

APPENDIX D

BENEFITS FOR ENDANGERED SPECIES

Appendix D

Benefits for Endangered Species

The objective of this appendix is to identify within the INRMP all management and conservation efforts for a federally listed species that the USFWS and NOAA Fisheries would use to consider when making a determination not to designate critical habitat on an installation. This will speed the review process by identifying upfront potential projects / actions to the installation, USFWS or NOAA Fisheries to obviate the need to designate critical habitat on military installations.

The Endangered Species Act was revised (ESA Section 4(a)(3)(b)(i)) via the National Defense Authorization Act of 2004, which states that, —*The Secretary [of the Interior] shall not designate as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense, or designated for its use, that are subject to an integrated natural resources management plan prepared under section 101 of the Sikes Act (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation.* The USFWS has determined that, where applicable, Federal critical habitat designation is not warranted if the INRMP includes the following three criteria:

1. **The plan provides a benefit to the species.** Cumulative benefits of the management activities identified in a management plan, for the length of the plan, must maintain or provide for an increase in a species' population or the enhancement or restoration of its habitat within the area covered by the plan (e.g., those areas deemed essential to the protection of the species). A benefit may result from reducing fragmentation of habitat, maintaining or increasing populations, ensuring against catastrophic events, enhancing and restoring habitats, buffering protected areas, or testing and implementing new strategies.
2. **The plan provides certainty that the management plan will be implemented.** Persons charged with plan implementation are capable of accomplishing objectives of the management plan and have adequate funding for the management plan. They have the authority to implement the plan and have obtained all necessary authorizations or approvals. An implementation schedule (including completion dates) for the management effort is provided in the plan.
3. **The plan provides certainty that the management effort will be effective.** The following criteria will be considered when determining the effectiveness of the management effort. The plan includes (1) biological goals (broad guiding principles for the program) and objectives (measurable targets for achieving the goals); (2) quantifiable, scientifically valid parameters that will demonstrate achievement of objectives and standards for these parameters by which progress will be measured are identified; (3) provisions for monitoring and, where appropriate, adaptive management; (4) provisions for reporting progress on implementation (based on compliance with the implementation schedule) and effectiveness (based on evaluation of quantifiable parameters) of the management effort are provided; and (5) a duration sufficient to implement the plan and achieve benefits of its goals and objectives.

The NBC Commanding Officer has the authority to implement the plan, which will be accomplished by environmental staff at NBC as scheduled and budgeted. Formal adoption of an INRMP by the commander constitutes a commitment to seek funding and execute, subject to the availability of funding, all Must Fund Projects and activities in accordance with specific timeframes identified in the INRMP. Under the Sikes Act, any natural resources management activity that is specifically addressed in the plan must be implemented (subject to availability of funds). Failure to implement the INRMP is a violation of the Sikes Act, as amended. Annual reporting on implementation of the current INRMP to both the

USFWS and CDFW has documented the commitment of NBC to acquire funding and implement the INRMP.

Goals, objectives, and strategies for management of listed species have been developed and are included in sections 4.2.3, 5.2.3, 6.2.3, 7.2.3, 8.2.3, 9.2.3, and 10.2.3 of this INRMP.

Projects that are applicable to some or all species are presented in **Table D-1**, these project are not repeated in the species specific project tables. Management objectives and strategies for management of listed species have been developed for management of special status species and specific projects are outlined in **Appendix C, Tables C-1 through C-9**.

Table D-1: Projects Applicable to Some or All Species

Project	Description	EPR Number	Section in INRMP
NBC INRMP	INRMP updates and revisions	00246NR000	
NBC INRMP Implementation	Initiate habitat improvement projects to conserve biodiversity and protect plant and animal habitats, as funding is available and when such projects will not adversely affect the military mission (e.g., noxious weeds or invasive species removal; habitat disturbance where such disturbance will promote native plant growth; preventing habitat disturbance when this will promote nonnative plant growth; and revegetation with native plants).	00246NR003	Special Status Species
Natural Resources Training Video, Natural Resource Interpretive Panels and Brochures	Educate the local community, as well as installation personnel and tenants about the installation natural resources program. Develop and distribute educational materials about the NBC natural resources program to stakeholders near NBC (e.g. neighborhoods, county, etc.).	00246NR019, 00246NR020, In-house	Law Enforcement of Natural resources Laws and Regulations, 4.2.4.8
SW NBC - Erosion Control Plan & Implementation	Implement erosion control BMPs to ensure adverse environmental impacts to TES habitats throughout NBC installations do not occur.	00246NR021	Habitat Management, Watershed Management
SW NBC Outdoor Recreation Plan	Develop an outdoor recreation plan for NBC. Seek opportunities for natural resources-based outdoor recreation to improve quality of life for Navy personnel, allow close partnership with the local community, and improve knowledge of the natural world and the Navy's stewardship of natural resources. Identify and evaluate suitable outdoor recreation opportunities for installation personnel in undeveloped areas that do not contain or have the potential to impact sensitive species.	00246NR022	Outdoor Recreation and Public Access

Project	Description	EPR Number	Section in INRMP
Neotropical Migratory Bird Monitoring (MAPS)	Annual bird surveys are conducted via MAPS at NOLF IB and RTSWS. This data will be used to analyze population trends for TES species as well as other migratory bird species.	00246NR023, 00246NR123	NBC All
SW NBC Long-Term Ecological Trend Monitoring	Conduct long-term resource monitoring to detect changes that may be caused by military activities. Survey for indicator species at least every two years; surveys should include an assessment of population size, health and habitat. Conduct climate change vulnerability assessment to asses' long-term threats to rare plant populations.	00246NR030	Habitat Management, 8.2.7.1 9.2.5.1
NAB EIS Mitigation - Terrestrial	Implement habitat restoration at SSTC-N. Develop and implement Long-term Habitat Enhancement Plan.	00246NR031	5.2.5.1
NBC - Invasive Plant Control in support of listed and sensitive species	Develop and implement an Invasive Species Management Plan to control the spread of invasive species on NBC. The plan should include specific prescriptions to evaluate individual invasive species, to identify targeted species, to control further spread of targeted species, and to develop and implement a program to monitor species abundance. Monitor pest and invasive species populations. Track usage of active ingredients and man-hours spent controlling pest and invasive species during implementation to ensure that the management strategies are sufficient. Conduct surveys annually to determine whether controls on existing infestations of species have been effective, and whether new populations have become established.	00246NR101	Special Status Species, Exotic and Invasive Species Management for Off Base Facilities
NOLFIB Habitat Enhancement for Federally Listed Species and Species at Risk (Light-footed Clapper Rail, Least Bell's Vireo, San Diego Fairy Shrimp)	Conduct habitat enhancement for Federally Listed Species and Species at Risk (Light-footed Clapper Rail, Least Bell's Vireo, San Diego fairy shrimp).	00246NR105	7.2.5.1
1 CP SW RTS WARNER SPRINGS - Fire Management Plan Update & Implementation to Benefit Multiple Listed Species	Review RTSWS FMP at least annually and update plan according to DoD Instruction 6055.06.	00246NR108	9.2.3.4

Project	Description	EPR Number	Section in INRMP
2 BO SW Camp Michael Monsoor (FKA La Posta) - Invasive Plant Species Control	Control and remove invasive species around existing rare species populations.	00246NR112	8.2.6.3 8.2.7.1 8.2.7.2 8.2.8
NBC - Natural Resources Inventory & Update for Various Installations	Perform monitoring of plant populations every five years. Conduct regular (approximately every two years) surveys for TES species that may be present on the NBC housing areas. Continue monitoring special status species and adapt monitoring and management actions as needed. Use monitoring information to guide adaptive management.	00246NR114, 00246NR118, 00246NR217	Special Status Species
RTS Warner Springs - Invasive Plant Control	Control and remove invasive species.	00246NR115, 00246NR511	9.2.5.2 9.2.6
RTS Warner Springs - Listed and Sensitive Plant Surveys	Conduct surveys for TES species every three years.	00246NR116	9.2.5

The USFWS Region 8 Navy INRMP Coordinator provided the following template for reporting of Benefits to Endangered Species. Of the federally listed species known or with the potential to occur on NBC, are discussed in detail below.

Figures D-1, D-2, D-3, and D-4, show designated critical habitat for all species within 5 miles of NBC installations. Species that occur on NBC are discussed in detail below.

See **Figures D-5 through D-9** for all Special Status Species, including Threatened and Endangered Species that occur on NBC installations.



Figure D-1: Designated Critical Habitat Adjacent to Naval Air Station North Island, Naval Amphibian Base Coronado and Silver Strand Training Complex North, and Silver Strand Training Complex South



Figure D-2: Designated Critical Habitat Adjacent to Lofgren Terrace Housing Area

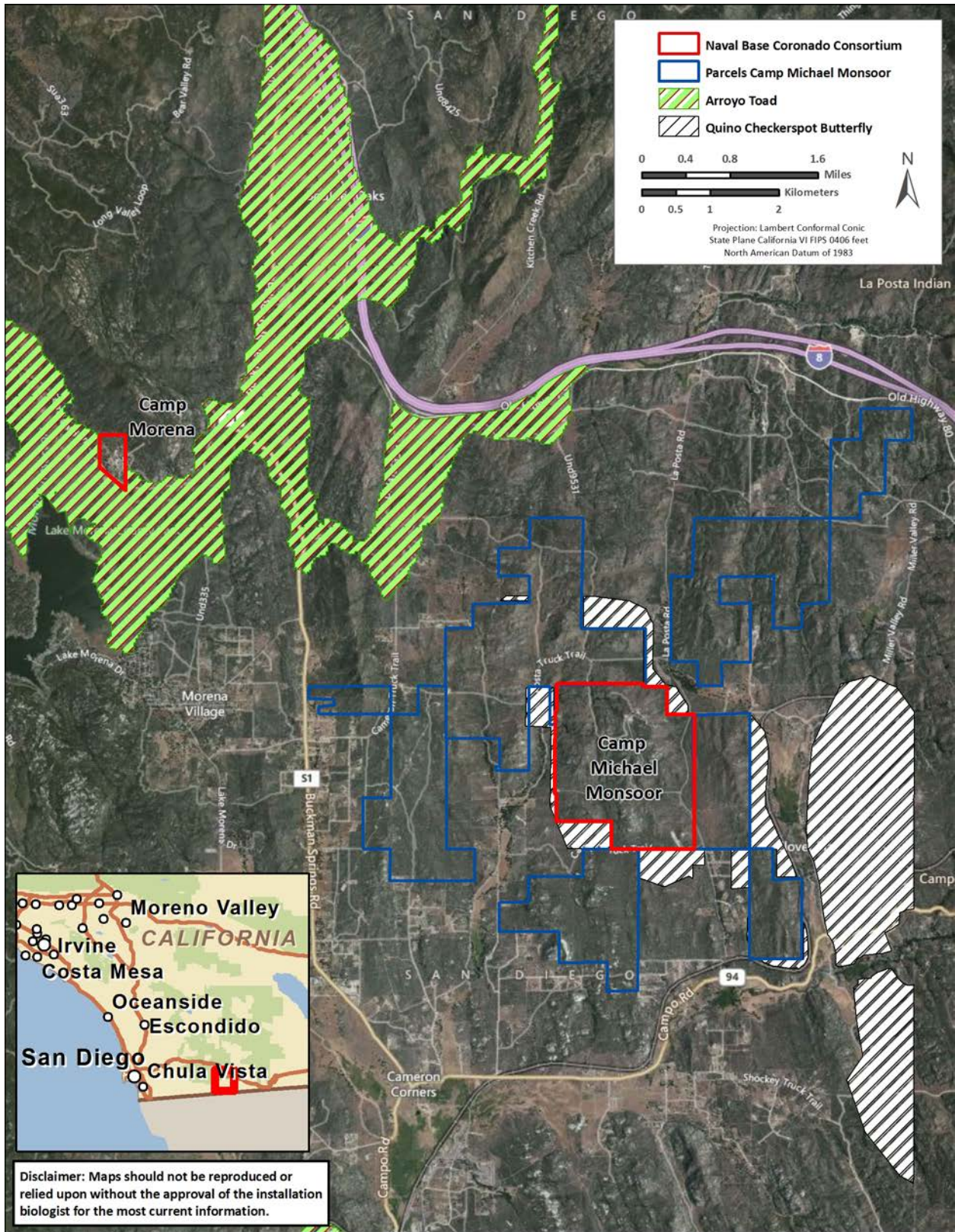


Figure D-3: Designated Critical Habitat Adjacent to Camp Michael Monsoor and Camp Morena

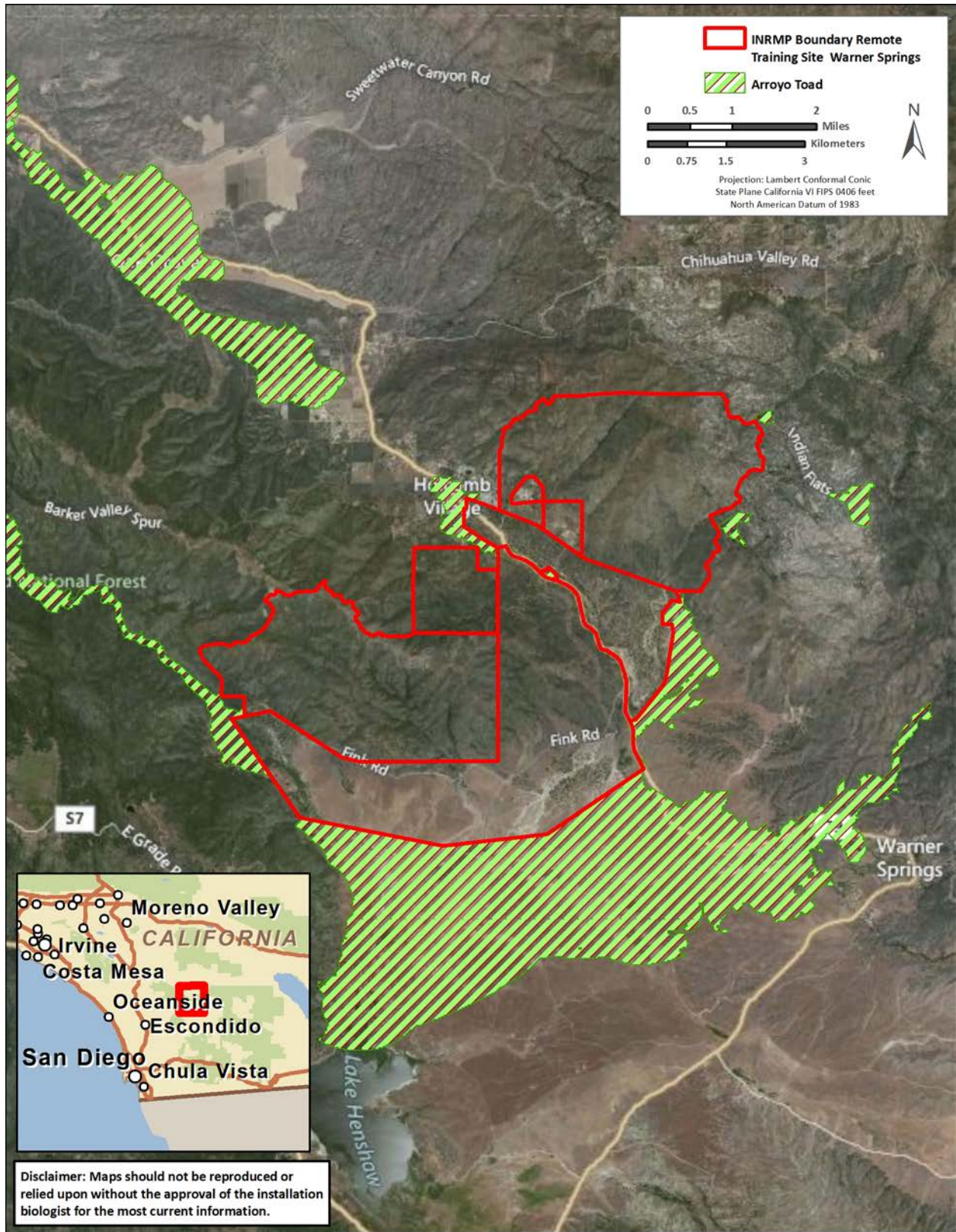


Figure D-4: Designated Critical Habitat Adjacent to Remote Training Site Warner Springs



Figure D-5: Special Status Species on Naval Air Station North Island

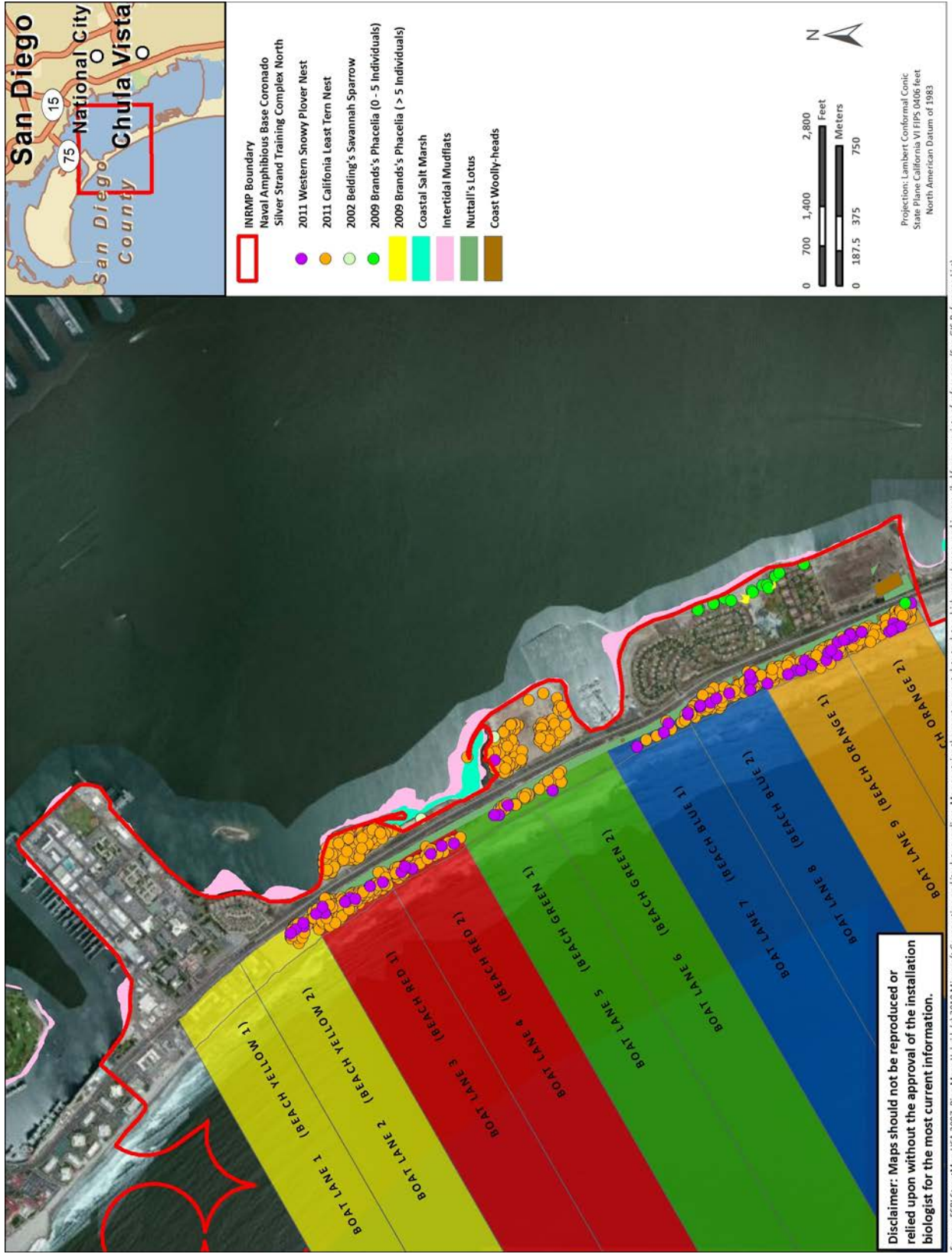


Figure D-6: Special Status Species on Naval Amphibian Base Coronado and Silver Strand Training Complex North

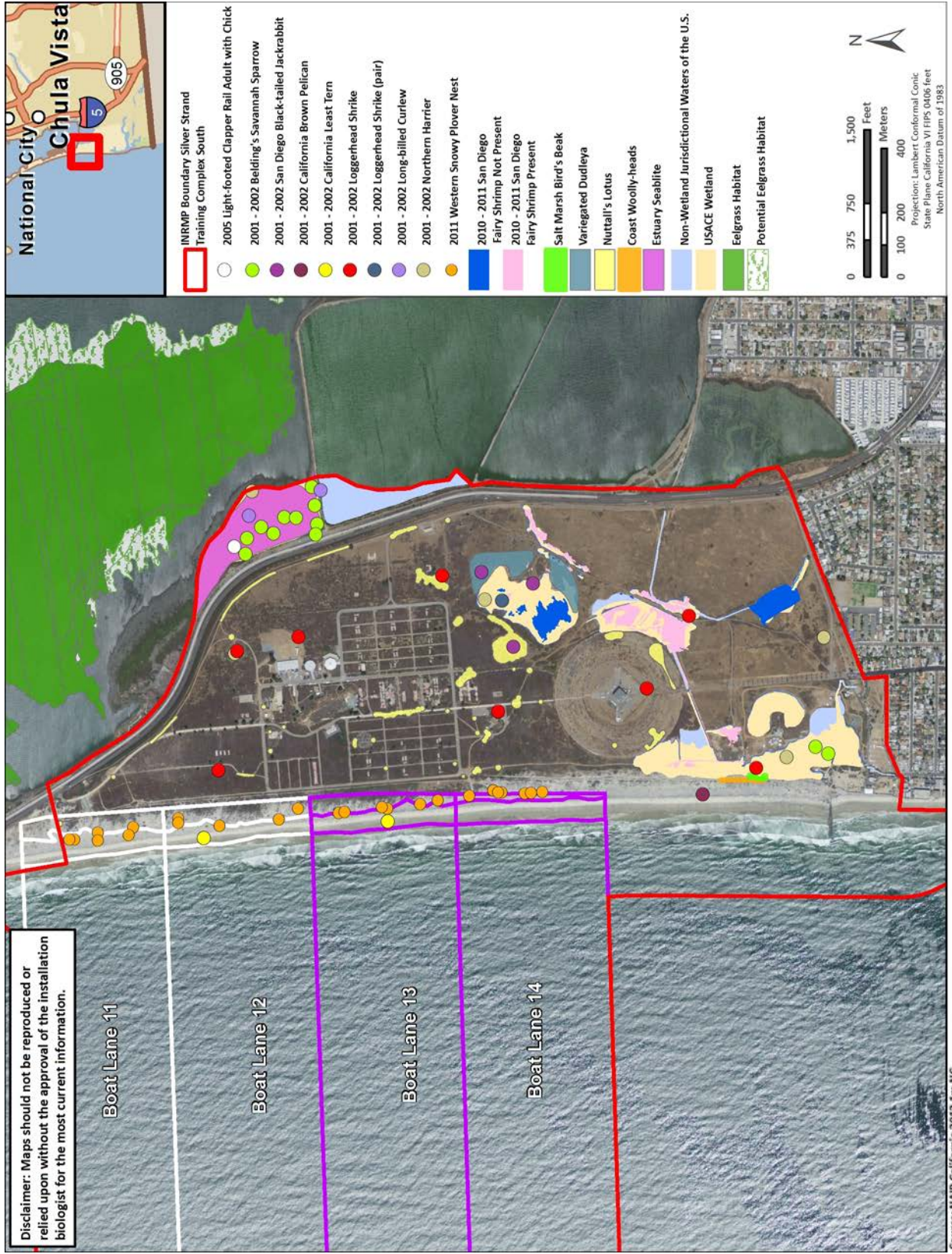


Figure D-7: Special Status Species on Silver Strand Training Complex South

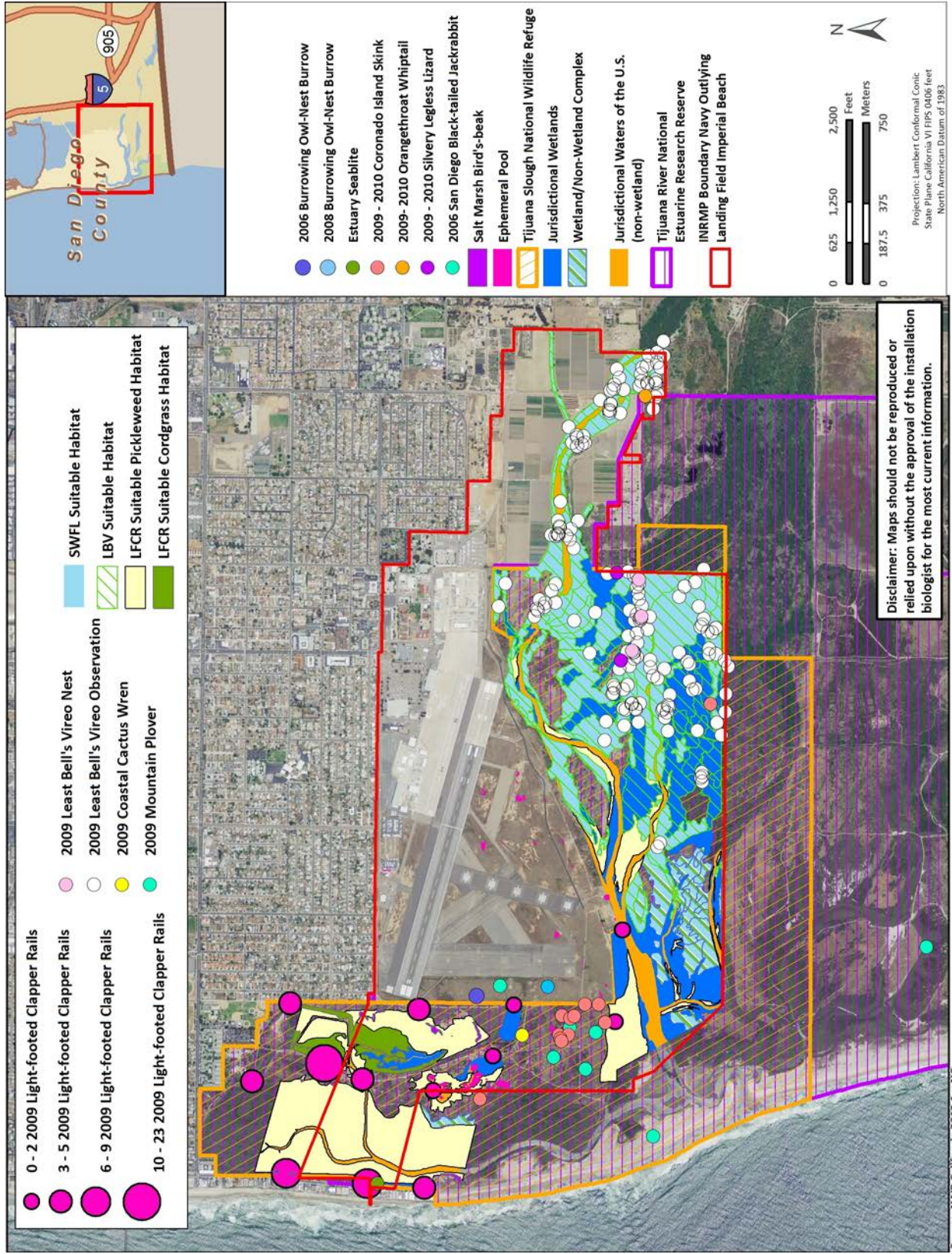


Figure D-8: Special Status Species on Navy Outlying Landing Field Imperial Beach

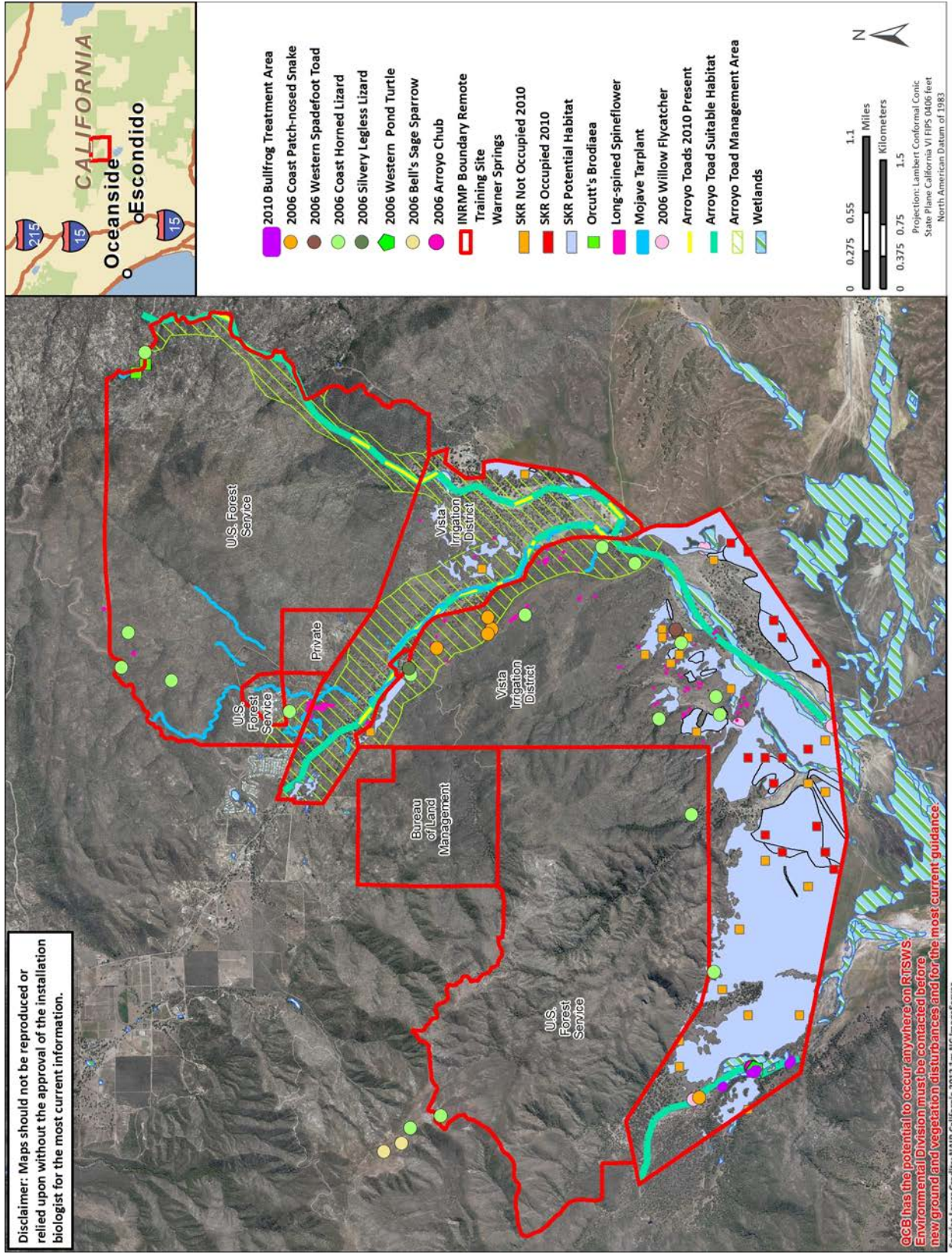


Figure D-9: Special Status Species on Remote Training Site Warner Springs

Salt Marsh Bird's-beak (*Cordylanthus maritimus maritimus*)

Related INRMP Sections

6.2.5 & 7.2.5	Special Status Species (Federally Listed and Other Special Status Species)
6.2.5.1 & 7.2.5.1	Federally Listed Species
6.2.5.3 & 7.2.5.3	ESA Consultation and Mission Requirements

Projects Applicable to Salt Marsh Bird's-beak

Project	Description	EPR Number	Section in INRMP
INRMP Implementation	Perform a vulnerability assessment to assess threats to existing salt marsh bird's-beak populations. Create a seedbank to increase plant stock in future years and ensure viable populations following drought or flood years. Conduct periodic monitoring (recommended annually) to determine population health. Complete a habitat evaluation to determine where populations can be expanded. Study pollinators to determine which species on SSTC-S are critical to plant reproduction. Perform invasive species control around areas known to contain salt marsh bird's-beak Habitat.	00246NR003	6.2.5.1 7.2.5.1
Invasive Plant Control in Support of Listed and Sensitive Species	Perform invasive species control in areas where vernal pools are known to exist.	00246NR101	6.2.5.1 7.2.5.1
Salt Marsh Bird's-beak and other Sensitive Plant Species Management	Conduct periodic monitoring (recommended at least every five years) to determine existing population health.	00246NR100	6.2.5.1 7.2.5.1
NOLFIB Habitat Enhancement for Federally Listed Species and Species at Risk	Conduct period monitoring of salt marsh bird's-beak habitat (at least every three years) and ensure monitoring does not impact sensitive habitat occupied by the Light-footed Clapper Rail. Conduct a study of pollinators in the plant's habitat to determine critical relationships between plant populations and pollinators.	00246NR105	7.2.5.1

Current Distribution and Status

Regional distribution and status information is presented in **Appendix G**. Salt Marsh Bird's-beak is known to occur on SSTC-S on the YMCA Camp Surf leased property, and NOLF IB (see **Figures D-6** and **D-7**). Surveys for this species began in 1996 on SSTC-S and 2002 on NOLF IB.

Change in Distribution and Status

In 2002 this species was not observed on SSTC-S as it was in 1996. No more recent survey data is available.

As of the 2010 survey season the number of documented occurrences of this species on NOLF IB increased from 1 to approximately 1,500 individuals.

Relevant Biological Opinions

Not applicable.

Critical Habitat

No critical habitat rules have been published for this species.

Effectiveness of Projects on Species and Habitat

Because NBC focuses on an ecosystem based approach to natural resources management, many projects have the potential to provide both direct and indirect benefits to salt marsh bird's-beak and their habitat. See **Table D-2** and **Appendix C** for a list of all INRMP projects, schedules, and implementation table.

Table D-2. Results of Past Surveys for Salt Marsh Bird's-beak on Naval Base Coronado

Year	Number Observed	Source	Comments	Installation
1996	UNK	U.S. Navy 2004d	This species was not observed during general plant surveys conducted in 2002.	SSTC-S
2002	1	U.S. Navy 2011g	Biologists noted that 2001 was a dry year and could account for the low number of observed individuals.	NOLF IB
2009- 2010	1500	U.S. Navy 2011g	Several patches of this species were observed.	NOLF IB

San Diego Fairy Shrimp (*Branchinecta sandiegonensis*)

Related INRMP Sections

6.2.5 & 7.2.5	Special Status Species (Federally Listed and Other Special Status Species)
6.2.5.1 & 7.2.5.1	Federally Listed Species
6.2.5.3 & 7.2.5.3	ESA Consultation and Mission Requirements

Projects Applicable to San Diego Fairy Shrimp

Project	Description	EPR Number	Section in INRMP
Endangered Fairy Shrimp Surveys – NRRF and NOLF	If training occurs in vernal pools conduct annual surveys for San Diego fairy shrimp and monitor habitat. Complete a vulnerability assessment to assess threats to existing population. Perform periodic monitoring using established protocols for San Diego fairy shrimp surveys.	00246NR031, 00246NR117	6.2.5.1 7.2.5.1
Invasive Plant Control in Support of Listed and Sensitive Species	Perform invasive species control in areas where vernal pools are known to exist.	00246NR101	6.2.5.1 7.2.5.1
	Develop protocols to ensure personnel clean footwear and equipment before and after conducting activities in vernal pools.	In-house	6.2.5.1 7.2.5.1
	Support genetic research of San Diego fairy shrimp.	Research	6.2.5.1

Current Distribution and Status

Regional distribution and status information is presented in **Appendix G**. San Diego fairy shrimp surveys were first conducted on SSTC-S in 2000 and 2001 and on NOLF IB in 2008 and 2009. The San Diego fairy shrimp was collected and identified during focused surveys for this species at SSTC-S during the winter of 2000–2001 and in February through May 2003. San Diego fairy shrimp have been documented within the vernal pools within the refuge on NOLF IB, west of the airfield. As part of the ecological inventory at NOLF IB, protocol fairy shrimp surveys were performed throughout areas where vernal pooling occurs in 2008-2009 and 2010-2011 (see **Figure D-6** and **D-7**).

Change in Distribution and Status

On SSTC-S the number of individuals documented and the number of vernal pools increased in 2010. NOLF IB however, experienced a significant decrease in documented individuals from 10s to 100s in 2008 and 2009 to no documented individuals in 2011.

Relevant Biological Opinions

The 2010 Biological Opinion on the U.S. Navy SSTC Operations (FWS-SDG-08B0503-09F0517) discusses San Diego fairy shrimp at SSTC-S Inland and requires (1) the avoidance of vernal pools occupied by San Diego fairy shrimp by designating drop zones are located at least 30 meters (100 feet) from each occupied pool; (2) Assure that military dogs do not enter the vernal pools at SSTC-S Inland; (3) Mark pools to facilitate monitoring, and monitor the occupied vernal pools and their watersheds to determine the baseline and ongoing conditions regarding fairy shrimp distribution and abundance; botanical resources; topography, hydrology and water chemistry; and (4) Fencing the limits of the vernal pools occupied by San Diego fairy shrimp. For a complete list of Terms and Conditions and Conservation Measures, see **Appendix I**.

Critical Habitat

Critical habitat was designated for San Diego fairy shrimp on December 12, 2007, and included approximately 2,468 hectares (6,098 acres) of habitat in Orange and San Diego counties, California (72 FR 70647–70714). **Figure D-1** through **D-3** shows designated critical habitat in proximity to NBC.

There is no critical habitat for any of the listed species in NBC. This is, in part, due to navy environmental planning through INRMPs. The final rule for designation of critical habitat for the San Diego fairy shrimp was issued on December 12, 2007 (72 Federal Register 70647), and excluded habitat at NOLF IB. Since the final rule came into effect on January 11, 2008, NBC property no longer includes any critical habitat for this species. Critical habitat for these species was not designated on NBC property because the National Defense Authorization Act of Fiscal Year 2004, Public Law 108-136, amended Section 4 of the ESA by exempting military lands that are subject to an INRMP from critical habitat designation, if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation (U.S. Navy 2008f).

Effectiveness of Projects on Species and Habitat

Because NBC focuses on an ecosystem based approach to natural resources management, many projects have the potential to provide both direct and indirect benefits to San Diego fairy shrimp and their habitat. See **Table D-3** and **Appendix C** for a list of all INRMP projects, schedules, and implementation table.

Table D-3. Results of Past Surveys for San Diego Fairy Shrimp on Naval Base Coronado

Year	Number Observed	Source	Comments	Installation
2001-2003 survey seasons	10s to 1000s of individuals were documented in 14 vernal pools.	U.S. Navy 2004d	No surveys were conducted 2002 due to lack of rainfall and insufficient ponding.	SSTC-S
2008-2009	10s to 1000s of individuals were documented 4 vernal pools.	U.S. Navy 2011g	NA	NOLF IB
2010	10s to 1000s of individuals were documented in 26 vernal pools.	U.S. Navy 2010e	Wet and dry season surveys were conducted.	SSTC-S
2010-2011	Present	U.S. Navy 2011g	Wet and dry season surveys were conducted.	NOLF IB

Quino Checkerspot Butterfly (*Euphydryas editha quino*)

Related INRMP Sections

8.2.5 & 9.2.5	Special Status Species (Federally Listed and Other Special Status Species)
8.2.5.1 & 9.2.5.1	Federally Listed Species
8.2.5.3 & 9.2.5.3	ESA Consultation and Mission Requirements

Projects Applicable to Quino Checkerspot Butterfly

Project	Description	EPR Number	Section in INRMP
Endangered Quino Checkerspot Butterfly Surveys	Conduct periodic monitoring for Quino checkerspot butterfly (recommended at least every three years) at Camp Michael Monsoor and RTSWS.	0024688888, 00246NR107	8.2.7.1 9.2.5.1
Quino Checkerspot Butterfly Habitat Management	Complete a vulnerability assessment to identify and address threats to Quino checkerspot butterfly populations.	00246NR107 00246NR109	8.2.7.1 9.2.5.1
Fire Management Plan, Updates and Implementation to Benefit Quino Checkerspot Butterfly	Minimize adverse fire management impacts and implement fire management strategies that benefit the Quino checkerspot butterfly and its habitat. Review FMP at least annually and update plan according to DoD Instruction 6055.06. Ensure fire management activities are conducted outside of the breeding season.	00246NR110	8.2.5.6 8.2.7.1 9.2.5.2
RTSWS Quino Checkerspot Butterfly Habitat Enhancement	Perform invasive species control to reduce threats to Quino checkerspot butterfly habitat. Minimize adverse fire management impacts and implement fire management strategies that benefit the Quino checkerspot butterfly and its habitat.	00246NR190	9.2.5.1
	Develop a comprehensive road maintenance plan that includes considerations for Quino checkerspot butterfly habitat needs. Review plan annually.	NBC Facilities	8.2.7.1 9.2.5.1
	Perform outreach and education to installation workforce, military members and improve understanding of population dynamics of Quino checkerspot butterfly.	In-house	8.2.7.1 9.2.5.1

Project	Description	EPR Number	Section in INRMP
	Adhere to provision in USFWS biological opinion and Quino checkerspot butterfly Management Plan at Camp Michael Monsoor and Camp Morena.	In-house	8.2.7.1

Current Distribution and Status

Regional distribution and status information is presented in **Appendix G**. The Quino checkerspot butterfly has been observed within the exclusive use area of Camp Michael Monsoor. During 2004 surveys 411.9 hectares (1,018 acres) of suitable habitat for this species was identified on land on Camp Michael Monsoor. A Quino checkerspot butterfly was observed during the April 2004 surveys within a 202.3 hectares (500 acres) survey area. Specifically, the Quino checkerspot was observed within the development footprint of Camp Michael Monsoor. Potential host plant detected within Camp Michael Monsoor was Coulter’s snapdragon (*Antirrhinum coulterianum*). During subsequent surveys conducted in 2006, 2007, and 2008, no individuals were observed. However, three Quino checkerspot butterflies were observed in a location they had not previously been detected during additional surveys conducted in 2010. During the 2010 habitat assessment there were 258 hectares (640 acres) identified as being suitable for Quino checkerspot butterfly. Three Quino individuals were observed in the southwest corner of Camp Michael Monsoor near the La Posta Truck Trail in Parcel C and the Existing Withdrawal. Two potential host plant species, Chinese houses (*Collinsia concolor*) and Coulter’s snapdragon were documented within the surveys along with several potential nectar sources (U.S. Navy 2010h). No plantain host plants (*Plantago spp.*) were found at Camp Michael Monsoor (Pers. Comm. Munson 2012).

In spring 2011 surveys were conducted for Quino checkerspot butterfly on 174 hectares (432 acres) of suitable habitat on RTSWS. Suitable habitat consisted of mostly undeveloped land dominated by sage scrub, open mixed and chamise chaparral, coast live oak woodland, grasslands and grazed pasture lands, oak woodlands, and fuel breaks. Four Quino checkerspot butterflies were observed on RTSWS during the 2011 surveys. Potential host plant species documented included Chinese houses (*Collinsia concolor*), Coulter’s snapdragon, dot-seed plantain (*Plantago erecta*), woolly plantain (*Plantago patagonica*), owl’s-clover (*Castilleja exserta*), and rigid bird’s-beak (*Cordylanthus rigidus*). Several potential nectar sources were documented, these include but are not limited to, California goldfields (*Lasthenia californica*), California buckwheat (*Eriogonum fasciculatum*), and chia (*Salvia columbariae*) (U.S. Navy 2012a).

Change in Distribution and Status

More data is needed to analyze changes in distribution and status.

Relevant Biological Opinions

The 2007 Biological Opinion (FWS-SDG-4452.1) and the 2011 Amendment to the Biological Opinion (FWS-SDG-4452) for the Land Withdrawal, Facilities Construction, and Operations at Naval Special Warfare, La Posta Mountain Training Facility (a.k.a. Camp Michael Monsoor) (FWS-SD-11B0338-11F0507). A QCB management plan was developed to address the requirements of these Biological opinions and future management of the species at CMM. Among the numerous conditions, these BOs required: (1) The presence of a biological monitor during the initial phases of clearing for construction projects to ensure that construction sites are marked and to assure adequate communication regarding

conversation measures and Quino checkerspot butterfly habitat; (2) surveys for larva and host plants of the Quino checkerspot butterfly during spring for one to three years preceding construction; and (3) seed collections of Quino host plants, performed by qualified personnel. For a complete list of Terms and Conditions and Conservation measures, see **Appendix I**.

Critical Habitat

Critical habitat was designated for the Quino checkerspot butterfly on June 17, 2009, and included approximately 25,141 hectares (62,125 acres) of habitat in Riverside and San Diego counties, California (74 FR 28775–28862). **Figure D-2** shows designated critical habitat in proximity to NBC.

There is no critical habitat for any of the listed species in NBC. This is, in part, due to Navy environmental planning through INRMPs (U.S. Navy 2008g). The National Defense Authorization Act of Fiscal Year 2004, Public Law 108-136, amended Section 4 of the ESA by exempting military lands from critical habitat designation that are subject to an INRMP, if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation (U.S. Navy 2008g).

Effectiveness of Projects on Species and Habitat

Because NBC focuses on an ecosystem based approach to natural resources management, many projects have the potential to provide both direct and indirect benefits to Quino checkerspot butterfly and their habitat. See **Table D-4** and **Appendix C** for a list of all INRMP projects, schedules, and implementation table.

Table D-4. Results of Past Surveys for Quino Checkerspot Butterfly on Naval Base Coronado

Year	# Observed	Source	Comments	Installation
2004	3	U.S. Navy 2008b	April 2004 surveys within a 202.3 hectares (500 acres) survey area.	CMM
2006	0	U.S. Navy 2010h		CMM
2007	0	U.S. Navy 2010h		CMM
2008	0	U.S. Navy 2010h		CMM
2010	3	U.S. Navy 2010h	During the 2010 habitat assessment there were 258hectares (640 acres) identified as being suitable for Quino checkerspot butterfly and thus required protocol presence/absence surveys.	CMM
2011	4	U.S. Navy 2012a	2011 surveys were conducted for Quino checkerspot butterfly on 174 hectares (432 acres) of suitable habitat on RTSWS.	RTSWS

Arroyo Toad (*Anaxyrus californicus*)

Related INRMP Sections

9.2.5	Special Status Species (Federally Listed and Other Special Status Species)
9.2.5.1	Federally Listed Species
9.2.5.3	ESA Consultation and Mission Requirements

Projects Applicable to Arroyo Toad

Project	Description	EPR Number	Section in INRMP
Invasive Species Removal	Continue annual bullfrog removal and control program. NBC invasive plant control also benefits arroyo toads by removing tamarisk and other invasives to enhance habitat.	00246WSF03	9.2.5.1
Arroyo Toad Monitoring	Conduct arroyo toad monitoring at least every three years. If toads are discovered in areas outside of current Arroyo Toad Management Area, these locations will be added to the ATMA and managed accordingly.	00246WSF01, 00246NR041	9.2.5.1
	Develop and distribute materials to educate the RTSWS personnel on the arroyo toad to ensure minimization and avoidance measures are followed. Establish nighttime speed limit of 15 miles per hour in arroyo toad occupied areas and install signs informing drivers of species' presence.	In-house	9.2.5.1

Current Distribution and Status

Focused surveys were performed at RTSWS for the arroyo toad in 2006 and 2010 (see Figure D-8). Both survey areas focused on Cañada Aguanga, the San Luis Rey River and the West Fork of the San Luis Rey River. During the 2010 surveys, the West Fork of the San Luis Rey River had water, but the USGS team concluded that the lack of Arroyo toads in this area may be due to unfavorable habitat and potential predation from non-native species (Clark et al. 2011). The 2006 surveys resulted in the detection of nine adult toads and led to a determination that 14 kilometers (8.7 miles) of stream bed were occupied. The 2010 surveys were designed and carried out by USGS. These surveys implemented a spatial and temporal monitoring approach to track the presence of breeding populations by documenting the presence of eggs and tadpoles during daytime wet surveys (Clark et al. 2011) because the probability of detecting eggs/tadpoles is higher during day surveys. Because much of RTSWS remained dry during the 2010 survey, surveys for adults were also conducted in dry areas. Breeding and presence of arroyo toad was confirmed in San Luis Rey River; while appropriate habitat was found in San Luis Rey River and in Cañada Aguanga with an estimated occupancy of 29% and 36%, respectively.

Change in Distribution and Status

More data is needed to analyze changes in distribution and status.

Relevant Biological Opinions

The 2009 Biological Opinion on the U.S. Navy’s proposed expansion and realignment of the RTSWS (FWS-SDG-09B0277-09F0806) discusses multiple conservation measures for minimizing the effects of the action on the arroyo toad. Among the requirements listed in this BO are: (1) road kill surveys during the most active time of the year for the arroyo toad immediately following training activities.; (2) training of SERE instructors to be knowledgeable about the fauna of the action area and to be able to identify the arroyo toad; (3) development of educational material with information on identifying the arroyo toad, how to differentiate between similar non-listed species and a synopsis of the training area rules and restrictions to avoid and minimize adverse impacts; and (4) daily removal of all trash that may attract predators. For a complete list of Terms and Conditions and Conservation measures, see **Appendix I**.

Critical Habitat

Critical habitat was designated for the arroyo toad on April 13, 2005, and included approximately 11,695 acres (4,733 hectares) of habitat in Santa Barbara, Ventura, Los Angeles, San Bernardino, and Riverside counties, California (70 FR 19561–19633). Critical habitat for this species was amended and became effective on March 11, 2011. This designation increased critical habitat by approximately 86,671 acres for a total of 98,366 acres in Santa Barbara, Ventura, Los Angeles, San Bernardino, Riverside, Orange, and San Diego counties, California (76 FR 7245 7467). Figure D-3 shows designated critical habitat in proximity to NBC. There is no critical habitat for any of the listed species in NBC. This is, in part, due to Navy environmental planning through INRMPs (U.S. Navy 2008f). The National Defense Authorization Act of Fiscal Year 2004, Public Law 108-136, amended Section 4 of the ESA by exempting military lands from critical habitat designation that are subject to an INRMP, if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation (U.S. Navy 2008f).

Effectiveness of Projects on Species and Habitat

Because NBC focuses on an ecosystem based approach to natural resources management, many projects have the potential to provide both direct and indirect benefits to arroyo toad and their habitat. See **Appendix C** for a list of all INRMP projects, schedules, and implementation table.

Table D-5. Results of 2006 Arroyo Toad Surveys at RTSWS on Cañada Aguanga and San Luis Rey River

Adults observed	Occupied river length in kilometers (miles)	Estimated habitat in acres
9	14.0 (8.7)	1543

Source: U.S. Navy 2010e

Table D-6. Results of 2010 Arroyo Toad Surveys at RTSWS

River segment	Breeding evidence	Estimated occupancy	Total length of survey in kilometers
Cañada Aguanga	None	36%	5.5
San Luis Rey River	Tadpoles	29%	11.0
West Fork, San Luis Rey River	None	N/A (dry)	2.5

Source: U.S. Navy 2010e

Green Sea Turtle (*Chelonia mydas*)

Related INRMP Sections

4.2.5, 5.2.5, 6.2.5	Special Status Species (Federally Listed and Other Special Status Species)
4.2.5.1, 5.2.5.1, 6.2.5.1	Federally Listed Species
4.2.5.3, 4.2.5.3, 6.2.5.3	ESA Consultation and Mission Requirements

Projects Applicable to Arroyo Toad

Project	Description	EPR Number	Section in INRMP
Surveys for green sea turtle	To maintain and collect data from the Navy-owned hydrophones to conduct regular multi-organization collaborative surveys for the green sea turtle that may be present within NAB Coronado and SSTC-N boundaries.	00242MR117	5.2.5.1

Current Distribution and Status

The population of green sea turtles in San Diego Bay numbers approximately 30 to 60 individuals; however, there is limited information about their movements or behavior (U.S. Navy 2011a). It is unknown how often they leave San Diego Bay or where they reside when they are outside the South San Diego Bay Power Plant channel. Female green sea turtles are believed to migrate from San Diego Bay to nesting grounds in Mexico prior to nesting season while the remaining male adults and subadults continue to be present within San Diego Bay. Eelgrass beds and associated algae and invertebrates known to be food for turtles are extensive in the south and south central San Diego Bay as well as seaside southwest of NASNI. Recent information on turtle foraging has broadened the general understanding of targeted food items as well as expanded the idea that adult green sea turtles are more omnivorous than previously thought. Considering recent foraging studies, resident turtles near U.S. Navy-managed areas along the San Diego Bay may be utilizing invertebrates within deeper areas of San Diego Bay in conjunction with eelgrass and algae as food sources (U.S. Navy 2011a).

Green sea turtles have the potential to occur off-shore of NASNI while in transit in and out the San Diego Bay, and within the eelgrass beds on the ocean and bay sides of NASNI, NAB Coronado and SSTC-N, and SSTC-S.

Change in Distribution and Status

More data is needed to analyze changes in distribution and status.

Relevant Biological Opinions

Not applicable.

Critical Habitat

Critical habitat was designated for green sea turtle; the final rule was published on 02 October, 1998 (63 FR 46693). Designated critical habitat included the coastal waters surrounding Culebra Island, Puerto Rico. Critical habitat for this species is not depicted in **Figures D-1** through **D-4** because it is not within reasonable proximity to NBC.

There is no critical habitat for any of the listed species in NBC per section 4(a)(3)(B)(i) of the Sikes Act. This is, in part, due to Navy environmental planning through INRMPs.

Effectiveness of Projects on Species and Habitat

Because NBC focuses on an ecosystem based approach to natural resources management, many projects have the potential to provide both direct and indirect benefits to green sea turtles and their habitat. See **Appendix C** for a list of all INRMP projects, schedules, and implementation table.

Western Snowy Plover (*Charadrius nivosus nivosus*)

Related INRMP Sections

5.2.5, 6.2.5 & 7.2.5	Special Status Species (Federally Listed and Other Special Status Species)
5.2.5.1, 6.2.5.1, & 7.2.5.1	Federally Listed Species
5.2.5.3, 6.2.5.3, & 7.2.5.3	ESA Consultation and Mission Requirements

Projects Applicable to Western Snowy Plover

Project	Description	EPR Number	Section in INRMP
California Least Tern and Western Snowy Plover Monitoring	Conduct California Least Tern and Western Snowy Plover monitoring on an annual basis.	00246J100G	5.2.5.2
California Least Tern and Western Snowy Plover Predator Control	Implement predator control program in conjunction with California Least Tern and Western Snowy Plover projects.	00246J100H	4.2.3.1 5.2.5.2
Dune and Strand Restoration to Support Endangered California Least Terns and Western Snowy Plovers	Enhance California Least Tern and Western Snowy Plover habitat through revegetation projects.	00246NR024	4.2.5.1 6.2.5.1
NAB EIS Mitigation – Terrestrial	Enhance Western Snowy Plover habitat through revegetation projects on SSTC.	00246NR031	5.2.5.1 6.2.5.1
North/South Delta Tern Mitigation Site Sand Enhancement	Add sand to Delta beaches to enhance habitat for nesting terns and plovers.	00246NR037	6.2.5.1
Restoration and North and South Delta Vegetation Management Plan for the Delta Beaches (Dune Restoration) and Implementation	Develop and implement a comprehensive management plan for vegetation at the Delta Beaches and SSTC training lanes (Long Term Enhancement Plan). Plan will identify vegetation goals for different areas and develop strategies to attain those goals, including substrate enhancement, invasive non-native plant control, planting and/or seeding, maintenance and monitoring.	00246NR113 and 00246NR031	6.2.5.1

Project	Description	EPR Number	Section in INRMP
	Amend storm water management plan to recognize nesting seasons of Western Snowy Plovers and ensure clearing of outfalls adjacent to plover areas occurs during non-breeding season.	In-house	4.2.5.1
Continue to manage dogs to eliminate dog/plover interactions.	Develop and distribute materials to educate workforce and beach users to eliminate dog/California Least Tern/Western Snowy Plover interactions.	00246NR031 & 00246NR019	5.2.5.1
Educate workforce and beach users to minimize impacts to nesting terns and plovers.	Develop and distribute materials to educate workforce and beach users (e.g. encourage Navy workforce to coordinate with the natural resources office on all beach projects).	00246NR020	5.2.4.6 5.2.9 5.2.11
Control invasive species to provide sufficient open areas for nesting.	Conduct surveys annually to determine whether controls on existing infestations of species have been effective, and whether new populations have become established.	00246NR101	NBC ALL
Continue CDFW Game Warden patrols as funding is available.			

Current Distribution and Status

Regional distribution and status information is presented in **Appendix G**. Western Snowy Plovers nest on the beach and within the airfield at NASNI. Surveys of the nesting activity of the Western Snowy Plover are conducted throughout the year (January through December) to document both nesting and non-nesting populations and distribution to determine the species' abundance, distribution, and nesting success (U.S. Navy 2011e). In 2011, 52 nests were documented at NASNI (40 on the beach and 12 on the airfield). Of those 52 nests, an estimated 59 chicks fledged. Fifteen Snowy Plover nests containing 47 eggs were collected from the airfield and beach at NASNI by Navy personnel, with concurrence from USFWS, and taken to Project Wildlife to be incubated until hatched and then the chicks to be raised in captivity, and subsequently released (see **Figure D-4**)(U.S. Navy 2011e).

In 2011, 62 nests were documented at NAB (61 on the oceanside and 1 on the Delta Beach South). Restriction of the beaches to primarily training use (rather than recreational access), predator control efforts, as well as nest buffers and training lane restrictions help to maintain these numbers (see **Figure D-5**)(U.S. Navy 2011e). Snowy Plovers are observed yearly during migration and winter at NAB. Winter roosting flocks are observed regularly at NAB with the largest flocks found on the Red and Orange training lanes.

Surveys of the nesting activity of the Western Snowy Plover are conducted throughout the year (January through December) to document both nesting and non - nesting populations and distribution to determine the species' abundance, distribution, and nesting success (U.S. Navy 2008f). In 2011, 25 nests were documented at SSTC-S beaches. Of those 25 nests, an estimated 5 chicks fledged. Restriction of the

beaches to primarily training use (rather than recreational access), predator control efforts, as well as nest buffers and training lane restrictions help to maintain these numbers (U.S. Navy 2011e). Snowy Plovers are observed yearly during migration and winter at SSTC-S but large wintering flocks are not common here likely due to recreational disturbance (Shepherd pers. comm.).

Change in Distribution and Status

Records of Western Snowy Plover use of Coronado and Silver Strand beaches include specimens currently housed at San Diego Natural History Museum and the Los Angeles County Museum. As of 2009 the Western Snowy Plover nest distribution on NBC (NASNI, NAB Coronado, SSTC-N and SSTC-S) reflects the relative infrequency of recreational use on military training beaches and the footprint of baseline training activities. In areas where appropriate physical conditions exist, plovers in the action area successfully reproduce in proximity to occasional disturbances (primarily military training) when the area immediately surrounding the nest site has been protected. Since 1992 nest totals on NBC have been steadily increasing, since 2000 the lowest number of nests recorded was in 2007 (U.S. Navy 2010e).

Relevant Biological Opinions

BOs that discuss Western Snowy Plover Management at NBC include: 2003 BO issued for the Military Training Operations on the Silver Strand and Naval Air Station North Island and Associated Management Strategies for the California Least Tern and Western Snowy Plover during the 2003 breeding Season (FWS-SDG-3452.1); the 2005 BO on NASNI Ongoing Operations addressed Bird/Animal airstrike hazards on the runway, as well as recreational and military training use of the southern NASNI beaches (FWS-SDG-3908.3 2005); the 2005 Navy Lodge Expansion (BO FWS-SDG-2908.5 20 July 2005) addressed the expansion of the Navy Lodge and its potential effect on Western Snowy Plover that nest on adjacent beaches; the 2005 Amendment to the April 1, 2005 BO on the Navy's proposed and ongoing operations (FWS-SDG-3908.3); the 2005 Amendment to endangered Species Consultation and Draft Biological opinion on Military Training Operations during 2005 and 2006 Breeding Seasons at Naval Amphibious Base, Coronado and Naval Radio Receiving Facility, Imperial Beach (FWS-SDG-3452.3); the 2010 Biological Opinion on the U.S. Navy's Silver Strand Training Complex Operations (FWS-SDG-08B0503-09F0517) Among other requirements, the BOs required (1) continued marking for 30-meter diameter buffers and monitoring; (2) avoidance of staked areas when beach raking; (3) setting aside of 14.9 acres of suitable (and historically used) plover habitat as off-limits to foot traffic, vehicle traffic, beach raking, and pets during the Snowy Plover breeding season (4) at NASNI placement of signage and distribution of educational materials to Navy Lodge patrons, employees and lifeguards. For a complete list of Terms and Conditions and Conservation Measures see **Appendix I**.

Critical Habitat

Critical habitat was designated for Western Snowy Plover; the final rule was published on June 19, 2012 and includes approximately 24, 527 acres of critical habitat in Washington, Oregon and California. Forty-seven units totaling 16, 337 acres were designated in California. **Figure D-4** shows designated critical habitat in proximity to NBC.

There is no critical habitat for any of the listed species in NBC per section 4(a)(3)(B)(i) of the Sikes Act. This is, in part, due to Navy environmental planning through INRMPS.

Effectiveness of Projects on Species and Habitat

Because NBC focuses on an ecosystem based approach to natural resources management, many projects have the potential to provide both direct and indirect benefits to Western Snowy Plover and their habitat. See **Table D-7** and **Appendix C** for a list of all INRMP projects, schedules, and implementation table.

Table D-7. Results of Past Nest Surveys of Western Snowy Plover at NBC

Year	Fledgling Estimate*	Nest Total	Source	Installation
1992	NA	11	U.S. Navy 2010e	NASNI, NAB Coronado and SSTC-N, and SSTC-S
1993	NA	12	U.S. Navy 2010e	NASNI, NAB Coronado and SSTC-N, and SSTC-S
1994	NA	16	U.S. Navy 2010e	NASNI, NAB Coronado and SSTC-N, and SSTC-S
1995	NA	22	U.S. Navy 2010e	NASNI, NAB Coronado and SSTC-N, and SSTC-S
1996	NA	33	U.S. Navy 2010e	NASNI, NAB Coronado and SSTC-N, and SSTC-S
1997	NA	43	U.S. Navy 2010e	NASNI, NAB Coronado and SSTC-N, and SSTC-S
1998	NA	34	U.S. Navy 2010e	NASNI, NAB Coronado and SSTC-N, and SSTC-S
1999	NA	30	U.S. Navy 2010e	NASNI, NAB Coronado and SSTC-N, and SSTC-S
2000	38	49	U.S. Navy 2010e	NASNI, NAB Coronado and SSTC-N, and SSTC-S
2001	32	49	U.S. Navy 2010e	NASNI, NAB Coronado and SSTC-N, and SSTC-S
2002	38	98	U.S. Navy 2010e	NASNI, NAB Coronado and SSTC-N, and SSTC-S
2003	60	101	U.S. Navy 2010e	NASNI, NAB Coronado and SSTC-N, and SSTC-S
2004	33	116	U.S. Navy 2010e	NASNI, NAB Coronado and SSTC-N, and SSTC-S
2005	34	80	U.S. Navy 2010e	NASNI, NAB Coronado and SSTC-N, and SSTC-S
2006	44	73	U.S. Navy 2010e	NASNI, NAB Coronado and SSTC-N, and SSTC-S
2007	24	42	U.S. Navy 2010e	NASNI, NAB Coronado and SSTC-N, and SSTC-S
2008	47	91	U.S. Navy 2010e	NASNI, NAB Coronado and SSTC-N, and SSTC-S
2009	62	134	U.S. Navy 2010e	NASNI, NAB Coronado and SSTC-N, and SSTC-S
2010	50	108	U.S. Navy 2011e	NASNI, NAB Coronado and SSTC-N, and SSTC-S
2011	62	139	U.S. Navy 2011e	NASNI, NAB Coronado and SSTC-N, and SSTC-S

Southwestern Willow Flycatcher (*Empidonax traillii extimus*)

Related INRMP Sections

7.2.5 & 9.2.5	Special Status Species (Federally Listed and Other Special Status Species)
7.2.5.1 & 9.2.5.1	Federally Listed Species
7.2.5.3 & 9.2.5.3	ESA Consultation and Mission Requirements

Projects Applicable to Least Bell's Vireo

Project	Description	EPR Number	Section in INRMP
NOLF Cowbird Trapping	Implement measures to reduce parasitism by Brown-headed Cowbirds.	00246NR028	7.2.5.1
Least Bell's Vireo and Southwestern Willow Flycatcher Surveys	Conduct Least Bell's vireo surveys at least once every three years using USFWS protocol. Include nest and territory monitoring, if possible.	00246NR035	7.2.5.1

Current Distribution and Status

Regional distribution and status information is presented in **Appendix G**. Surveys performed in 2009 failed to detect any Southwestern Willow Flycatchers at NOFL IB. Habitat does exist at the site to support pairs of this species: black willow stands in the southeastern corner and arroyo willow stands near watercourses. One Willow Flycatcher, likely the northern California subspecies (*E.t. brewsteri*), was observed during the March 2009 survey indicates that appropriate habitat exists (U.S. Navy 2011g).

Focused surveys for the Southwestern Willow Flycatcher were conducted in 2006 on RTSWS. Suitable nesting habitat was documented on RTSWS and common tree and shrub species included willows (*Salix* spp.), seep willow (*Baccharis* spp.), cottonwood (*Populous* spp.) and tamarisk (*Tamarix ramosissima*). The drainages surveyed consisted of southern willow scrub, southern coast live oak riparian forest, and southern cottonwood-willow riparian forest, and was determined to be marginal habitat for this species. No Southwestern Willow Flycatchers were documented during these surveys. Four Willow Flycatchers belonging to another subspecies (probably *E.t. brewsteri*) were detected during the three sets of Southwestern Willow Flycatcher surveys conducted in 2006. Further investigation into the presence/absence of the Southwestern Willow Flycatcher at RTSWS is needed (U.S. Navy 2007).

Change in Distribution and Status

More data is needed to analyze changes in distribution and status.

Relevant Biological Opinions

Not applicable.

Critical Habitat

Critical habitat was designated for Southwestern Willow Flycatcher on October 19, 2005, and included approximately 120,824 acres (48,896 hectares) of habitat in Apache, Cochise, Gila, Graham, Greenlee, Maricopa, Mohave, Pinal, Pima, and Yavapai counties, Arizona; and Kern, Santa Barbara, San Bernardino, and San Diego counties, California (70 FR 60885–61009).

Effectiveness of Projects on Species and Habitat

Because NBC focuses on an ecosystem based approach to natural resources management, many projects have the potential to provide both direct and indirect benefits to Southwestern Willow Flycatcher's and their habitat. See the related projects table and **Appendix C** for a list of all INRMP projects, schedules, and implementation table.

California Least Tern (*Sternula antillarum browni*)

Related INRMP Sections

4.2.5, 5.2.5, 6.2.5 & 7.2.5	Special Status Species (Federally Listed and Other Special Status Species)
4.2.5.1, 5.2.5.1, 6.2.5.1, & 7.2.5.1	Federally Listed Species
4.2.5.3, 5.2.5.3, 6.2.5.3, & 7.2.5.3	ESA Consultation and Mission Requirements

Projects Applicable to California Least Tern

Project	Description	EPR Number	Section in INRMP
California Least Tern and Western Snowy Plover Monitoring	Conduct California Least Tern and Western Snowy Plover monitoring, nest monitoring on an annual basis.	00246J100G	4.2.5.1
California Least Tern and Western Snowy Plover Predator Control	Implement predator control program in conjunction with California Least Tern and Western Snowy Plover projects.	00246J100H	4.2.3.4 4.2.4.7
INRMP Implementation	Develop and distribute materials to educate workforce and beach users to eliminate dog/California Least Tern interactions.	00246NR003	5.2.5.1
Dune and Strand Restoration to Support Endangered California Least Terns and Western Snowy Plovers	Enhance California Least Tern and Western Snowy Plover habitat through revegetation projects.	00246NR024	4.2.5.1
NAB EIS Mitigation - Terrestrial	Control invasive species to provide sufficient open areas for California Least Tern habitat.	00246NR031	5.2.5.1
North/South Delta California Least Tern Mitigation Site Sand Enhancement	North/South Delta California Least Tern Mitigation Site Sand Enhancement. Add sand to Delta beaches to enhance habitat for nesting terns and plovers.	00246NR037	4.2.5.1

Project	Description	EPR Number	Section in INRMP
Restoration and North and South Delta Vegetation Management Plan for the Delta Beaches (Dune Restoration) and Implementation	Develop and implement a comprehensive management plan for vegetation at the Delta Beaches and SSTC training lanes (Long-term Enhancement Plan). Plan will identify vegetation goals for different areas and develop strategies to attain those goals, including substrate enhancement, invasive non-native plant control, planting and/or seeding, maintenance and monitoring.	00246NR113 and 00246NR031	6.2.5.1
Interpretive Panels and Brochures	Educate workforce and beach users on California Least Tern nesting colony presence and breeding season restrictions (e.g. encourage Navy workforce to coordinate with the natural resources office on all beach projects).	In-house	4.2.5.1

Current Distribution and Status

Regional distribution and status information is presented in **Appendix G**. Efforts to monitor the species, control predators, protect habitat, and create colony sites have resulted in population increases. California Least Tern populations are monitored yearly under an on-going Navy-funded and managed monitoring program on U.S. Navy training facilities, currently implemented by the San Diego Zoological Society.

NBC has four active Least Tern nesting sites: the MAT Site, Delta Beach North, Delta Beach South, and NAB Coronado ocean/SSTC-N ocean. The MAT, an area of approximately 21.6 acres enclosed by chain-link fencing, is in a portion of the central airfield. Surveys of the nesting activity of the California Least Tern were conducted from April to mid-September 2011 on the airfield MAT site at NASNI to determine the species' nesting success at this site. A total of 83 nests were observed within the MAT site in 2011. An estimated 82 pairs of California Least Terns nested within the MAT site. Within the 83 nests, a total of 152 eggs were documented. Of those 152 eggs, an estimated 25 chicks fledged. Of the 25 estimated fledglings, an estimated 21 fledglings survived and left the site (see **Figure D-4**)(U.S. Navy 2011e).

In 1994, California Least Terns began nesting on oceanside beaches where military training takes place. Protection had to be established to protect the terns, and this began the development and evolution of a series of adaptive set of measures, with each year bringing ever-increasing tern numbers and a new set of circumstances. As nesting on oceanside training beaches continued to increase, the Navy adapted and improved their approach as a result of information gained from monitoring and experimentation.

Surveys of the nesting activity of the California Least Tern were conducted from April to mid-September 2011 at NAB Coronado and SSTC-N including the Delta Beaches to determine the species' nesting success at these sites. A total of 1063 nests were observed at these sites in 2011 (see **Figure D-5**). An estimated 973 pairs of California Least Terns nested at these sites. Within the 674 nests, a total of 1,179 eggs were documented. Of those 1,179 eggs, an estimated 62 chicks fledged. Of the 62 estimated fledglings, an estimated 43 fledglings survived and left the site (U.S. Navy 2011e).

Currently California Least Terns do not nest on SSTC-S. Least Terns are regularly observed foraging along the shoreline and over the salt marsh habitat on the bay side of SSTC-S (Shepherd pers. comm. 2012).

Currently California Least Terns do not nest at NOLF IB. California Least Terns were noted at NOFL IB only during the sensitive marsh bird surveys in 2009. They breed on sandy beaches at the mouth of the nearby Tijuana River and are present from April to August (U.S. Navy 2011e).

Change in Distribution and Status

The number of least nests observed on NBC has increased significantly in recent years. The number of Least Tern nests recorded has increased from 269 nests in 1995 to 1146 nests in 2011 (**Table D-8**). The increase in the number of Least Tern nests observed is likely a result of the general resurgence in the Least Tern population, the proximity to ocean and bay foraging resources, the suitability of the beach habitat for Least Tern nesting, predator management, and successful nest avoidance efforts of the Navy. The number of Least Tern nests observed may be greater than the number of pairs using the beaches because some pairs initiate a second nest after a nest failure (U.S. Navy 2011e).

Relevant Biological Opinions

USFWS BOs that discuss Least Tern management at NBC include: the 1980 BO regarding repairs on the helicopter MAT area at NASNI (1-1-80-F-18), the Formal Endangered Species Consultation (1-1-82-F-123) on the MAT Repair/Lamps MKIII Project at NASNI 1983, 2003 BO issued for the Military Training Operations on the Silver Strand and Naval Air Station North Island and Associated Management Strategies for the California Least Tern and Western Snowy Plover during the 2003 breeding Season (FWS-SDG-3452.1); the 2005 BO on NASNI Ongoing Operations addressed Bird/Animal airstrike hazards on the runway, as well as recreational and military training use of the southern NASNI beaches (FWS-SDG-3908.3 2005); the 2005 Amendment to the April 1, 2005 BO on the Navy's proposed and ongoing operations (FWS-SDG-3908.3); the 2005 Amendment to endangered Species Consultation and Draft Biological opinion on Military Training Operations during 2005 and 2006 Breeding Seasons at Naval Amphibious Base, Coronado and Naval Radio Receiving Facility, Imperial Beach (FWS-SDG-3452.3); and the 2010 Biological Opinion on the U.S. Navy's Silver Strand Training Complex Operations (FWS-SDG-08B0503-09F0517). Among other requirements, the BOs require (1) control of mammalian and avian predators of the Least Tern, (2) nesting substrate enhancement, (3) nest relocation if necessary, and (4) Least Tern nest marking with tongue depressors or small wooden stakes. For a complete list of Terms and Conditions and Conservation Measures see Appendix I."

Critical Habitat

No critical habitat rules have been published for the California Least Tern.

Effectiveness of Projects on Species and Habitat

Because NBC focuses on an ecosystem based approach to natural resources management, many projects have the potential to provide both direct and indirect benefits to California Least Tern and their habitat. See **Table D-8** and **Appendix C** for a list of all INRMP projects, schedules, and implementation table.

Table D-8. Results of Past Nest Surveys for California Least Tern at NBC

Year	Fledgling Estimate	Nest Total	Comments	Installation
1995	NA	269	NA	NASNI, NAB Coronado and SSTC-N, and SSTC-S
1996	NA	382	NA	NASNI, NAB Coronado and SSTC-N, and SSTC-S
1997	NA	492	NA	NASNI, NAB Coronado and SSTC-N, and SSTC-S
1998	NA	676	NA	NASNI, NAB Coronado and SSTC-N, and SSTC-S
1999	75	804	NA	NASNI, NAB Coronado and SSTC-N, and SSTC-S
2000	405	763	NA	NASNI, NAB Coronado and SSTC-N, and SSTC-S
2001	358	927	NA	NASNI, NAB Coronado and SSTC-N, and SSTC-S
2002	63	825	NA	NASNI, NAB Coronado and SSTC-N, and SSTC-S
2003	210	1299	NA	NASNI, NAB Coronado and SSTC-N, and SSTC-S
2004	42	1207	NA	NASNI, NAB Coronado and SSTC-N, and SSTC-S
2005	145	1270	NA	NASNI, NAB Coronado and SSTC-N, and SSTC-S
2006	206	1605	NA	NASNI, NAB Coronado and SSTC-N, and SSTC-S
2007	230	1285	NA	NASNI, NAB Coronado and SSTC-N, and SSTC-S
2008	155	1670	NA	NASNI, NAB Coronado and SSTC-N, and SSTC-S
2009	72	1866	NA	NASNI, NAB Coronado and SSTC-N, and SSTC-S
2010	67	1199	67 is # of fledges estimated leaving site. 245 fledges total but 178 were found dead.	NASNI, NAB Coronado and SSTC-N, and SSTC-S
2011	147	1146	NA	NASNI, NAB Coronado and SSTC-N, and SSTC-S

Source: U.S. Navy 2011e.

Light-footed Clapper Rail (*Rallus longirostris levipes*)

Related INRMP Sections

5.2.5, 6.2.5, & 7.2.5	Special Status Species (Federally Listed and Other Special Status Species)
4.2.5.1 & 6.2.5.1, & 7.2.5.1	Federally Listed Species
4.2.5.3 & 6.2.5.3, & 7.2.5.3	ESA Consultation and Mission Requirements

Projects Applicable to Light-footed Clapper Rail

Project	Description	EPR Number	Section in INRMP
Light-footed Clapper Rail Surveys	Coordinate with USFWS and CDFW to ensure marsh habitat within SSTC-S and NOLFIB property within USFWS refuge is being monitoring for Light-footed Clapper Rail on an annual basis. Implement additional monitoring if necessary.	00246NR026	7.2.5.1
Invasive Plant Control in Support of Listed and Sensitive Species	When necessary, perform invasive species control in areas where Light-footed Clapper Rail habitat is known to exist.	00246NR101	5.2.5.1 6.2.5.1 7.2.5.1

Current Distribution and Status

Regional distribution and status information is presented in **Appendix G**. Narrow intertidal flats occur along the margins of tidal channels of the salt marshes of south San Diego Bay such as at the Delta beaches, which may be used for feeding areas by the Light-footed Clapper Rail. Light-footed Clapper Rails were observed on the Delta Beach marsh on SSTC-N in the past. No nesting activity by Light-footed Clapper Rails has been documented at NAB Coronado or SSTC-N (U.S. Navy. 2010d).

The most recent Navy surveys at SSTC-S were conducted in 2004. A single adult Light-footed Clapper Rail with a downy chick was detected in the pickleweed approximately 40 yards from the inland edge of the marsh below the restored upland berm (U.S. Navy 2010e).

Nine Light-footed Clapper Rails were detected on NOLF IB during the 2002 natural resources inventory in the northwestern section of the Tijuana Estuary (see **Figure D-7**): two during spring (30 March 2002), two during the breeding season (22-24 April and 31 May 2002), and five during the fall (23-24 October 2002) (U.S. Navy 2006d).

Twenty-nine pairs of Light-footed Clapper Rails were detected on NOLF IB in 2005 during a Navy survey effort, including one pair at the river's edge near the mouth of the Tijuana River (off of the southwest corner of the airfield)(Hoffman 2007). No nests were found during the 16 April 2005 nest search. During focal surveys for secretive marsh birds in 2009, a total of 61 clapper rails were recorded

during six surveys conducted in May and June. A third of these were detected at one of the 13 stations, which was located closest to its preferred cordgrass habitat. Light-footed clapper rails were all observed aurally during general avian surveys in the estuary west of the airfield boundary fences.

Change in Distribution and Status

Light-footed Clapper Rail populations are assessed annually at NOLF IB and SSTC-S since 1980 as part of the state's annual census of marshes. NOLF IB has supported between 12 percent and 64 percent of the population in the Tijuana Estuary since annual censuses began in 1980 (Hoffman 2007). The annual number of clapper rails in the Tijuana Estuary has ranged from 60 and 87 individuals over the last decade. The Tijuana Estuary population has thrived under a management regime that includes maintaining tidal flow in the marsh and restricting human activity. From 1980 to 1993, SSTC-S supported at least one pair of clapper rails and in 2005 a breeding pair of Light-footed Clapper Rails was documented on SSTC-S (Hoffman 2007). However, the appearance of this species on SSTC-S during the annual census has been sporadic since 1993.

Relevant Biological Opinions

Currently there are no Biological Opinions for NBC that address Light-footed Clapper Rail.

Critical Habitat

No critical habitat rules have been published for the Light-footed Clapper Rail.

Effectiveness of Projects on Species and Habitat

Because NBC focuses on an ecosystem based approach to natural resources management, many projects have the potential to provide both direct and indirect benefits to Light-footed Clapper Rails and their habitat. See **Table D-9** and **Appendix C** for a list of all INRMP projects, schedules, and implementation table.

Table D-9. Results of Past Surveys for Light-footed Clapper Rail at Naval Base Coronado

Year	Total # of pairs	Comments	Installation
1980	3	NA	NOLF IB
1981	7	NA	NOLF IB
1982	8	NA	NOLF IB
1983	7	NA	NOLF IB
1984	9	NA	NOLF IB
1985	0	NA	NOLF IB
1986	1	NA	NOLF IB
1987	4	NA	NOLF IB
1988	9	NA	NOLF IB
1989	7	NA	NOLF IB
1990	6	NA	NOLF IB
1991	16	NA	NOLF IB
1992	29	NA	NOLF IB
1993	24	NA	NOLF IB
1994	22	NA	NOLF IB
1995	15	NA	NOLF IB
1996	NA	No map.	NOLF IB
1997	33	NA	NOLF IB
1998	24	NA	NOLF IB
1999	22	NA	NOLF IB
2000	21	NA	NOLF IB
2001	18	NA	NOLF IB
2002	21	NA	NOLF IB
2003	25	NA	NOLF IB
2004	23	NA	NOLF IB
2005	29	NA	NOLF IB

Source: Hoffman 2007.

Least Bell's Vireo (*Vireo belli pusillis*)

Related INRMP Sections

7.2.5 & 9.2.5	Special Status Species (Federally Listed and Other Special Status Species)
7.2.5.1 & 9.2.5.1	Federally Listed Species
7.2.5.3 & 9.2.5.3	ESA Consultation and Mission Requirements

Projects Applicable to Least Bell's Vireo

Project	Description	EPR Number	Section in INRMP
NOLF Cowbird Trapping	Implement measures to reduce parasitism by Brown-headed Cowbirds.	00246NR028	7.2.5.1
Least Bell's Vireo and Southwestern Willow Flycatcher Surveys	Conduct Least Bell's vireo surveys at least once every three years using USFWS protocol. Include nest and territory monitoring, if possible.	00246NR035	7.2.5.1

Current Distribution and Status

Regional distribution and status information is presented in **Appendix G**. Five Least Bell's Vireos were documented in the willow riparian area on NOLF IB during the breeding season (i.e., late-April to early-June) during the 2002 natural resources inventory (U.S. Navy 2006d). During focal surveys in 2009, a total of 23 pairs or territorial males were recorded along with an additional seven transient males. Of these 23 pairs, 15 were confirmed nesting, either by adults carrying nesting material or associating with fledglings or by observing nests with eggs (see **Figure D-7**). Vireos were found in riparian vegetation and substantial willow stands, primarily within the eastern and southeastern portion of NOLF IB and were also abundant in areas characterized by dense stands of arroyo willow and arrow willow/mulefat (U.S. Navy 2011g).

Focused surveys for the Least Bell's Vireo were conducted in 2006 on RTSWS. This species is an obligate riparian breeder and would be expected to occur in the cottonwood-willow riparian forest on RTSWS. No vireos were detected during the focused survey for the Least Bell's Vireo and the report concluded that the riparian habitat on the site is only marginally suitable for the vireo due to the lack of a well-developed understory (U.S. Navy 2007).

Change in Distribution and Status

More data is needed to analyze changes in distribution and status.

Relevant Biological Opinions

Not applicable.

Critical Habitat

Critical habitat was designated for Least Bell's Vireo on February 2, 1994, and included approximately 15,200 hectares (38,000 acres) of habitat in Santa Barbara, Ventura, Los Angeles, San Bernardino, Riverside, and San Diego counties (72 FR 72009–72213). **Figure D-5** shows designated critical habitat in proximity to NBC.

There is no critical habitat for any of the listed species in NBC. This is, in part, due to Navy environmental planning through INRMPs (U.S. Navy 2008f). The National Defense Authorization Act of Fiscal Year 2004, Public Law 108-136, amended Section 4 of the ESA by exempting military lands from critical habitat designation that are subject to an INRMP, if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation (U.S. Navy 2008f).

Effectiveness of Projects on Species and Habitat

Because NBC focuses on an ecosystem based approach to natural resources management, many projects have the potential to provide both direct and indirect benefits to Least Bell's Vireo and their habitat. See **Table D-10** and **Appendix C** for a list of all INRMP projects, schedules, and implementation table.

Table D-10. Results of Past Surveys for Least Bell's Vireo on Naval Base Coronado

Year	Total # of pairs	Comments	Source	Installation
2006	0	NA	U.S. Navy 2007	RTSWS
2009	23	Pairs or territorial males were recorded along with an additional seven transient males	U.S. Navy 2011g	NOLF IB

Stephens' Kangaroo Rat (*Dipodomys stephensi*)

Related INRMP Sections

9.2.5	Special Status Species (Federally Listed and Other Special Status Species)
9.2.5.1	Federally Listed Species
9.2.5.3	ESA Consultation and Mission Requirements

Projects Applicable to Stephens' Kangaroo Rat

Project	Description	EPR Number	Section in INRMP
Stephens' Kangaroo Rat Monitoring	Monitor population of Stephens' kangaroo rat at least every three years using USFWS protocol.	00246NR042, 00246WSF02	9.2.5.1
	Develop and distribute materials to educate the RTSWS personnel on the Stephens' kangaroo rat. Establish nighttime speed limit of 15 miles per hour in Stephen's kangaroo rat occupied areas and install signs informing drivers of species' presence.	In-house	9.2.5.1

Current Distribution and Status

Focused surveys for the federally listed Stephens' kangaroo rat were first performed in 2006 as part of a two-year Biological Resources Survey at RTSWS. A USFWS permitted biologist conducted live trapping for a total of 978 survey trap-nights, capturing a total of 25 Stephen's kangaroo rats. 347 acres of habitat were mapped and rated according to density. In 2010-2011, USGS designed and carried out a multi-tiered, habitat-based, adaptive monitoring program designed to track yearly trends in the total area occupied by Stephens' kangaroo rat on RTSWS. The monitoring areas were divided into two sampling strata based on historic occupancy: 249 hectare (615 acres) of historically occupied Stephen's kangaroo rat habitat. Surveys included a combination of searching for kangaroo rat sign and live-trapping (Brehme et al. 2011). A total of 16 individuals were trapped in 2010 and 54 individuals were trapped in 2011 (see **Figure D-8**).

Change in Distribution and Status

More data is needed to analyze changes in distribution and status.

Relevant Biological Opinions

The 2009 Biological Opinion on the U.S. Navy's proposed expansion and realignment of the RTSWS (FWS-SDG-09B0277-09F0806) discusses multiple conservation measures for minimizing the effects of the action on the Stephens' kangaroo rat. Among the requirements listed in this BO are: (1) road kill surveys during the most active time of the year for the Stephens' kangaroo rat and immediately following

training activities.; (2) training of SERE instructors to be knowledgeable about the fauna of the action area and to be able to identify the Stephens' kangaroo rat; (3) development of educational material with information on identifying the Stephens' kangaroo rat, how to differentiate between similar non-listed species and a synopsis of the training area rules and restrictions to avoid and minimize adverse impacts; and (4) daily removal of all trash that may attract predators. For a complete list of Terms and Conditions and Conservation measures, see **Appendix I**.

Critical Habitat

No critical habitat rules have been published for the Stephens' kangaroo rat.

Effectiveness of Projects on Species and Habitat

Because NBC focuses on an ecosystem based approach to natural resources management, many projects have the potential to provide both direct and indirect benefits to Stephens' kangaroo rat and their habitat. See the related projects table and **Appendix C** for a list of all INRMP projects, schedules, and implementation table.

Table D-11. Results of Targeted Stephens' Kangaroo Rat Surveys at RTSWS in 2006

Individuals captured	Confirmed occupied acreage	Likely occupied acreage
55	290.8	347.2

Source: U.S. Navy 2011, Final Environmental Assessment for Expansion and Training at RTSWS, FONSI signed 04 June 2010.

Table D-12. Results of Targeted Stephens' Kangaroo Rat Surveys at RTSWS in 2010-2011

	Plots surveyed	Plots trapped	Total individuals captured
2010	40	13 ¹	16
2011	40	31	54

Source: U.S. Navy 2011, Final Environmental Assessment for Expansion and Training at RTSWS, FONSI signed 04 June 2010.

Note: ¹Live-trapping in 2010 was not completed due to access restrictions.

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