, several thousand spectators routinely gather in sandy areas along the beach in the southern Monterey Bay area during the City's public fireworks event.

At least 102 people were attracted to a 1.6 mile length of beach west of the City of Marina 1-1 1/2 hours before fireworks were launched in the Monterey harbor in 2002. It is likely that the number of people in this area also increased as darkness progressed.

Many of the 6,800 to 60,000 spectators that were present along the beach during the City of Monterey fireworks event in 2002 were involved in activities such as Frisbee throwing, building bon fires, pitching tents, and shoveling sand to create sand castles, sand walls, or sand trenches. These activities collectively have the potential to markedly affect the extent and character of any natural habitat that still persists in the local area, particularly when the number of people attending the Monterey fireworks event is taken into account. The City of Monterey's 4<sup>th</sup> of July fireworks event likely triggers the single greatest influx of people to the local beaches that occurs during any day of the year, and thereby contributes to the highly altered landscape that exists in the local area.

Other public fireworks events in or near Half Moon Bay, Santa Cruz, Capitola, Aptos, Pacific Grove, and Cambria are likely to result in concentrations of 3,000-10,000 spectators along coastal beaches. Most of the spectators that gather for fireworks events in these areas are likely to occur within 1/4 to 1/2 mile of a fireworks launch site.

The number of invited guests that would attend a private fireworks display is likely to include a maximum of 200 people. There is a potential that a small number of uninvited guests would gather to view a private fireworks display, but it is unlikely this number would exceed a few dozen individuals because private displays would only last a few minutes and would not be advertised like public events.

Increased Risk of Trampling of, or Disturbance to, Listed Plants, Listed Butterflies or Their Host Plants, or Plover Nests/Chicks: Spectators that gather to view fireworks displays that are hosted by the City of Monterey are likely to create a larger number of adverse effects than spectators that gather to watch events in Half Moon Bay, Santa Cruz, Capitola, Aptos, Pacific Grove, and Cambria because events in those six areas attract a substantially smaller number of people (Scott Kathey, Sanctuary, pers. comm. 2002).

Fireworks events that result in large, dense concentrations of spectators have the potential to result in trampling of listed plants, or the larvae of Smith's blue butterflies or their host plants. The trampling of Monterey spineflower is one of the threats that resulted in the listing of the

taxon (Service 1998). The final rule listing the Menzies' wallflower and Monterey gilia states that these plant taxa have been threatened by activities that include trampling by pedestrians (59 FR 5499). Large levels of human foot traffic may result in the burial of smaller individuals of listed plant species as sand is displaced when spectators traverse sand covered slopes. The intensity of foot traffic associated with fireworks displays also increases the potential that non-native plant species could colonize areas that are affected by human use. Non-native plant species compete with native plant species for space, water, and nutrients, and therefore have the potential to reduce the number and distribution of listed plant taxa. Older seed producing plants may also be adversely affected by pedestrians if they are crushed or trampled. Spectators may trample or crush coast buckwheat or seacliff buckwheat plants that are needed to support Smith's blue butterflies. Spectators may injure or kill eggs, larvae, or pupae of the Smith's blue butterfly if they are crushed. Adult Smith's blue butterflies may be harassed by being flushed from roosting sites. People that gather to view fireworks may also trample or destroy listed dune plants that have been propagated or planted during restoration projects that are designed to restore extirpated or degraded populations (Ian Harlen, CDPR, pers. comm. 2002).

The number of western snowy plover coastal breeding sites and the size of breeding populations have been affected by a number of human activities (Air Force 2000). Western snowy plovers have been found to be disturbed more than twice as often by human activities than by all other natural causes combined (Page *et al.* 1977). Normal western snowy plover behavior associated with feeding and breeding can be disrupted if people visit areas where nesting western snowy plovers are present. Recreational beach users may also inadvertently crush plover nests or young chicks as they traverse beach areas. During the 2002 City of Monterey fireworks event, several pet dogs were brought to local beach areas by fireworks spectators. Unleashed dogs may sometimes chase western snowy plovers, kill chicks, or destroy nests if they are present (Service 2001).

Fireworks can disturb western snowy plovers (Service 2001). In locations where nesting western snowy plovers co-occur with fireworks launch sites, the species may abandon nests as a result of fireworks events, even when nests are surrounded by symbolic fencing. In areas where symbolic fencing does not protect nests, beach users may trample eggs or nests. There is also the potential that western snowy plovers nests and chicks inside areas that have been symbolically fence could be disturbed or crushed if people disregarded the presence of the fences. Fireworks displays have also been found to adversely affect the federally threatened piping plover (*Charadrius melodus*) which is ecologically similar to the western snowy plover (Howard *et al.* 1993).

Loss or Alteration of Habitat Due to Beach Cleaning Activities: Some public fireworks events are followed by beach grooming activities that are designed to remove trash or other material that would be considered to be "debris" (*i.e.*, driftwood or plant material that was deposited by wave action). Beach-cleaning activities remove the natural wrackline that would facilitate the presence of feeding habitat that might be used by western snowy plovers (Howard *et al.* 1993; Service 2001). Driftwood associated with the wrackline provides cover for western snowy plover chicks and promotes the presence of invertebrate prey items these birds plovers can feed on. Removal of driftwood from the wrackline is likely to reduce the concentration of

invertebrates and cause western snowy plovers to spend more time and energy foraging. Mechanized beach cleaning can lead to crushing of western snowy plover eggs or chicks in areas where they nest, or cause prolonged disturbances that are associated with elevated noise levels. Beach grooming activities also are likely to increase the potential that invasive non-native plant species could colonize disturbed areas, thereby preventing the reestablishment of plant communities that historically existed.

Increased Risk of Road-related Mortality: Spectators traveling to beach areas where fireworks are discharged typically park within 1/2 to 1 mile of the fireworks event. This activity creates dramatic increases in the level of vehicle traffic near fireworks launch sites. In areas where 3,000-10,000 people gather to watch fireworks events, it is likely that hundreds or thousands of cars travel to parking lots near fireworks launch sites. Many of the parking areas near the fireworks launch sites in the Cambria and the Half Moon Bay areas are within 1/2 mile of habitat that is occupied by the California red-legged frog or San Francisco garter snake. The increased level of vehicular traffic that is associated with fireworks events has the potential to result in the crushing of individual frogs or snakes if they cross roads that are being used by fireworks spectators.

Debris-related Effects: The presence of uncollected debris that may exist in beach areas where fireworks events have been held is likely to attract the presence of scavengers or predators that include ring-billed gulls (*Larus delawarensis*), California gulls (*Larus californicus*), western gulls (*Larus occidentalis*), and glaucous-winged gulls (*Larus glaucescens*). These bird species are known to prey on western snowy plover chicks during the breeding season (Service 2001). If fireworks events result in debris that is deposited on the same beaches that are used by western snowy plovers, various species of gulls may be attracted to these beaches because of the trash and subsequently prey upon young chicks or eggs.

Effects to Critical Habitat: The presence of large numbers of fireworks spectators in a critical habitat unit that has been designated for the western snowy plover or Monterey spineflower that occurs outside of a conditional fireworks display area, may adversely affect the primary constituent elements that are associated with the unit. For western snowy plover critical habitat, these effects would arise because the presence of large numbers of fireworks spectators is likely to degrade or alter the habitat's ability to provide areas where western snowy plovers breed, rear offspring, or feed. These effects may occur within the critical habitat unit that extends from 0.5 to 4 miles north of the Southern Monterey Bay conditional use area and within the unit of critical habitat at Marina State Beach. The presence of large numbers of fireworks spectators in a critical habitat unit that has been designated for the Monterey spineflower may affect the primary constituent elements by adversely affecting plant communities that are associated with the listed plant taxon and creating disturbance events that promote the establishment or spread of non-native plant species that compete for resources that are necessary for the growth and reproduction of Monterey spineflower. These effects may occur within the unit that extends 4 miles north from the Southern Monterey Bay conditional use area, the critical habitat at Marina State Beach, and portions of the 310-acre Asilomar Unit. We expect the effects at Marina State

Beach and Asilomar to be less than those in the Monterey/Seaside/Sand City area because these outlying areas are expected to have less spectator use.

### CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7(a)(2) of the Act.

Commercial, municipal, and public actions that are reasonably certain to occur within the conditional fireworks areas have the potential to result in chronic and persistent effects that may adversely affect listed species or their designated critical habitats. The City of Sand City is interested in developing parcels along their coastal strands for visitor-serving purposes including hotels and resorts. The Monterey Bay Shores project in Sand City was denied a permit by the California Coastal Commission on the grounds that the project is inconsistent with the Sand City certified Local Coastal Program, but the applicant is currently appealing that finding and pursuing development of a habitat conservation plan for their project. The City also intends to develop the McDonald parcel along their coastal strand, but there are no specific project plans for the site yet. Because the status of these projects is undetermined, we will not analyze the effects these projects could have on listed species or critical habitat.

### CONCLUSION

After reviewing the current status of the southern sea otter, brown pelican, western snowy plover, San Francisco garter snake, California red-legged frog, Smith's blue butterfly, Monterey gilia, Menzies' wallflower, Monterey spineflower, and Tidestrom's lupine, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the authorization of fireworks events, as proposed, is not likely to jeopardize the continued existence of these taxa. We base our conclusions on the following:

1. Because fireworks displays will only be authorized within four discrete areas within the Sanctuary, fireworks displays will be prohibited within the remaining 95 percent of the Sanctuary. The areas where fireworks will be permitted constitute a small percentage of the entire range of the southern sea otter, brown pelican, western snowy plover, San Francisco garter snake, California red-legged frog, Smith's blue butterfly, Monterey gilia, Menzies' wallflower, Monterey spineflower, and Tidestrom's lupine. Therefore, the effect of the proposed action on these species is not likely to reduce substantially their overall populations.
2. The maximum number of fireworks events, including private and public displays, in each of the four conditional fireworks display areas will not exceed six events within each display area each year.

3. Breeding habitat that is used by the brown pelican, southern sea otter, California red-legged frog, and San Francisco garter snake should not be affected by the proposed action. Therefore, their breeding success should not be affected.
4. Prolonged disturbance to listed species is not expected because authorized fireworks events will occur infrequently.
5. The number of Smith's blue butterflies, Monterey gilia, Menzies' wallflower, Monterey spineflower, and Tidestrom's lupine that may be trampled and killed by fireworks spectators is likely to be a small percentage of the total number of individuals across their ranges.

After reviewing the current status of critical habitat for the western snowy plover and Monterey spineflower, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the authorization of fireworks events, as proposed, is not likely to destroy or adversely modify the critical habitat of the western snowy plover and Monterey spineflower. We base our conclusions on the following:

1. Because fireworks displays will only be authorized within four discrete areas within the Sanctuary, fireworks displays will be prohibited within the remaining 95 percent of the Sanctuary. The areas where fireworks will be permitted are proximal to a small percentage of the critical habitat for the western snowy plover and Monterey spineflower. Therefore, the proposed action may only affect a few areas of critical habitat for these taxa.
2. The maximum number of fireworks events, including private and public displays, in the Southern Monterey Bay conditional use area will not exceed six events per year. Therefore, effects to primary constituent elements from fireworks events will occur on only 6 days per year.
3. The Administration is not authorizing activities that will modify the primary constituent elements of the critical habitat that is associated with the Monterey spineflower or western snowy plover.

#### INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavioral patterns which

include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measure described below is non-discretionary and must be undertaken by the Administration or made binding conditions of any permit issued by the Administration, as appropriate, for the exemption in section 7(o)(2) to apply. The Administration has a continuing duty to regulate the activities covered by this incidental take statement. If the Administration fails to assume and implement the terms and conditions of the incidental take statement, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the Administration must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

Southern Sea Otter - We anticipate that no southern sea otters will be taken as a result of the proposed fireworks events. We base this conclusion on the nature of the proposed activity, the behavior of the subspecies which suggests they habituate to areas with frequent, and sometimes intense human activity, and the relatively low abundance of southern sea otters in the action area.

Brown Pelican - The number of brown pelicans observed in the vicinity of the proposed fireworks display areas at any given time is the combined result of breeding success elsewhere, weather, and seasonal changes in their movements, such that declines at these sites cannot be reliably attributed to the proposed action. There is a chance that some injury or mortality may occur, as described in the Effects of the Action section of this biological opinion; however, the potential for such an incident to occur would be very remote and unpredictable.

Based upon the information presented by the Administration, we anticipate that few brown pelicans will be killed, injured, or harassed as a result of the authorization of fireworks displays in any given year. Estimating a precise number is impossible because of the variation in numbers of brown pelicans in the vicinity of the proposed fireworks display areas at any one time, the varying levels of human activity, and the potential difficulty in determining whether any dead bird that is found died of natural causes or as a result of a fireworks event.

This biological opinion does not exempt from the prohibitions of section 9 of the Act any form of take that is not incidental to the proposed authorization of fireworks displays within the Sanctuary in accordance with the project description provided by the Administration.

This incidental take statement does not provide an exemption from the prohibitions of section 9 of the Act for activities that occur above the mean high tide level. We have not included reasonable and prudent measures and terms and conditions in this biological opinion for areas above the mean high tide level because the Administration does not have jurisdiction over those areas. Therefore, we have not provided incidental take exemptions for the western snowy

plover, San Francisco garter snake, California red-legged frog, and Smith's blue butterfly. The Administration should inform fireworks permit applicants that some fireworks displays may result in the take of listed species, and such activities may result in a violation of section 9 of the Act. Therefore, some entities, particularly applicants that host public fireworks events, may need to acquire a permit pursuant to section 10(a)(1)(B) of the Act if fireworks-related activities may result in take of listed species above the mean high tide level.

Section 9 of the Act does not address the incidental take of listed plant species. Consequently, this biological opinion does not contain an incidental take statement for the Monterey gilia, Menzies' wallflower, Monterey spineflower, or Tidestrom's lupine. The Administration should be aware that the Act prohibits the removal from and reduction to possession or the malicious damaging or destruction of endangered plants from Federal lands; by regulation, the Service extended this prohibition to threatened species. Section 9(a)(2)(B) prohibits any person from removing, cutting, digging up, or damaging or destroying individuals of a listed plant species in knowing violation of any law or regulation of any State or in the course of any violation of a State criminal trespass law.

Our evaluation of the effects of the proposed action includes consideration of the measures developed by the Administration, and repeated in the "Description of the Proposed Action" portion of this biological opinion, to minimize the adverse effects of the proposed project on the listed species addressed in this biological opinion. Any subsequent changes in the minimization measures proposed by the Administration may constitute a modification of the proposed action, as specified at 50 CFR 402.16.

#### REASONABLE AND PRUDENT MEASURE

We believe the following reasonable and prudent measure is necessary and appropriate to minimize take of the brown pelican during fireworks events in the Monterey Bay National Marine Sanctuary:

The Administration must ensure that the level of incidental take anticipated in this biological opinion is commensurate with the analysis contained herein.

#### TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, the Administration must comply with the following terms and conditions which implement the reasonable and prudent measure described above. These terms and conditions must be incorporated as a binding condition of any permit issued by the Administration. The terms and conditions are non-discretionary.

The following terms and conditions implement the reasonable and prudent measure:

- a. Because we are unable to anticipate with a great deal of certainty the number that may be killed, the Administration must contact us whenever a dead brown pelican is reported or found following a fireworks event. The Administration must attempt to determine whether the cause of death or injury was likely due to a flight response that was initiated by the discharge of fireworks. Once the cause of death or injury has been determined, the Service and the Administration must review the circumstances surrounding the incident to determine whether additional protective measures are required.
- b. If more than one brown pelican is found dead or injured during any authorized fireworks event, the Administration must contact the Service to determine whether formal consultation should be re-initiated. This threshold is intended to determine whether the activities associated with fireworks events may be affecting brown pelicans more substantially than we anticipated.

#### DISPOSITION OF DEAD OR INJURED SPECIMENS

Upon locating a dead or injured brown pelican, initial notification must be made in writing to the Service's Division of Law Enforcement in Torrance, California (370 Amapola Avenue, Suite 114, Torrance, California 90501). If a brown pelican is found dead or injured within the Half Moon Bay area, the Sacramento Fish and Wildlife Office must be contacted by telephone (916-414-6648) and in writing (U.S. Fish and Wildlife Service, Endangered Species Division, 2800 Cottage Way, Room W-2605, Sacramento, CA 95825-1846) within 3 working days of the finding. If a dead or injured brown pelican is found in other areas where fireworks will be launched, the Ventura Fish and Wildlife Office must be contacted (2493 Portola Road, Suite B, Ventura, California 93003, (805) 644-1766). The report will include the date, time, location of the carcass, a photograph, cause of death, if known, and any other pertinent information.

Care must be taken in handling dead specimens to preserve biological material in the best possible state for later analysis. Should any injured brown pelicans survive, the Service must be contacted regarding their final disposition. The remains of intact brown pelicans must be placed with the California Academy of Sciences, Golden Gate Park, San Francisco, California, or the Museum of Vertebrate Zoology, University of California, Berkeley, California.

In the case of take or suspected take of listed species not exempted in this opinion, the Ventura and Sacramento Fish and Wildlife Offices must be notified within 24 hours of the take or suspected take violation.

#### REPORTING REQUIREMENT

The Administration must provide a written annual report to the Ventura and Sacramento Fish and Wildlife Offices within 90 days following the end of each calendar year that this biological opinion is in effect. The report must document the number of listed animals that are killed or



injured as a result of fireworks events and describe the number and location of fireworks events that are authorized each year.

## CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. We recommend the following conservation measures be implemented, and that the Administration should inform fireworks permit applicants of the following recommended conservation measures, as applicable, to reduce the likelihood of the take of listed species above mean high water during fireworks displays:

1. The Administration should maintain current maps that document the occurrence and distribution of listed dune plant taxa that are known to occur within areas where fireworks may be permitted. These maps may be obtained from the CNDDB, and files that are maintained by the CDPR or the Naval Postgraduate School. The Administration should work in a collaborative manner with the Service to acquire distribution records pertaining to listed dune plant taxa.
2. The Administration should maintain current maps that depict the boundaries of proposed and designated critical habitat units for listed taxa.
3. The Administration should not issue permits for private fireworks events that have a launch site or designated spectator viewing area that is within 1/4 mile of a location that has documented occurrences of Monterey gilia, Monterey spineflower, Menzies' wallflower, or Tidestrom's lupine, unless plant surveys have been completed and areas with listed plants have been protected with barriers that prevent the trampling of listed species.
4. Applicants that apply for fireworks permits should be encouraged to conduct presence/absence surveys for listed plant taxa and to transmit positive survey results to the CNDDB.
5. The Administration or their permittees should develop a public outreach program and develop and disseminate brochures or pamphlets that are designed to educate spectators and staff that are launching fireworks that listed species or their habitat may occur near the proposed fireworks launch site, and that spectators should avoid activities that have the potential to adversely affect listed species.
6. The Administration should recommend to permittees that pets not be allowed in the spectator viewing areas during fireworks events.

7. Fireworks permittees should be encouraged to implement actions that reduce the potential that large numbers of spectators will cause vehicle-related mortalities of listed animal species. For example, cars and other passenger vehicles that are used to convey spectators to private and public fireworks displays should be parked at least 100 yards from aquatic environments that may be suitable habitat for the California red-legged frog or San Francisco garter snake.
8. During private fireworks displays, spectator viewing areas should be confined to the smallest practical area, and the boundaries of these areas should be delineated with flagging or other markings in advance of the launching fireworks to minimize the potential for accidental trampling of listed species.
9. The Administration should maintain a file that documents the occurrence and distribution of western snowy plover nests that have been observed since 1995 within each of the areas where fireworks may be permitted, and they should not issue permits that allow fireworks launch sites within 3/4 of a mile of a location where western snowy plovers have been documented to nest. This prohibition should be in effect between March and late September each year. The Administration should work in a collaborative manner with the Service to acquire distribution records of western snowy plovers.
10. Permittees should be required to submit a report to the Administration within 4 weeks of each permitted fireworks event. The report should provide an estimate of the number of spectators that gathered in the marine or terrestrial habitats that could potentially be used by listed species during a fireworks event. The report should contain a 1:24,000 scale map that depicts the relative abundance of spectators within the spectator viewing area.

The Service requests notification of the implementation of any conservation recommendations so we may be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species and their habitats.

#### REINITIATION NOTICE

This concludes formal consultation on the authorization of fireworks displays within the Monterey Bay National Marine Sanctuary. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If you have any questions regarding this biological opinion, please contact me at (805) 644-1766, extension 320.

Sincerely,

A handwritten signature in black ink, appearing to read 'D. M. Pereksta', with a long horizontal flourish extending to the right.

David M. Pereksta  
Assistant Field Supervisor  
Santa Cruz/San Benito/Monterey

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