



United States Department of the Interior

FISH AND WILDLIFE SERVICE

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Naval Air Weapons Station
1 Administration Circle
China Lake, California 93555-6100

Subject: Biological Opinion for Activities on San Nicolas Island, California (5090 Ser 8G0000D/7284) (1-8-01-F-14)

Dear Ms. Shepherd:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the U.S. Navy's (Navy) ongoing activities on San Nicolas Island and the effects on the federally endangered brown pelican (*Pelecanus occidentalis*) and island night lizard (*Xantusia riversiana*), and the threatened western snowy plover (*Charadrius alexandrinus nivosus*) and its critical habitat, in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). Your December 21, 2000, request for formal consultation was received on December 26, 2000.

This biological opinion is based on information which accompanied your December 21, 2000, request for consultation, including the biological assessment (Navy 2000), discussions between Navy and Service biologists, and our files.

SOUTHERN SEA OTTER

Between 1987 and 1990, the Service translocated 140 endangered southern sea otters (*Enhydra lutris nereis*) to San Nicolas Island. Under Public Law 99-625, non-Department of Defense (DOD) related activities that may affect the southern sea otters at San Nicolas Island are to be treated as if the species is listed as threatened. However, DOD-related actions carried out directly by a military department (such as those activities addressed in this document) that may affect the southern sea otter are treated differently under Public Law 99-625; that is, southern sea otters are to be treated as members of a species that is proposed to be listed under section 4 of the Act. Therefore, pursuant to section 7(a)(4) of the Act, the Navy must confer with the Service on any action that is likely to jeopardize the southern sea otter.

The Navy did not request conference on the southern sea otter. The Service has concluded that a conference opinion is not necessary because the activities analyzed in this programmatic biological opinion are not likely to jeopardize the species. We have reached this conclusion because, after a decline in numbers to 14 following the initial relocation of southern sea otters to San Nicolas Island, the number of southern sea otters has increased and appears to be stable at approximately 20 individuals. The Navy has not proposed any changes in its activities from those that have been conducted since the translocation. Consequently, southern sea otters are not likely to be affected differently than they have been over the past 14 years. Finally, the southern sea otters at San Nicolas Island represent a small portion of the subspecies' current population.

CONSULTATION HISTORY

Informal consultation regarding the activities on San Nicolas Island was initiated on July 28, 1998. On that date, Rick Farris of the Service met with Grace Smith and Steve Schwartz of the Navy to discuss the range of activities that were occurring on San Nicolas Island and the potential effects to listed species. We determined at that meeting that a programmatic approach, similar to that prepared for the Navy Base Ventura County (Service 2001), to satisfy the Navy's section 7 responsibilities for the ongoing activities should be undertaken. Following that initial meeting, intermittent discussions took place between Ms. Smith and Mr. Farris regarding elements of the biological assessment and changes to activities which had been implemented since the July 28, 1998, discussion.

We received the request to initiate consultation and the biological assessment on December 26, 2000. In our acknowledgment letter, we requested a 30-day extension to the 135-day timeline to complete the biological opinion. The Navy did not respond to this request. Mr. Farris and Ms. Smith met again on April 24, 2001, to discuss the biological assessment and to clarify some aspects of the information.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

As an element of the Naval Air Warfare Center Weapons Division Sea Range, the Outlying Landing Field San Nicolas Island is managed by the Naval Air Weapons Station at China Lake. The Sea Range covers 36,000 square nautical miles of open ocean, extending approximately 170 nautical miles seaward from the California coast (Figure 1). The Sea Range supports test and evaluation of sea, land, and air weapons systems and various types of training. As part of the Sea Range, San Nicolas Island provides a platform for launches of missiles and targets, while facilities on the island conduct radar tracking and control, range surveillance, telemetry, and communications for weapons testing.

The Navy has identified 13 ongoing and proposed activities that may affect listed species on San Nicolas Island. The actions are described in the biological assessment (Navy 2000) as follows:

Missile and Target Launches

Missiles are currently launched from two locations on San Nicolas Island (Figure 2). The Alpha Complex is located approximately two miles from the western shoreline. The large (38,000 pounds) Vandal missiles are launched from this complex and produce the loudest sounds of any activity on San Nicolas Island (Figure 3). The duration of the sound is short as the missiles cross the northwest shoreline in approximately 4.75 seconds after launching. If fired at the lowest angle of 6 degrees, the Vandals cross the shoreline at approximately 1,000 feet. Other launches are at angles up to 45 degrees so they cross the shoreline at higher elevation. Eight to 14 launches occur per year at the Alpha Complex.

The other launch facility is the Building 807 Launch Complex. These structures are located on the western end of the island near the shoreline (Figure 3). The Building 807 Complex is used to launch smaller missiles than the Alpha Complex. Missiles are launched westward, over the ocean, within a 60 degree azimuth. Two to six launches from the Building 807 Complex may occur any time of the year.

The Navy is proposing to construct and use a new 50K launcher and a vertical launcher. The 50K launcher would be built near, and would be the same size as, the existing Alpha Complex. It would be used approximately 3 times per year and could launch missiles up to 50,000 pounds (larger than the Vandals launched at the Alpha Complex and presumably louder). The vertical launch system would be built near the existing Building 807 Launch Complex. It would also be used three times per year to launch missiles similar to those currently launched from the existing complex. The Navy has not provided any further details on the proposed new launch complexes.

Barge Operations

Supplies are delivered to San Nicolas Island by barges. Barges land from 26 to 40 times each year. The materials brought in on the barge are unloaded at an established site at Daytona Beach (Figure 2). Daytona Beach is on the southeastern side of the island and is approximately 180 to 200 feet wide and 0.8 mile long. The established landing site is on the eastern end of the beach and includes a staging area consisting of an asphalt parking lot, trailer, and storage area. A landing ramp extends from the staging area to water's edge. The beach is at its narrowest here (approximately 75 feet) and is often inundated during high tide.

Depending upon the supplies and conditions, the barges are unloaded in one of two ways. Most commonly, the barge arrives at the landing ramp and the supplies are driven off to the staging area. Alternatively, the barges may land directly on the beach where a temporary landing is formed with sand. The barge is offloaded and the beach is restored to its original condition.

Proposed Pier Construction

The Navy proposes to construct a pier and upgrade existing facilities at the current barge landing site on Daytona Beach (Figure 2). The project has not been finalized and would occur in the near future. The basic components are expected to include: construction of a pier extending into the ocean from the asphalt staging area; removal or replacement of existing structures at the staging area; improvement of the road to the landing site; and extension of utilities to the facility. The Navy believes the construction would take a maximum of two years.

Reverse Osmosis Plant Operation

The Navy currently operates a desalination (reverse osmosis) system to provide potable water for the San Nicolas Island facilities. The plant is at Coast Guard Beach on the eastern end of the island (Figure 2). It consists of shallow wells and a pumping station on the beach. The desalination plant sits on a bluff above the beach. Water that collects in the wells is pumped from the beach to the desalination plant and then to the Navy's facilities. Brine waste generated by the processing is discharged to a well 400 feet from the shoreline on the upper beach. Because the volume of brine waste may exceed the percolation rate, a ponded area of brine water accumulates occasionally around the well site. Up to 70,000 gallons of brine waste is discharged per day and the brine lake may expand to approximately .25 acre. The formation of the brine lake is not predictable and its size fluctuates from the maximum .25 acre to completely dry.

The desalination plant operates continuously during regular work days and the pump must be started at the beginning of each week. Personnel walk to the pump station to start the pump and inspect it; this activity may take 15 minutes. If the pump malfunctions, additional trips to the beach may be needed. Maintenance is required every two years; well points are removed and replaced at this time. This requires movement of sand with an endloader and temporary disturbance of the beach.

In a letter dated February 7, 2001, the Navy requested our concurrence that a proposal to replace the existing desalination plant with a more modern facility would not adversely affect the western snowy plover or its critical habitat. The goal of the project was to remove the pump station and wells from Coast Guard Beach and avoid the weekly disturbance of nesting western snowy plovers, and to eliminate the excavation of the old wells every two or three years. The project included placement of a permanent underground intake and a remotely activated in-line pump. Maintenance of the pump would occur annually thereafter during the season when western snowy plovers are absent. Access to construct the system included installation of a temporary road 150 yards long and 8 yards wide.

The new desalination plant was completed in 2001 prior to the issuance of our response to the request for concurrence. The Navy proceeded with the project because of its desire to complete activities prior to the arrival of nesting western snowy plovers. The new desalination plant failed to function as planned and San Nicolas Island had to revert to its old system until the problems

could be solved. In the interim, the temporary road could not be removed and the new facility could not be repaired because western snowy plovers arrived and began occupying the Coast Guard Beach area. The Navy will revisit the pump station after the western snowy plover nesting season is over in 2001 and repair the new system and remove the temporary road. The repair work, road removal, and operation of the new facility are activities to be evaluated in this biological opinion.

Equipment/Materials Storage and Staging Areas

Storage and staging areas for equipment and construction materials are established at various locations around San Nicolas Island (Figure 2). Materials stored include lumber, pipe, rock, and concrete blocks. Most of the existing staging areas are on the eastern end of the island to be close to the barge landing. Some are permanent while other staging and storage areas are temporary. The Public Works Storage Yard is a permanent area approximately 3 acres in size. The existing temporary sites range from 2,500 square feet up to 4 acres and are placed on previously disturbed areas. Materials are stored in these locations after offloading from the barge or aircraft. As needed, the materials are removed and used at the Navy facilities and the storage areas fluctuate from being bare to holding materials for future use.

Debris Removal

Occasionally, the Navy abandons project sites, leaving behind construction and other materials. These old project sites are located throughout the island and range in size from 100 square feet to 0.5 acre. Debris piles are removed as funding is available or if volunteers undertake the cleanup. The total area covered by debris piles is not known and fluctuates as materials are deposited and removed.

Roadside Maintenance

The Navy must periodically maintain the shoulders of roads on San Nicolas Island to prevent erosion and undermining. This maintenance includes grading and replacement of shoulder materials such as gravel and repair of asphalt. The shoulders range in width from 0 to 8 feet. Roadsides are also mowed to increase visibility of both vehicles and San Nicolas Island foxes (*Urocyon littoralis dickeyi*).

Recreation

Approximately 150 personnel are assigned to San Nicolas Island and they participate in recreational activities. These activities include beachcombing, fishing, boating, kayaking, scuba diving, and biking. Most activity is concentrated on sandy beaches or rocky intertidal areas. Personal watercraft are typically launched from Cissy Cove, Tranquility Beach, or the barge landing (Figure 2). Beach closures are determined by the Environmental Protection Office (EPO) based upon the presence or absence of listed species or marine mammals and are enforced by Navy security.

Natural Resource Research and Management

The Navy conducts or allows numerous resource management and research activities to take place on San Nicolas Island. These include monitoring of state and federally listed species, ecosystem monitoring, removal of non-native species, habitat preservation and restoration, beach and island clean-up projects, and cultural resource surveys.

The Navy-sponsored research and monitoring is conducted by the EPO. This work is mainly monitoring of the western snowy plover population on San Nicolas Island to assess potential impacts from Navy activities. Two island-wide western snowy plover surveys are conducted each year; a breeding season survey in late May, and a census of wintering individuals in December or January. The surveys focus on areas that have operational value for the Navy, such as the barge landing, Coast Guard Beach, Red Eye Beach and Building 807 (Figure 2). The operational areas are surveyed to determine how many western snowy plovers use them and to document nesting success. Nests are not approached or marked.

Surveys for brown pelicans are conducted by aircraft. Monitoring of the island night lizard population is done through a cooperative agreement with the Biological Research Division of the U.S. Geological Survey and under individual recovery permits issued by the Service. The Biological Research Division is proposing more intensive research, including continuation of capture/mark/recapture experiments to establish the ages of individual island night lizards. The effects of these activities on the island night lizard will be evaluated by the Service under the authorization of section 10(a)(1)(A) of the Act.

Amphibious Training Exercises

The Navy conducts amphibious training exercises four to six times per year. These exercises involve a small group of military personnel (30 or less) who approach the island by swimming to shore from a boat. They then traverse the shoreline, conduct clandestine patrols, and overtake a predetermined inland site, typically the airfield. The training lasts from 8 hours to 2 days. Beach landings occur on Red Eye Beach, Tender Beach, Cissy Cove, Coast Guard Beach, or Daytona Beach at the barge landing (Figure 2).

Explosive Ordnance Disposal

On an as-needed, emergency basis, the Navy must dispose of unexploded ordnance. The materials are transported to a designated range and detonated with 2 to 10 pound charges. The explosive ordnance disposal site is 900 feet south of Red Eye Beach.

Proposed Multi-purpose Instrumentation Sites

The Navy proposes to construct five multi-purpose instrumentation sites on San Nicolas Island. The sites would consist of a concrete pad and an access road with mobile instrumentation placed on the pads as needed. The pads would be placed in various locations on the island in areas of coastal scrub or grassland (Figure 2). The Navy does not know the size of the sites and the length of access roads until plans and locations have been finalized.

Routine Small Construction Projects and Utilities Maintenance

The Navy conducts approximately six to ten small construction and utilities projects each year to maintain the facilities' infrastructure. These projects occur in most habitats on the island and each one typically involves less than 5,000 square feet of habitat removal. The area of effect totals approximately 1 acre per year.

Proposed Protective Measures

The Navy proposes to avoid and minimize the effects of the 13 activities discussed above on listed species and critical habitat through the following measures. Some of the measures are meant to be compensatory; that is, while they may not avoid or minimize the effects of the activities, they will support the conservation of the listed species discussed in this biological opinion. These measures are or would be implemented by the EPO.

1. The south side of San Nicolas Island is closed by EPO to all activities to protect the western snowy plover and brown pelican. This closure also provides protection for marine mammals and other sensitive wildlife species.
2. All western snowy plover nesting areas are closed for the duration of the breeding season. Signs and barricades are erected to denote closures and the EPO patrols the beaches periodically.
3. The EPO conducts consistent monitoring of listed species and their habitat to assess the potential for adverse effects from Navy activities.
4. All permanent and visiting personnel are required to attend an environmental briefing that emphasizes federal and Navy regulations pertaining to the protection of listed species and describes the beach closures and their enforcement.
5. Disturbed and unused areas are revegetated with cactus (*Opuntia* spp.) and boxthorn (*Lycium californicum*) to provide habitat for island night lizards.
6. Potential perches for avian predators are removed when feasible.

In addition to these general measures, the Navy proposes to minimize the effects of the specific activities on listed species and critical habitat as follows:

Missile and Target Launches

7. Western snowy plovers currently use the area adjacent to the Building 807 Launch Complex and are at risk of injury or nest loss due to human activities. Approximately 2,500 square feet of the substrate immediately adjacent to the Building 807 Launch Complex may be compacted to make it unsuitable for western snowy plover nesting. The Navy has not established a timeframe for this activity.

Barge Operations

8. All unnecessary structures adjacent to the barge landing facilities that could provide predator perches would be removed or rendered unsuitable for that purpose, as feasible.
9. If western snowy plover nests are found within 600 feet of the barge landing area, the Navy will contact the Service to develop actions to avoid adverse effects.
10. All construction equipment, vehicles, and supplies will be thoroughly cleaned and inspected prior to shipment to San Nicolas Island to reduce the potential for introducing non-native species.

Proposed Pier Construction

11. If western snowy plover nests are discovered within 1,200 feet of the proposed pier location during construction, the Navy will halt its activities and contact the Service to develop actions to avoid adverse effects.

Reverse Osmosis Plant Operation

12. The EPO will coordinate with the operations personnel to define access routes to the pumping station to avoid disturbing nesting western snowy plovers. Operations personnel will not remain in the area any longer than necessary to complete maintenance or repairs.
13. Routine, non-emergency maintenance to the system will be performed outside of the western snowy plover breeding season.
14. Any future upgrades to the system will include modifications to further reduce effects on the western snowy plover.
15. All unnecessary structures in the area which could provide a perch for predators will be removed. Remaining essential structures will have perching deterrents installed, if feasible.

Equipment/Materials Storage

16. Staging areas for temporary storage of equipment and materials will be located where surveys have shown that island night lizard densities are low. If storage areas are located in high quality island night lizard habitat, a 50-foot buffer will be established around the equipment and materials. The buffer will consist of bare asphalt, open ground, or sand. No vegetation would be removed to establish the buffers; the buffers would be incorporated within the already disturbed areas.

17. Artificial habitat which may harbor island night lizards (*e.g.*, stored materials with hiding places) will be surveyed by EPO personnel before such materials are removed. If island night lizards are found, EPO personnel will be present when materials are removed and will relocate any island night lizards encountered to suitable habitat nearby.
18. Habitat for relocated island night lizards will be created by planting appropriate cover in barren areas adjacent to occupied habitat.

Debris Removal

19. Artificial habitat formed by debris which may harbor island night lizards (*e.g.*, stored materials with hiding places) will be surveyed by EPO personnel before any debris is removed. If island night lizards are found, EPO personnel will be present when debris is removed and will relocate any island night lizards encountered to suitable habitat nearby.
20. Habitat for relocated island night lizards will be created by planting appropriate cover in barren areas adjacent to occupied habitat.

Roadside Maintenance

21. Areas of high quality habitat for island night lizards will be excluded from the mowing regime.

Recreation

22. Beaches where western snowy plovers nest will continue to be closed from March 1 through September 15 of each year to prevent disturbance of nesting birds.
23. EPO personnel will monitor the beaches every year to determine if western snowy plovers persistently nest in historical nesting areas. Where western snowy plovers continue to nest, beaches will continue to be closed; if western snowy plovers are absent, beaches may be opened.

Management and Research Activities

24. EPO personnel will coordinate the research and management activities with the EPO natural resource manager to avoid and minimize adverse effects on listed species or critical habitat.
25. Persons conducting research with listed species on San Nicolas Island and not affiliated with the Navy will be required to hold section 10(a)(1)(A) permits from the Service for their activities prior to their access to the island.

Amphibious Training Exercises

26. Beaches where western snowy plovers nest will be closed to amphibious training exercises from March 1 through September 15 each year.

Explosive Ordnance Disposal Activities

27. The explosive ordnance disposal range will be relocated to a site which has no potential to affect listed species or critical habitat.

Proposed Multi-purpose Instrumentation Site Construction

28. The multi-purpose instrumentation sites will be placed to avoid habitat that supports island night lizards or other listed species or critical habitat.

Routine Small Construction Projects and Utilities Maintenance

29. Potential sites for these activities will be surveyed for island night lizards by EPO personnel before any construction or maintenance activity. If island night lizards are found, EPO personnel will be present when vegetation is removed and construction begins and will relocate any island night lizards encountered to suitable habitat nearby.

STATUS OF THE SPECIES

Island Night Lizard

The island night lizard was listed as threatened on August 11, 1977 (42 *Federal Register* 40682). The Service has not designated critical habitat for this species. The following information for the island night lizard was taken from Service (1980), Fellers and Drost (undated.), Fellers and Drost (1991), and Fellers *et al.* (1998).

The island night lizard is endemic to the Channel Islands off the coast of southern California. It occurs on Santa Barbara, San Clemente, and San Nicolas islands, and one small islet (Sutil Island) adjacent to Santa Barbara Island. Compared to other Channel Island endemic vertebrates, island night lizards are apparently the most morphologically distinct from their closest relatives on the mainland, indicating a longer period of isolation (Fellers *et al.* 1998).

The island night lizard is a medium-sized lizard (2.75 to 4 inches snout-vent length) with soft scales and folds of skin along the neck and sides of the body. The back is mottled with pale gray or beige and yellow-brown, darkened to varying degrees with black giving it a reticulated or netted pattern. Occasionally, individuals may have dark dorsolateral lines or a vertebral stripe. Some island night lizards have a bluish tinge on the belly changing to yellow on the underside of the tail. Color variations appear to differ between the islands but individuals tend to match the substrates they inhabit.

Despite the name, island night lizards are not nocturnal. They are most active at midday with little activity in the cool mornings or evenings and little, if any, activity at night. Activity peaks seasonally as well; island night lizards become active in spring during the mating season and activity subsides through the summer and fall. Young of the year may be active throughout the year, while adults display seasonal and daily variations in activity described.

Island night lizards become sexually mature in their third or fourth year. Unlike most reptiles, the island night lizard is viviparous, meaning that it bears live young that are nourished within the female. The females give birth to 3 to 9 young in September of each year following a 14-week gestation period. Researchers consider the species k-selected, meaning that they are slow-maturing, long-lived, with a low reproductive potential. Only half of the females give birth in a given year and even then only one brood is attempted. Fellers *et al.* (1998) estimate that some island night lizards may be more than 30 years old which is surprising for a reptile of its size.

Island night lizards inhabit a variety of habitats. They are most abundant in boxthorn and cactus scrub and rocky areas with fissures. These habitats provide protection from predatory birds which were the major source of mortality prior to the introduction of cats and rats to the islands. They also inhabit debris piles left by humans which may simulate the protected structure of shrublands or rock crevices.

In suitable habitat, island night lizards reach densities greater than any other ground-dwelling lizard that has been studied; up to 1,300 lizards per acre in boxthorn and 1,000 per acre in cactus scrub (Fellers and Drost 1991). These high densities are attributed to a low metabolic rate and associated lower energy demands, sedentary nature, and their ability to live on diverse foods. Island night lizards eat a wide variety of insects and spiders and they ingest a relatively large quantity of plant material for a lizard of their size. Consequently, home ranges overlap and a large number of island night lizards can occupy smaller areas.

This propensity to congregate in suitable habitat makes larger numbers of individual island night lizards susceptible to human activities. When debris is left adjacent to occupied habitat, island night lizards may move into the pile; when the debris is removed, many individuals could be injured or killed. Activities that remove stands of boxthorn or cactus scrub habitats may also affect large numbers of island night lizards. Other factors that threaten the island night lizard include: the introduction of non-native predators (*i.e.*, cats and rats); loss of habitat to development and grazing; introduction of non-native plants that displace boxthorn and cactus scrub habitats; direct mortality from vehicles; trampling by cattle and humans; and competition from introduced southern alligator lizards (*Elgaria multicarinata*). Human activities and non-native predators are the two greatest threats to the species.

Brown Pelican

The brown pelican was federally listed as endangered in 1970 (35 *Federal Register* 16047). The recovery plan describes the biology, reasons for decline, and the actions needed for recovery of the California brown pelican (Service 1983).

Brown pelicans are from 42 to 54 inches long and weigh from 8 to 10 pounds. Even though they have a 6.5- to 7.5-foot wingspan, brown pelicans are the smallest of the seven species in the pelican family (Pelecanidae). Adults have chestnut-and-white necks, white heads with pale yellow crowns, a brown-streaked back, rump, and tail, blackish-brown belly, grayish bill and pouch, and black legs and feet. They are rather clumsy on land and fly with their necks folded, heads resting on their backs, using slow, powerful wingbeats.

Adult brown pelicans are primarily fish eaters and require up to 4 pounds of fish per day. Their diet consists mainly of northern anchovy (*Engraulis mordax*), Pacific sardine (*Sardinopus sagax*), and other surface-schooling fish. Brown pelicans have also been known to eat some crustaceans, usually prawns. They have extremely keen eyesight and can spot a school of small fish, or even a single fish, from 60 to 70 feet above. To catch fish, they dive steeply into the water, where they may submerge completely or only partly depending on the height of the dive, and surface with a mouthful of fish. Air sacs beneath the skin cushion the impact and help it surface.

Brown pelicans are social and gregarious. Males and females, juveniles and adults, congregate in large flocks for much of the year. Brown pelicans nest in colonies on small coastal islands that are free of mammalian predators and human disturbance and are associated with an adequate and consistent food supply. Nesting colonies of the brown pelican on the Pacific coast range from the Channel Islands in the Southern California Bight to the islands off Nayarit, Mexico. Prior to 1959, intermittent nesting was observed as far north as Point Lobos in Monterey County, California. Currently in southern California, brown pelican colonies are found only on Anacapa and Santa Barbara islands; they do not nest on any of the other Channel Islands. The southern California population of brown pelicans today is estimated at 4,500 to 5,000 breeding pairs.

Dispersal between breeding seasons ranges from British Columbia, Canada, to southern Mexico and possibly to Central America. During the non-breeding season, which varies between colonies but typically extends from July to January, brown pelicans roost communally, generally in areas that are near adequate food supplies, have some type of physical barrier to predation and disturbance, and provide some protection from environmental stresses such as wind and high surf. Breakwaters and jetties are often used for roosting. Brown pelican numbers in a given area may vary greatly with the season.

Although nest predation may be a problem, adult brown pelicans have few natural enemies. Nests are sometimes destroyed by hurricanes, flooding, or other natural disasters; however, the biggest threat to brown pelican survival has historically been human activities. In the late 19th

and early 20th centuries, brown pelicans were hunted for their feathers, which adorned women's clothing, particularly hats. During the food shortages following World War I, fishermen claimed brown pelicans were decimating the commercial fishery resource and slaughtered them by the thousands. The nests were also frequently raided for eggs.

Brown pelicans experienced widespread reproductive failures in the 1960s and early 1970s. Much of the failure was attributed to eggshell thinning caused by high concentrations of DDE, a metabolite of DDT. Other factors implicated in the decline of this species include human disturbance at nesting colonies and food shortages. Brown pelicans have not nested north of the Channel Islands since the species' decline in the late 1950s and early 1960s. In 1972, the Environmental Protection Agency banned the use of DDT in the U.S. and placed restrictions on the use of other pesticides. Since then, the level of chemical contaminants in pelican eggs has decreased. Brown pelican nesting success has subsequently increased. The brown pelican was the first species to apparently recover from the effects of pesticides.

Western Snowy Plover

The Pacific coast population of the western snowy plover was federally listed as threatened on March 5, 1993 (58 *Federal Register* 12864), and critical habitat was designated on December 7, 1999 (64 *Federal Register* 68508).

A notice of availability of a draft recovery plan for the western snowy plover was published on August 14, 2001 (66 *Federal Register* 42676). The range of the western snowy plover is divided into six recovery units, with more than half of the breeding adults expected to exist in central and southern California. The recovery plan describes the actions needed to recover the western snowy plover to the point where populations are self-sustaining and the subspecies can be delisted. These actions include: monitoring and management of breeding and wintering habitat; establishment of working groups to prepare and implement management plans for the six recovery units; developing and testing new predator management techniques; improving monitoring of breeding success; public education; and working with Mexico to protect its western snowy plover populations and wintering habitat.

The western snowy plover is one of 12 subspecies of the snowy plover (*Charadrius alexandrinus*) in the family Charadriidae. The western snowy plover is a small, pale-colored shorebird with dark patches on either side of the upper breast. The bill and legs are blackish. Males have black head and breast markings in breeding plumage; in females, these markings are usually dark brown.

Western snowy plovers prefer sandy beaches that are relatively free from human disturbance and predation. Sandy beach habitat is unstable due to unconsolidated soils, high winds, storms, wave action, and colonization by plants. Sand spits, dune-backed beaches, beaches at creek and river mouths, and salt pans at lagoons and estuaries are the preferred habitats for nesting. The attributes considered essential to the conservation of the coastal population of the western snowy

plover can be found in the final rule for the designation of critical habitat (64 *Federal Register* 68508). The physical and biological features and primary constituent elements of critical habitat are provided by 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, interdunal flats, spits, washover areas, blowouts, intertidal flats, salt flats, and flat rocky outcrops. Several of these components (sparse vegetation, salt flats) are mimicked in artificial habitat types used less commonly by western snowy plovers (*i.e.*, dredge spoil sites and salt ponds and adjoining levees).

Western snowy plovers tend to be gregarious in winter. They 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.

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 common 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 3 but up to 6) in it. 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 renest if eggs are lost. Hatching occurs throughout the subspecies' range from early April through mid-August, with chicks fledging approximately one month after hatching. Like its relatives, western snowy plover chicks are precocial, feeding on their own within hours of 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 and Persons 1995).

The Pacific coast population of the western snowy plover breeds primarily on coastal beaches from southern Washington to southern Baja California, Mexico. Historically, western snowy plovers bred or wintered at 157 locations on the Pacific coast, including 5 sites in Washington, 19 sites in Oregon, and 133 sites in California. In 1991, Page *et al.* estimated that only 1,200 to 1,900 adult western snowy plovers remained on the Pacific coast of the United States, and in 1995, approximately 1,000 western snowy plovers occurred in coastal California (Nur *et al.* 1999). Fewer than 40 adults are believed to be nesting in Washington, slightly more than 100 in coastal Oregon, and fewer than 100 in California north of the Golden Gate. Larger numbers were and are still found in southern and central California, at Monterey Bay (estimated 200 to 250 breeding adults), Morro Bay (estimated 85 to 93 breeding adults), Pismo Beach to Point Sal (estimated 130 to 246 breeding adults), Vandenberg Air Force Base (estimated 130 to 240 breeding adults), and the Oxnard Lowlands (estimated 69 to 105 breeding adults). In California,

western snowy plovers also breed on San Nicolas and Santa Rosa islands, Bolsa Chica in Orange County, and along the coast of San Diego County. Probably as many western snowy plovers nest along the west coast of Baja California as along the Pacific coast of the United States (Palacios *et al.* 1994).

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.

The Pacific coast population of the western snowy plover has experienced 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 (particularly red foxes [*Vulpes vulpes*] on the mainland and island foxes on the Channel Islands), skunks (*Mephitis mephitis*), common ravens (*Corvus corax*), gulls (*Larus* spp.) and raptors has been identified as a major factor limiting western snowy plover reproductive success at many Pacific coast sites.

The need for increased management of Pacific coast western snowy plovers and their habitats is recognized in a population viability analysis conducted for the western snowy plover (Nur *et al.* 1999). This analysis was conducted to aid the recovery team for the western snowy plover in developing recovery criteria. Its authors conclude that, "Under status quo scenarios, even with intensive management in some areas, the population is almost certain to decline" and "ceasing current management practices including area closures, predator control, and predator exclusions would be disastrous for the Pacific coast population." The recovery team has also identified population growth as a prerequisite to the recovery of the subspecies.

ENVIRONMENTAL BASELINE

San Nicolas Island is approximately 60 miles southwest of Point Mugu and covers 13,370 acres (Figure 1). It is approximately 9 miles long and 3.6 miles wide with 32 miles of shoreline. The island, generally treeless, is relatively flat on top and drops sharply off on the south side with a more gradual slope to the ocean on the north side. The interior terrain is a rolling mesa and the western end contains large shifting sand dunes. Thirteen vegetation communities have been identified on San Nicolas Island (Navy 2000). Five scrub communities, including caliche, isocoma, baccharis, lupinus, and coreopsis scrub comprise 7,349 acres of habitat. Barren areas that support no vegetation comprise 3,468 acres. Freshwater aquatic vegetation communities, coastal and inland dunes, and coastal marsh also occur. Of the 250 plant taxa present, 2 are endemic to San Nicolas Island.

Several terrestrial bird species nest on the island and large seabird rookeries are located along the western shore. Terrestrial mammals present include the San Nicolas Island fox, deer mouse (*Peromyscus maniculatus*), and introduced domestic cats (*Felis domesticus*). San Nicolas Island is an important refuge for several species of pinnipeds. Annually, more than 23,000 elephant seals (*Mirounga angustirostris*), 80,000 California sea lions (*Zalophus californianus*), and 500 harbor seals (*Phoca vitulina*) haul out on the beaches and rocky outcrops along the shoreline (Navy 2000).

Island Night Lizard

Island night lizards are generally distributed only over the eastern half of the island with the exception of a few isolated populations along the west end and southern shore (Figures 4 and 5). Where island night lizards occur, their numbers vary greatly. These variations seem to be related to habitat, as shown in the table below (Fellers *et al.* 1998). The grasslands that cover much of the eastern mesa support few or no island night lizards. Mixed shrub communities support moderate numbers of island night lizards. Cactus, boxthorn and boulder beach habitats support the greatest density of island night lizards. The San Nicolas Island population of island night lizards is estimated to be approximately 15,350 individuals (Fellers *et al.* 1998).

Table. Island night lizard population estimates by habitat type and a total number:

<u>Habitat</u>	<u>Area (square meters)</u>	<u>Lizards/hectare</u>	<u>Population</u>
Cactus	4,740	2,500	1,190
Boxthorn	500	3,200	160
Boulder beach	2,500	4,000	1,000
Mixed scrub	650,000	200	<u>13,000</u>
Total island night lizards on San Nicolas Island (estimated)			15,350

Brown Pelican

Brown pelicans roost along the shoreline of San Nicolas Island throughout the year (Figure 6). Their abundance is variable throughout the year and from year to year, depending on oceanographic conditions. In terms of seasonal variations, total numbers are lowest in the period of February through May, highest in August through October, and at intermediate levels in early summer and early winter (Briggs *et al.* 1981). Aerial surveys conducted between June and September of 1992, and June and September of 1993, counted an average of 341 birds (Jacques *et al.* 1996).

Western Snowy Plover

Western snowy plovers occur on the island throughout the year (Figure 7). Seasonal use patterns are closely related to the movements of migrating individuals and success of the breeding population. Numbers are lowest at the beginning of the breeding season and increase in the fall

as wintering birds arrive. The results of annual breeding season surveys from 1978 through 2000 are shown below:

<u>Year</u>	<u>Adult Total</u>	<u>Year</u>	<u>Adult Total</u>
1978	133	1996	104
1989	90	1997	91
1991	78	1998	90
1993	111	1999	60
1994	74	2000	72
1995	116		

During the fall, numbers increase approximately 30 percent. On San Nicolas Island, 12 beaches, totaling 514 acres and 9.8 miles of shoreline, have been designated as critical habitat for this subspecies (Figure 8).

Western snowy plovers have nested in the area adjacent to the Building 807 launch complex since 1996 (Figure 8). Four to six nest initiations have been documented each year, with most nests being 700 to 1,400 feet from the launch facility (a notable exception being a nest adjacent to the access road, 300 feet from the launch facility in 2000). The area is not designated as critical habitat.

Western snowy plovers regularly forage and nest on the beach west of the barge landing area (Figure 9). All documented nests have been greater than 900 feet from the landing ramp with the exception of a nest reported along the access road in 1993 (Wehtje and Baron 1993). In 2000, a male with three chicks was observed in the operational area (Navy 2000). The brood likely migrated into the area from the western portion of Daytona Beach. An area of critical habitat for the western snowy plover is located 700 feet west of the operational area.

All of the amphibious landing locations, with the exception of the Daytona Beach site, are known to support nesting western snowy plovers. Wintering flocks also occur at Red Eye Beach, Tender Beach and Coast Guard Beach where amphibious landings may occur (Figure 7). Western snowy plovers may also nest or forage in proximity to the proposed pier construction site.

Western snowy plovers also use the pumping and discharge areas (the brine pond) at the desalination plant year-round (Figure 10). The beach is exposed to the prevailing northwest winds, and winds in excess of 25 miles per hour, blowing parallel with the beach, are not uncommon. Not surprisingly, western snowy plovers use of this beach is related to wind intensity and direction. The beach is also subject to overwash during periods of extreme tidal fluctuation or storm events. In 1993, five nesting attempts by western snowy plovers were documented in the area. Of these, three hatched successfully. The other two clutches were lost, probably as a result of exposure to high winds (Wehtje and Baron 1993). In 1997, four nesting attempts were documented; three hatched successfully, one was abandoned, probably as a result of high winds. In 2000, only one nest was observed in the area. The nest was later abandoned

for unknown reasons (Navy 2000). A portion of this area around the desalination plant is designated as critical habitat for the subspecies.

Of the 12 locations where western snowy plovers regularly nest on San Nicolas Island (Figure 7), 9 are on beaches that may be visited by personnel during recreational activities. During the non-breeding season, western snowy plovers tend to congregate at four locations which could be visited by fishermen or beach goers. Western snowy plovers also roost, forage, and nest on Red Eye Beach which is approximately 5,000 feet northwest of the explosive ordnance disposal area.

EFFECTS OF THE ACTIONS

Some of the effects of activities at San Nicolas Island on listed species are difficult to document.

For example, the effects on listed species of noise from missile launches have not been documented; however, the literature on the effects of aircraft noise on wildlife allows us to reasonably conclude that such effects have occurred and are occurring under current operations (Gladwin *et al.* 1987, Mancini *et al.* 1988). Given current biological knowledge and documented responses of wildlife to human activities, we can predict that the listed species on San Nicolas Island are affected directly, indirectly, temporarily, and permanently in the following manner by Navy activities.

Missile and Target Launches

The effect of missile and target launches on listed birds at San Nicolas Island has not been specifically demonstrated. The best information available is data obtained during launches at Vandenberg Air Force Base (VAFB). For example, the findings made during the launch of a Lockheed launch vehicle from pad SLC-6 at VAFB support other observations that western snowy plovers crouch and observe objects, such as helicopters or launch vehicles that “mimic” avian predators (Lockheed Environmental System and Technologies 1995). During launch monitoring at VAFB in 1997, researchers found that western snowy plovers near pad SLC-2 flushed at launch but returned to normal behavior soon after the Delta II launches. Monitors observing western snowy plovers during a launch at pad SLC-4W at VAFB in 1998 did not observe any adverse effects on 12 of 13 nests. However, one of the three eggs in the nest closest to SLC-4W was found to be broken after the launch. In 1999, nesting western snowy plovers were monitored on Surf and Wall Beaches at VAFB during the launch of an Athena 2 rocket from pad SLC-6. No western snowy plovers flushed and no eggs were disturbed as a result of the launch (Lockheed Martin Environmental Services 1999). A consultant to VAFB, BioResources, stated that western snowy plover reproductive success does not appear to be affected by launches, even in the SLC-2 area where Delta II space vehicles are launched within approximately 0.5 mile of nesting western snowy plovers (BioResources 2000).

According to the biological assessment (Navy 2000), missile launches can produce noise levels comparable to a loud factory (approximately 100 dBA). The threshold of pain in terms of human perception is 120 dBA; normal conversation is approximately 60 dBA (Mancini *et al.* 1988). The potential effects of loud noises are: (a) birds are displaced from active nests, exposing eggs or

young to predation and environmental stress (heat or cold); (b) excessively loud sounds may cause permanent hearing damage, thus interfering with an individual's ability to function; (c) the stress of a noisy environment may lead to physiological changes that lower reproductive success and eliminate otherwise suitable habitat as a nesting area; and (d) the flush response by adults may result in damage to eggs.

Brown pelicans roost on the west end of the island in proximity to the Building 807 Launch Complex within the Vandal 100 dBA acoustical contour. These birds may be flushed from roosting sites by missile and target launches; however, the effects are likely to be minimal as the brown pelicans return to the roost or find another site nearby shortly after each event (Navy 2000). Brown pelicans do not nest on San Nicolas Island (Service 1983) so we do not anticipate that the launches will affect breeding.

Western snowy plovers nest in the Building 807 Launch Complex area and are disturbed by the launches and human activity around the facility. If the birds are flushed from their nests during unfavorable weather or if predators are nearby, the nests or young could be lost during this disturbance. Unfavorable weather includes rain (Flemming *et al.* 1988), windspeed over 10 miles per hour at which sand is mobilized (Environment Australia 2001), and temperatures above approximately 85 or below 70 degrees Fahrenheit for eggs exposed for more than half an hour (Hill and Talent 1990). The launches from either facility are not expected to affect any designated critical habitat for the western snowy plover because they will not alter the primary constituent elements. The Navy proposal to compact 2,500 square feet of the substrate to discourage nesting will remove a potential nesting site but will ultimately protect the western snowy plover from mortality or disturbance and failed nesting attempts. More suitable nesting locations are found elsewhere on the island and could support more western snowy plovers.

Island night lizards are not likely to be affected by the launching activities. They do not generally occur in the launch areas.

Barge Operations

In a letter sent to the Navy dated July 9, 1997, we noted that western snowy plovers have not attempted to nest at the barge landing location since 1993 and that increasing use of the beach by pinnipeds has reduced the value of the location as nesting habitat. Also, we recognized that the beach is narrowing and is frequently inundated by high tides which would destroy any nests. The biological assessment (Navy 2000) further states that the nearest nesting location is more than 900 feet from the landing ramp, although foraging individuals occasionally appear in the barge landing area, and the nearest critical habitat is approximately 700 feet to the west (Figure 9). Based upon this information, we concurred with the Navy's conclusion that the continued operation of the barge landing is not likely to adversely affect western snowy plovers.

Because the barges come from the mainland, the potential exists that non-native plant and animal species could be transported to San Nicolas Island. If established, such non-native species may degrade habitat for the western snowy plover and island night lizard or introduced animals may prey directly upon these species. The Navy has proposed to clean and inspect all equipment,

vehicles, and supplies to reduce the potential for such introductions; however, such measures may not always be sufficient to prevent plant propagules or animals from reaching the island.

Brown pelicans may be flushed from roosting and foraging areas near the barge landing. Because considerable suitable habitat for brown pelicans exists around San Nicolas Island, this temporary displacement will not substantially affect the population of brown pelicans.

Proposed Pier Construction

The pier would be constructed in the current barge landing area, and its construction is not expected to affect the western snowy plover or its critical habitat for the reasons cited above in the barge landing discussion. Also, the Navy has proposed to stop construction if western snowy plovers are discovered within 1,200 feet of the site. However, the new pier may provide new perches for predatory birds that will use the high position to prey upon western snowy plovers and their chicks foraging on Daytona Beach or nearby.

The island night lizard occurs in the vicinity and individuals could be killed during the removal or replacement of existing structures at the staging area, improvement of the road to the landing site, and extension of utilities to the facility. The construction of new roads and installation of utilities could remove habitat for the species.

Reverse Osmosis Plant Operation

Western snowy plovers nesting on Coast Guard Beach are sometimes disturbed by the maintenance activities at the existing reverse osmosis plant. Because the plant is on the northwest side of the island, it is subject to prevailing winds sometimes exceeding 25 miles per hour. If western snowy plovers are displaced from their nests, eggs could get covered by blowing sand, or temperatures could be such that the eggs get too cold or too hot, resulting in mortality. Because western snowy plovers have nested in the vicinity of brine pond, overflow during peak periods of water treatment could flood nests.

The modernization of the desalination system will reduce the number of visits to the station to once per year, thus substantially reducing the effects of the maintenance. The Navy proposes to make the needed repairs and get the new system operating outside of the western snowy plover breeding season, so adverse effects to the species that could result from repairs will be avoided. Western snowy plovers that are wintering in the area may be displaced by the construction; however, considerable suitable habitat for western snowy plovers exists around San Nicolas Island, the temporary displacement will not diminish the population.

The Navy is uncertain when the new system will become functional; in the meantime, the old system and maintenance schedule remain in effect. If the new system is repaired and future maintenance occurs during the non-breeding season as proposed, we do not anticipate any effects from this activity; however, the brine pond overflow problem remains. Because the brine pond

will fill as it has in the past, any western snowy plovers attempting to nest there may be displaced. The number of birds so affected is likely to be low as no more than one nest has been attempted at the brine pond site in any given year (Navy 2000); most western snowy plover nests are located near the pumping station.

Island night lizards and brown pelicans do not occur in the vicinity of the desalination plant.

Equipment/Materials Storage and Staging Areas

Island night lizards may be affected by the placement, and subsequent removal, of equipment and materials. The Public Works Storage Yard is generally low quality habitat for the island night lizard; most of the yard itself is devoid of vegetation. However, the adjacent vegetation is predominantly native, including a 2,000-square foot area of cactus which is high quality habitat. Individual island night lizards may be killed when materials are removed or set in place, especially when the materials sit for extended periods and the island night lizards use the area as substitute habitat because of its structure. The Navy proposes to locate future storage and staging areas in areas of low island night lizard density to minimize the potential for mortality or injury of island night lizards.

The temporary staging areas are in areas of low quality habitat with the exception of the largest site. It is situated in an area of generally moderate quality habitat and in close proximity to an area representing prime habitat for the island night lizard. Its proximity to good habitat means that island night lizards will be attracted to the structure provided by the materials and possibly killed or injured when the materials are moved.

The Navy has proposed relocating individual island night lizards from storage and staging areas prior to removal of equipment and materials. Generally, moving island night lizards from storage and staging areas should reduce the number of individuals that are killed or injured during the removal of equipment and materials. However, some island night lizards could be killed or injured while being captured or transported to release areas; released individuals may be more susceptible to competition from resident island night lizards or predation because of their unfamiliarity with new habitats. Some potential exists that resident island night lizards could experience greater difficulty in finding food or shelter with the increase in numbers. The degree of such an effect would depend upon the number of island night lizards released into an area, but it is likely to be low given the small total area of the staging and storage areas and the abundance of more suitable habitat outside of the staging and storage areas.

We note that the Navy has proposed to remove island night lizards from storage and staging areas by using biologists with recovery permits issued pursuant to section 10(a)(1)(A) of the Act. The use of recovery permits to remove island night lizards from work areas is not necessary and could possibly violate the intent of section 7(a)(2) of the Act. The Service can provide the Navy the authority to relocate island night lizards from work areas through a biological opinion if the Service concludes that the Navy's proposed activity is not likely to jeopardize the continued existence of the species.

Brown pelicans and western snowy plovers occur at the shoreline and not in the inland areas where the permanent and temporary storage areas are located.

Debris Removal

Because island night lizards often use man-made materials for shelter, they are subject to mortality or injury when the materials are removed. The number of island night lizards that may be killed or injured by debris removal and relocation is likely to be low because the debris piles are small in relation to the suitable habitat for the species. The Navy has proposed relocating individual island night lizards from debris piles prior to removal. The potential effects of removing and relocating materials were discussed in the previous section of this biological opinion and apply similarly to this activity.

Roadside Maintenance

Island night lizards may be killed or injured during the mowing and maintenance of roadsides. The area affected and the number of island night lizards affected would be relatively small given the population estimate of 15,300 individuals and the measures to minimize mowing in high quality habitat. To minimize the effects, the Navy has proposed to avoid mowing in areas where island night lizard density is likely to be highest (*i.e.*, cactus scrub and boxthorn). This may reduce the numbers of island night lizards killed; however, some mortality is likely.

Recreation

Much of the recreation on San Nicolas Island is likely to occur on beaches where western snowy plovers nest. Of the 12 known nesting locations, 9 are areas where recreation may be pursued (Figure 7). Human activity is known to disturb western snowy plovers to the extent that nests may be abandoned, temporarily making eggs and nestlings more susceptible to predation or the effects of weather. The potential exists for direct destruction of nests as they are cryptic and easily overlooked by casual observers. Nests in areas where human activity is not controlled are often crushed. The potential effects from recreation on western snowy plovers is minimized by seasonal beach closures to protect nesting birds.

Recreation at San Nicolas Island may cause brown pelicans to be flushed from roosting areas or interrupted while foraging; however, these disturbances are temporary and would not likely preclude brown pelicans from finding suitable roosting and foraging areas nearby. Consequently, the effects of recreation on brown pelicans would be minimal.

Island night lizards occur away from most areas where recreation is likely to occur. We anticipate that recreation would have minimal, if any, effects on this species.

Natural Resource Management and Research

Brown pelicans may be flushed from roost sites during the periodic monitoring, restoration, weed removal, clean up, and cultural resource surveys. However, this disturbance is unlikely to be severe enough to result in mortality or injury because the brown pelicans typically fly off to

another location to roost or forage, and roosting and foraging sites are not limited at San Nicolas Island.

Western snowy plovers may be flushed from nest sites during monitoring which may result in the loss of eggs or young. This is more of a problem during inclement weather (*e.g.*, cold, windy, hot). Disturbance may also cause the separation of young from adults and may make the young susceptible to predation. The number of western snowy plovers affected is dependent upon the number of nests and young present and conditions during monitoring.

Habitat restoration work (ongoing and proposed) has the potential to improve habitat for the island night lizard and thus may benefit this species. Cleanup activities to improve habitat for island night lizards may result in some injury or mortality. The Navy has proposed to relocate any island night lizards that have taken up residence in areas to be cleaned. This may reduce the numbers of island night lizards killed; however, some mortality is likely. The area affected and the number of island night lizards affected would be relatively small given the abundance of suitable habitat and the population estimate of 15,300 individuals. Other research involving the island night lizard must be authorized under section 10(a)(1)(A) of the Act and the effects of those activities are not considered in this biological opinion.

Amphibious Training Exercises

All of the beaches where amphibious training exercises take place, with the exception of Daytona Beach, support nesting western snowy plovers. The effects of amphibious training exercises would be avoided by the Navy's proposal to close all beaches where western snowy plovers nest to the training for the entire western snowy plover breeding season.

Amphibious training exercises may cause brown pelicans to be flushed from roosting areas or interrupted while foraging; however, these disturbances are temporary and would not likely preclude brown pelicans from finding suitable roosting and foraging areas nearby. Consequently, the effects of recreation on brown pelicans would be minimal.

The amphibious training exercises take place on beaches where the island night lizard does not occur, so effects to this species from this activity are avoided. During the assault on the airfield, some island night lizards may be killed or injured; however, the airfield is not good habitat for the species and few instances of injury or mortality are expected.

Explosive Ordnance Disposal

If any EOD activities take place prior to the proposed relocation of the facility, and depending upon the size of the charges used in disposing of ordnance, the sound and concussive shock from the explosions at the current EOD site may disrupt the nesting of western snowy plovers on Red Eye Beach and near the Building 807 Launch Complex. Birds flushed from their nests leave eggs and young vulnerable to weather and predation. The number that could be affected depends upon the number of nests within the range of effects of the explosions, the size of charges, and current weather conditions. We believe the number affected would be low based upon previous

Navy experience with the EOD program and monitoring of western snowy plover nest locations that have not shown a direct correlation between the activity and nest abandonment (Navy 2000).

EOD activities could also flush roosting brown pelicans from the Vizcaino Point area. This disturbance would be temporary and would not likely preclude brown pelicans from finding suitable roosting and foraging areas nearby. Consequently, the effects of current EOD actions on brown pelicans would be minimal. The effects of the current EOD actions on island night lizards is also expected to be minimal because there is no evidence that reptiles respond strongly to loud sounds (Gladwin *et al.* 1987).

The Navy proposes to relocate the EOD site to an area where it will not have effects on any listed species or critical habitat; however, no timeline for such relocation is proposed nor does the Navy provide any information on how this will be determined. If sited correctly, activities at the relocated facility could avoid adverse effects on the western snowy plover or brown pelican because the facility could be moved inland away from where these species occur. Without further data on maximum charge size and distance to sensitive receptors, it is impossible to predict that complete avoidance of effects will be achieved.

If the Navy is able to relocate the EOD facility outside of island night lizard habitat, no effects to this species are expected. Loss of habitat and mortality of island night lizards may occur if the new EOD facility is placed within suitable habitat for the species. The number of island night lizards affected depends upon the habitat type, as the density of island night lizards varies with habitat, and may vary as individuals move in and out of construction areas.

Proposed Multi-purpose Instrumentation Site Construction

Island night lizards occur in the areas currently proposed for construction of the multi-purpose instrumentation facilities (pads and access roads). The areas generally support low quality lizard habitat so that the number of island night lizards affected will be less than if the facilities were placed in high quality habitat where island night lizards are found in greater densities. Because the proposed project sites are not in areas where island night lizards are absent, individuals will likely be killed or injured during site preparation and usage (*i.e.*, vehicle access, foot traffic).

The western snowy plover and the brown pelican do not occur in the area of the existing instrumentation facilities, nor are they likely to occur in the areas of the proposed facilities.

Routine Small Construction Projects and Utilities Maintenance

Because small construction projects and utilities maintenance may occur in all habitat types on San Nicolas Island, all three listed species addressed in this biological opinion could be affected. The island night lizard would be the species most affected because the majority of the small projects and maintenance occur away from the shoreline areas. Island night lizards will likely be killed or injured by site preparation and the movement of vehicles, and the excavation of utilities will remove habitat for the species. The number of island night lizards affected will vary

depending upon habitat type because the species' density varies among the different habitats found on San Nicolas Island; all other factors being equal, in habitats where the individuals exist more densely, more are likely to be killed than in an area where the habitat supports a lower density of island night lizards. The Navy proposes to survey potential construction sites and utilities for island night lizards prior to the activity and remove individuals to safe habitat. This relocation may cause injury or mortality through handling, introduction into unfamiliar territory, or competition with resident island night lizards.

If routine small construction and utilities maintenance activities take place on the beaches where western snowy plover nest, the projects could result in the loss of nests or young through direct destruction or as a result of adults being flushed from nests or young under unfavorable conditions making them susceptible to predation or weather. The scale of the disturbance depends upon the number of nests in the vicinity. In areas where western snowy plovers do not nest, no effects are expected. Brown pelicans may be flushed from roost sites; however, these disturbances would be temporary and would not likely preclude brown pelicans from finding suitable roosting and foraging areas nearby. Consequently, the effects of routine small construction projects and utilities maintenance on brown pelicans would be minimal.

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 of the Act. We do not anticipate any cumulative effects on San Nicolas Island because it is federal land and all discretionary activities that the Navy undertakes there are subject to the requirements of section 7(a)(2) of the Act.

CONCLUSION

After reviewing the current status of the island night lizard, brown pelican, and western snowy plover, the environmental baseline for San Nicolas Island, the effects of the proposed and ongoing activities, and the cumulative effects, it is the Service's biological opinion that the thirteen activities discussed in this biological opinion are not likely to jeopardize the continued existence of the brown pelican, western snowy plover, and island night lizard, and are not likely to destroy or adversely modify designated critical habitat for the western snowy plover. We base these conclusions on the following:

Island Night Lizard

1. The Navy has proposed measures to avoid and minimize adverse effects to the island night lizard.

2. The Navy is proposing to restore disturbed areas to high quality habitat for the island night lizard which should increase its numbers on San Nicolas Island.
3. The Navy's current and future activities on San Nicolas Island will affect only small areas of the species' habitat. High quality habitat that supports the greatest densities would be avoided.

Brown Pelican

1. Brown pelicans do not nest at San Nicolas Island, so any effects to the species are not likely to reduce its breeding success.
2. The Navy has proposed measures to avoid and minimize adverse effects to the brown pelican.
3. The low potential for adverse effects to the species are not likely to reduce the population substantially.

Western Snowy Plover

1. The Navy has implemented and proposes additional measures to avoid and minimize direct effects to western snowy plovers caused by the ongoing activities.
2. The western snowy plover population at San Nicolas Island represents a small portion of the subspecies' distribution. Additionally, the effects are not likely to reduce the overall population or degrade the status of the species at San Nicolas Island.
3. The Navy's activities will not appreciably reduce the ability of the designated critical habitat on San Nicolas Island to support the survival and recovery of the western snowy plover because most disturbances would be temporary and the primary constituent elements would continue to support nesting, foraging, and roosting.

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 by annoying it to such an extent as to significantly disrupt normal behavior 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 measures described below are non-discretionary, and must be undertaken by the Navy or made binding conditions of any contract or permit issued by the Navy, as appropriate, for the exemption in section 7(o)(2) to apply. The Navy has a continuing duty to regulate the activities covered by this incidental take statement. If the Navy fails to assume and implement the terms and conditions of the incidental take statement, or make them binding conditions of any contract it issues, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the Navy 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)].

The take of any listed species as a result of trespass onto beaches during closures or in violation of posted warnings is not considered incidental because these actions are either in violation of posted or stated prohibitions on San Nicolas Island or they are outside of the standard operation procedures as described to the Service in the biological assessment (Navy 2000). Any take resulting from trespass in violation of posted beach closures may be considered a violation of section 9 of the Act.

Island Night Lizard - Island night lizards are widely scattered throughout San Nicolas Island; however, their density varies with habitat types. The activities listed in the project description may cause the injury or death of individuals, but the number affected would depend upon the type of habitat in proximity to the activity and the size of the project. Because both of these factors vary unpredictably, the number of individual island night lizards that could be taken by the Navy's activities cannot be accurately predicted.

The Navy shall contact the Service whenever the number of dead island night lizards found in a given year reaches five, and the cause of death or injury is unknown or may be due to Navy activities. Provided that protective measures proposed by the Navy and the terms and conditions of this biological opinion are being fully implemented, operations need not cease while the cause of mortality is being determined. Once the cause of death or injury has been determined, the Service and Navy shall decide whether any additional protective measures are required to address the cause of the loss of the island night lizard.

Brown Pelican - The number of brown pelicans observed at San Nicolas Island at any given time is the combined result of breeding success elsewhere, weather, and seasonal changes in their movements, such that changes in numbers at San Nicolas Island cannot be reliably attributed to Navy actions. Based upon the information presented by the Navy, we anticipate that few, if any, brown pelicans will be killed or injured at San Nicolas Island in any given year. Estimating a precise number is impossible because of the variation in numbers of brown pelicans at San Nicolas Island 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 the Navy's activities.

The Navy shall contact the Service whenever a dead or injured brown pelican is found and the cause of death or injury shall be determined. Provided that the protective measures proposed by the Navy and the terms and conditions of this biological opinion are being fully implemented, operations need not cease while the cause of death is being determined. Once the cause of death or injury has been determined, the Service and Navy shall decide whether any additional protective measures are required to address the cause of the loss of the brown pelican.

Western Snowy Plover - The western snowy plover is a small, cryptically-colored bird that would be difficult to find were it not for its movement. Finding dead or injured individuals is also difficult. The seasonal presence of this species is complex, in that breeding individuals and their young are present in spring and summer and are replaced by migratory or wintering individuals in fall and winter, with overlap between the two populations. Changes in numbers at San Nicolas Island can be attributed to several factors, not solely to the Navy's activities, although instances in which harassment may have occurred (*e.g.*, flushing birds from nests) have been observed or inferred from monitoring. Nest success or failure is difficult to calculate from the data gathered; ascribing reasons for failure when it does occur is also often difficult.

Based upon the information presented by the Navy, we anticipate that few, if any, western snowy plovers will be killed or injured at San Nicolas Island in any given year. Estimating a precise number is impossible because of the variation in numbers of western snowy plovers at San Nicolas Island 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 the Navy's activities.

The Navy shall contact the Service whenever a dead or injured western snowy plover or an abandoned nest is found and the cause of death or injury is unknown or may be due to Navy activities. Provided that protective measures proposed by the Navy and the terms and conditions of this biological opinion are being fully implemented, operations need not cease while the cause of mortality is being determined. Once the cause of death or injury has been determined, the Service and Navy shall decide whether any additional protective measures are required to address the cause of the loss of the western snowy plover or its nest.

REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take of the island night lizard, brown pelican, and western snowy plover:

1. All relocation of island night lizards shall be conducted by a biologist authorized by the Service. The authorized biologist shall provide all information pertinent to the relocation.
2. Censuses of listed species for the purpose of monitoring the effects of Navy activities on these species shall be performed by biologists authorized by the Service. The methods used for censusing shall follow strict procedural guidelines to reduce the chances of disturbance.

3. Western snowy plover nests shall be monitored during missile or target launches, EOD activities, barge landings, and other activities that may disturb nesting western snowy plovers to determine the subspecies' response.
4. Areas closed during road maintenance and other activities to prevent mortality of island night lizards shall be clearly marked.
5. Relocation of the EOD facility shall consider the information on effects gathered from similar activities at the Navy Base Ventura County.
6. The EPO shall review all existing and new structures to determine which shall be fitted with materials to prevent their use as perches by predatory birds.
7. The barge landing area and other areas of concentrated human activity shall be monitored for non-native species. Any such species found shall be removed.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, the Navy must comply with, or ensure that any contractor complies with, the following terms and conditions which implement the reasonable and prudent measures described above, and outline reporting and monitoring requirements. These terms and conditions are non-discretionary.

The following terms and conditions implement reasonable and prudent measure 1:

1. At least 30 days prior to relocating any island night lizards, the Navy shall contact the Service and request approval of (a) biologist(s) who will capture and relocate any island night lizards that could be killed or injured by Navy activities. Qualified individuals shall have demonstrable experience in handling reptiles and knowledge of the biology of the island night lizard.
2. The authorized biologist(s) shall record all pertinent information when island night lizards are relocated, including the number of individuals captured, site of capture, site of relocation, habitat at capture and release sites, snout-to-vent length, sex, if possible, and number of mortalities resulting from relocation and from the activity for which relocation was implemented.

The following terms and conditions implement reasonable and prudent measure 2:

3. Individuals who will be performing monitoring and censusing of western snowy plover and island night lizard for the purposes of determining the effects of Navy activities on these species shall be authorized by the Service at least 30 days prior to the onset of such activities. This authorization will not include research activities that require possession

of a permit pursuant to section 10(a)(1)(A) of the Act, such as age class studies or nest monitoring where eggs are handled.

4. During censusing or observation of western snowy plovers, biologists shall follow these guidelines:
 1. Monitors must remain at least 100 feet from the nests.
 2. Censuses shall not be conducted when wind speeds exceed 10 mph maximum, if it is raining, or temperatures are below 70 or above 85 degrees fahrenheit.
5. During censusing of island night lizards, authorized biologists shall follow these precautions:
 1. Other than handling authorized under this biological opinion for relocation out of harm's way, the species shall not be captured. Capture for research purposes can only be conducted by a biologist with a current recovery permit issued pursuant to section 10(a)(1)(A) of the Act or as authorized under reasonable and prudent measure number 1.
 2. Debris or cover moved to find island night lizards shall be replaced in the exact location and position in which it was originally.
 3. Biologists shall not enter island night lizard habitat in vehicles except to travel on established roads. All surveys shall be conducted on foot with care taken to avoid stepping on individual island night lizards.

The following terms and conditions implement reasonable and prudent measure 3:

6. No more than two hours prior to missile or target launches or any other activities that could disturb nesting western snowy plovers, the EPO shall observe the nests from at least 100 feet to determine the status of the nesting activity (i.e., eggs present, adults on nest, etc.). Immediately after the missile or target launch or other activity, the nests shall be observed again to ascertain whether any disturbance has occurred or the status of the nests have been altered by the activity.
7. The results of such monitoring shall be reported to the Service annually unless the disturbance results in the loss of an adult, young, or eggs, in which case the results shall be reported immediately.
8. Activities that may displace adult western snowy plovers from their nests for more than ½ hour shall not take place when winds exceed 10 mph, or temperatures are below 70 degrees fahrenheit or above 85 degrees fahrenheit, or if it is raining.

The following terms and conditions implement reasonable and prudent measure 4:

9. Low signs (less than 3 feet) shall be permanently installed along the roads in high quality island night lizard habitat, as determined by the EPO, to warn of the restrictions on roadside maintenance.
10. Areas within high quality habitat for the island night lizard to be closed to roadside maintenance shall be marked with bright flagging or similar material by the EPO during maintenance to prevent accidental intrusion. Flagging shall be removed immediately after maintenance has been completed in that stretch of the habitat.
11. The limits of all construction areas or areas where disturbance of island night lizard habitat will occur shall be delineated with bright flagging or fencing to minimize the amount of habitat loss. Equipment, personnel, and vegetation removal shall not operate beyond the limits defined by the flagging or fencing. Materials used to delineate the construction area boundaries shall be removed immediately after project completion.

The following terms and conditions implement reasonable and prudent measure 5:

12. The placement of the new EOD facility shall be coordinated with the Service to ensure that explosive ordnance activities will no longer affect nesting western snowy plovers. The new facility shall be located at least 2,000 feet from the nearest western snowy plover nesting area and critical habitat. Any new EOD structures shall be oriented so that the sound and concussive shock is directed toward the middle of the island to further reduce the potential effects on western snowy plovers.
13. Detonations shall be tamped under sand and insulated with sandbags to minimize the sound and concussive shock.
14. Charges shall be limited to 2 pounds maximum unless the Navy can demonstrate that larger charges at 2,000 feet and with tamping and structure orientation will not cause a response in nesting western snowy plovers. Any effects from testing larger charges is not considered in this biological opinion and must be addressed as a separate consultation.

The following terms and conditions implement reasonable and prudent measure 6:

15. The EPO shall conduct surveys of all existing and future structures to determine if they may serve as perches for birds that could prey upon western snowy plovers. The structures determined to provide a view of the western snowy plover nesting areas shall be mapped.
16. All structures mapped as providing a view of western snowy plover nesting areas shall be fitted with Nix-a-lite® or a similar material to discourage perching by predatory birds. This does not include structures where installation of anti-perching materials would interfere with their function.

17. Structures or materials that are not permanent and may provide a perch for predatory birds in view of western snowy plover nesting areas shall be removed. The removal of these structures or materials shall follow the other terms and conditions intended to reduce the take of island night lizards, and shall be conducted outside of the western snowy plover nesting season.

The following terms and conditions implement reasonable and prudent measure 7:

18. The barge landing site, storage and staging areas, and all other areas where human activities are concentrated or where materials from the mainland are stored shall be surveyed by the EPO once per year to determine if any non-native plant or animal species have been introduced to San Nicolas Island. The location and species of the non-native plant or animal shall be recorded. Upon discovery, the non-native species shall be removed to the best of the Navy's ability.

REPORTING REQUIREMENTS

The Navy shall provide a written annual report to the Service by January 31 of each year that this biological opinion is in effect. The report shall document the number of island night lizards, brown pelicans, or western snowy killed or injured by the Navy's activities. The report shall also provide a summary of the previous year's activities and their effects on listed species. The report shall contain information on the following: (1) type of activities (*e.g.*, number of missile or target launches, new construction, debris removal, etc.); (2) location of activities; (3) a description of the habitat in which new construction or debris removal has occurred; (4) the species and number of listed species affected; (5) steps taken to avoid or minimize effects; (6) the number of any island night lizards relocated (as defined in reasonable and prudent measure 1); (7) the species and ultimate action taken upon discovery of a non-native plant or animal; (8) the nature of any research conducted on San Nicolas Island by the Navy or outside researchers; (9) the results of any censuses of brown pelicans, western snowy plovers, and island night lizards conducted on San Nicolas Island in the previous year; and (10) any other pertinent information as required by this biological opinion. The first report, although it will not cover all of 2001, is due approximately January 31, 2002.

DISPOSITION OF DEAD OR INJURED SPECIMENS

Upon locating a dead or injured island night lizard, brown pelican, or western snowy plover, 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) and by telephone and writing to the Ventura Fish and Wildlife Office in Ventura, California, (2493 Portola Road, Suite B, Ventura, California 93003, (805) 644-1766) within three working days of the finding. The report shall include the date, time, location of the carcass, a photograph, cause of death, if known, and any other pertinent information.

Care shall be taken in handling dead specimens to preserve biological material in the best possible state for later analysis. Should any injured birds or island night lizards survive, the

Service should be contacted regarding their final disposition. The remains of intact island night lizards shall be placed with the University of California at Santa Barbara [Contact: Mark Holmgren, University of California at Santa Barbara, EEMB Department, Santa Barbara, California, 93106, (805) 893-4098]. Arrangements regarding proper disposition of potential museum specimens shall be made with the University of California by the EPO prior to implementation of any actions. The remains of intact western snowy plovers and brown pelicans shall be placed with the Western Foundation of Vertebrate Zoology [Contact: René Corrado, 439 Calle San Pablo, Camarillo, California, (805) 388-9944]. Arrangements regarding proper disposition of potential museum specimens shall be made with the Western Foundation by the EPO prior to implementation of any actions.

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

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 measures:

1. The island fox is found on most of the Channel Islands; however, its numbers are decreasing at alarming rates on many of the islands with the notable exception of San Nicolas Island. The Navy should allow researchers access to San Nicolas Island to study the species there and to evaluate the factors that maintain the population.
2. Personnel on San Nicolas Island should be prohibited from bringing domestic pets (*i.e.*, cats, dogs, rats, snakes, etc.) onto the island. Any domestic animals on San Nicolas Island currently should be removed to the mainland until the owners can claim them. Feral cats should be caught and deposited at the Camarillo Animal Shelter.
3. EPO personnel who will be performing research activities with listed species not described in the terms and conditions section of this biological opinion should apply for permits pursuant to section 10(a)(1)(A) of the Act.

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 benefitting listed species or their habitats.

REINITIATION NOTICE

This concludes formal consultation on the ongoing activities and some future activities being conducted by the Navy on San Nicolas Island. These activities include: missile and target

launches; barge operations; proposed pier construction; reverse osmosis plant operations; equipment/materials storage and staging; debris removal; roadside maintenance; recreation; natural resource research and management; amphibious training exercises; explosive ordnance disposal; routine small construction project and utilities maintenance; and protective measures proposed to reduce effects on listed species . 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 or concerns, please call Rick Farris of my staff at (805) 644-1766.

Sincerely,

/s/Carl Benz Acting for
Diane K. Noda
Field Supervisor

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