



NAVWPNSTA Seal Beach Det Fallbrook Many Landscapes

## NAVAL WEAPONS STATION SEAL BEACH DETACHMENT FALLBROOK NATURAL RESOURCES CONSERVATION – SMALL INSTALLATION 2020

**Naval Weapons Station Seal Beach Detachment Fallbrook** (Det. Fallbrook) is located approximately 14.4 kilometers inland in San Diego County, California. The 3,582-hectare base shares three boundaries with Marine Corps Base Camp Pendleton and one with the community of Fallbrook. Det. Fallbrook serves as a vital strategic munitions supply point for the Pacific Fleet and the U.S. Marine Corps. The current on-site population includes 212 civilians, 24 contractors, and 14 active duty military.

Approximately 90 percent of the base is undeveloped natural landscape and, due to safety and security buffer zones, restricted to public access and recreation activities. The sprawling metropolitan areas of San Diego to the south and Los Angeles to the north have encroached upon the boundaries of local military installations and nearby open-space preserves, creating ecological islands within a sea of development. Det. Fallbrook is widely recognized as an important partner in the conservation of regionally significant natural resources.

**THE MISSION:** Det. Fallbrook is the primary West Coast supply point for Navy amphibious warfare ships and acts together with Naval Weapons Station Seal Beach to provide Navy ordnance storage, maintenance, and distribution for a majority of the U.S. Pacific Fleet. The base also provides storage and distribution of Marine Corps munitions and air-launched missile maintenance services for several major DoD weapons programs.

### PROGRAM MANAGEMENT

#### *RESOURCE CONSERVATION SUPPORTS MISSION READINESS*

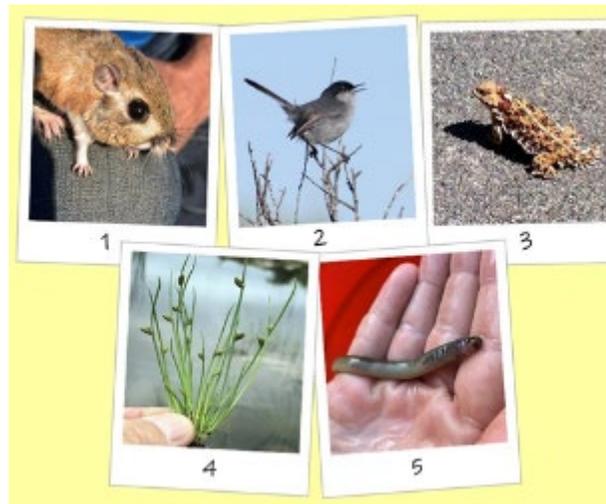
The Natural Resources Conservation (NRC) program supports the mission through integration of mission drivers into natural resources planning, programmatic agreements with the United States Fish and Wildlife Service (USFWS), streamlined project reviews, and individually tailored solutions as necessary. The NRC program’s success hinges on early integration in planning cycles, close collaboration with mission stakeholders, excellent regulatory relationships, and proactive resource management. The base’s wildlands, while generally compatible with the low impact mission, present unique challenges. The proximity of native habitats and threatened and endangered species, coupled with surrounding development pressures, intensify the need for impact avoidance and minimization and underscore the importance of proactive management.

The fully compliant Integrated Natural Resources Management Plan (INRMP), which was signed in 2016 and is on schedule for the required update in 2021, predicates natural resources management on multi-species and ecosystem-based planning within the framework of mission support and regulatory compliance. Full implementation of the INRMP has maintained exemption from the regulatory burden of designated Critical Habitat, which once encumbered 98 percent of the installation.

- OVERARCHING INRMP GOALS**
- Ensure mission sustainability and environmental compliance
  - Manage, protect, and enhance sensitive populations and resources
  - Partner with others to realize management goals and inspire innovative solutions
  - Foster a stewardship ethic through education, outreach, and awareness

### REGIONALLY SIGNIFICANT NATURAL RESOURCES

Part of the California Floristic Province, a globally recognized biodiversity hotspot, Det. Fallbrook includes approximately 571 hectares of grassland, 2,446 hectares of coastal sage scrub, and 183 hectares of wetland and riparian resources. In addition to providing habitat for seven federally listed threatened and endangered species, the base serves as breeding ground for migratory birds, a wildlife corridor for native megafauna (e.g., mountain lions, bobcats, mule deer), and as a refugia for native flora and fauna subject to impacts elsewhere.



1. Endangered Stephens kangaroo rat
2. Threatened coastal California gnatcatcher
3. Coast horned Lizard, California Species of Special Concern
4. Native bulrush represents new plant record for San Diego County
5. Extirpated since 1940s, native Pacific Lamprey were rediscovered in the Santa Margarita River.

### ENVIRONMENTAL MANAGEMENT SYSTEM INTEGRATION

Det. Fallbrook achieves its mission support and environmental excellence through a fully integrated **Environmental Management System (EMS)** in conformance with ISO 14001 standards and OPNAV M-5090.1. The NRC program is facilitated by the plan-do-check-act process of EMS and the goal of continual improvement through self-assessments and open, continuous dialogue among resource trustees.

This approach is led by the Conservation Program Manager, who is also the Site Environmental Coordinator and reports to the Detachment Director as a member of the command's core team. INRMP implementation and the EMS process is further facilitated by an on-site natural resources specialist, and environmental compliance staff from the parent command.

A cornerstone of the EMS cycle is the annual NRC Metrics Meeting, which is attended by the USFWS, National Marine Fisheries Service (NMFS), and California Department of Fish and Wildlife (CDFW). Considered exemplary by Naval Facilities Engineering Command (NAVFAC) Headquarters, the base's Metrics presentations are posted on the Navy's Conservation Web site as a model for other installations. Embracing the spirit of collaboration, the full-day Metric's program presents the status of INRMP implementation, population statistics and resource assessments, and planned actions for the year ahead. NRC personnel are consistently rated in the Metrics responses by regulatory partners as providing "highly effective collaboration/cooperation."

### OUTSTANDING PROGRAM FEATURES

Three recurring themes make the NRC program at Det. Fallbrook excel:

- **Leadership in program management** – Under the guidance of the Conservation Program Manager, the INRMP is fully programmed to implement focused objectives, novel projects, and increased outreach while maintaining regulatory communication and compliance.
- **Mission integration and proactive impact assessments** –NRC program initiatives are designed to ensure no net loss to the military mission while improving compliance, mission flexibility, training opportunities, and environmental process efficiencies.
- **Teamwork through education, outreach, and engagement of the professional community** – A hallmark of the NRC program is successful partnering with individuals and organizations both internal and external to the installation.

### ACCOMPLISHMENTS

#### *REDUCING LIGHT POLLUTION WHILE ENHANCING MISSION*

**GOAL:** Reduce light pollution while achieving security and safety compliance and enhancing Mission

**MISSION CONTEXT:** To meet Chief of Naval Operations physical security requirements for ammunition and explosives handling and storage areas, the addition of nighttime lighting is required at two ordnance holding yards and a suspect cargo site. These lights are adjacent to endangered Stephens' kangaroo rat (SKR) and threatened coastal California gnatcatcher (CAGN) habitat. Artificial lighting instantly “urbanizes” a natural landscape and can cause significant deleterious effects on the environment, adversely affecting species at risk.

Excessive or poorly designed night lighting can also negatively affect the mission. Many legacy security lights are excessive in number, unshielded, brighter than necessary, and aimed out toward personnel. This not only increases energy consumption but creates disability glare and unsafe conditions, well-documented problems in the field of security lighting.

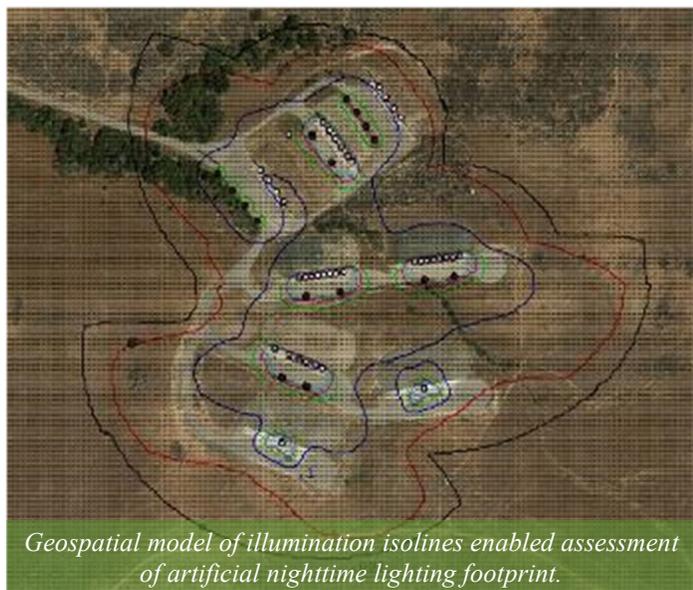
**PROJECT:** Collaborating with Facilities, Security, Ordnance, and Explosives Safety, the NRC program conducted a holistic assessment of artificial lighting at Det. Fallbrook, establishing baseline conditions, clarifying regulatory and mission drivers, and evaluating the efficacy of existing lighting. In 2018, the NRC program worked with Public Works to get all existing lighting fixtures on base mapped in GIS. Subsequent lighting analyses required acquisition of specialized engineering software to be used in GIS applications, classroom training for use of the software, and photometric modeling for assessment of mission compliance and potential environmental effects.



*Excessive and poorly designed lighting creates disability glare and wastes energy.*



*Dark sky compliant lighting reduces unnecessary light trespass while providing enhanced mission benefits.*



*Geospatial model of illumination isolines enabled assessment of artificial nighttime lighting footprint.*

**RESULTS:** A consensus plan was achieved in 2019 that brings legacy lighting fixtures into compliance with current Unified Facilities Criteria and International Dark Sky Association standards and reduces the existing lighting footprint (e.g. removing up to 51 lighting fixtures and refitting approximately 18 others with lower color temperatures and reduced light scatter). This proactive solution simultaneously benefits the mission and helps offset adverse effects from the addition of artificial lighting at the holding yards and suspect cargo area. In 2019, the NRC program completed a formal Endangered Species Act (ESA) consultation, paving the way for project implementation in 2020.

### *WILDLAND FIRE MANAGEMENT REINVIGORATED*

**GOAL:** Reinvigorate wildland fire preparedness to reduce mission risks, increase resiliency

**MISSION CONTEXT:** Wildland fires are designated the highest emergency management risk at Det. Fallbrook. In addition to high ignition rates on Camp Pendleton from live fire training, potential increases in wildland fire activity due to anthropogenic and climatic influences underscore the importance of wildland fire management. The 2014 Tomahawk Fire, which burned over 50 percent of the installation, caused millions of dollars in damage and exposed numerous risks and vulnerabilities to the mission. A central pillar of the NRC program is the Wildland Fire Management Plan (WFMP), which contributes directly to the base's emergency wildland fire readiness and supports the explosives safety mission.

**PROJECT:** The NRC program enhanced implementation of the WFMP and proactively contributed to pre-suppression preparedness with the following improvements:

- **Fire Atlas** – The NRC program manages and publishes a Fire Atlas to aid first responders and Incident Command personnel in avoidance and minimization of impacts to sensitive resources during an emergency response. Significant revisions to the Fire Atlas were made in 2018. It is now widely recognized by the command and external emergency responders as an invaluable tool during fire response. Planners also now use the Atlas for constraints identification. Both flip book and wall map versions are maintained at California Department of Forestry and Fire Protection (Cal Fire) and Emergency Operations Centers for Camp Pendleton, Naval Weapons Station Seal Beach, and the Navy's Regional Dispatch Center.
- **Grazing Infrastructure Improvements** – Since the inception of Det. Fallbrook, cattle grazing has been conducted primarily for the purpose of fuels reduction for fire management. The NRC program manages cattle grazing in a manner designed to reduce risks and optimize benefits to sensitive resources. In 2018-2019, the NRC program partnered with Facilities to invest nearly \$500,000 in the replacement of ageing cattle fencing and funded the installation of a well and water trough in a remote pasture area. Supplementary water sources improve cattle distribution throughout pastures and reduce livestock dependence on more fragile ephemeral surface waters, especially during drought conditions.



*The 2014 Tomahawk Fire epitomizes the challenges facing land managers in a highly urbanized interface.*



*Fence line contrasts before and after a wildland fire vividly illustrate the benefits of cattle grazing as a fire management tool.*





*Ryan Lockwood (top), Natural Resources Specialist, Det. Fallbrook, and Lisa Ordonez (bottom), NIWC, conduct maintenance of RAWS.*

- Remote Automated Weather Station (RAWS) – After funding and installing a RAWS tower, which is part of a coordinated weather monitoring system for the National Weather Service and the National Interagency Fire Center, the NRC program took up the mantle of annual RAWS maintenance for wildland fire and natural resources management, including maintaining sensor calibrations and software updates.

**RESULTS:** Maintaining the RAWS and updating the Fire Atlas help reduce risks to the mission associated with wildland fires through pre-suppression and suppression preparedness. Grazing infrastructure investments will contribute to the sustainability of this critical fuels management tool for decades. The NRC program now leads the WFMP conditions of readiness review during the Emergency Management Officer’s annual wildland fire preparedness meeting.

### *CLIMATE ADAPTATION: LEVERAGING LOCAL EXPERIENCE TO BENEFIT DoD*

**GOAL:** Leverage local experience to help develop DoD climate adaptation guide and training.

**MISSION CONTEXT:** Often referred to as a “threat multiplier” within the DoD, climate change is expected to greatly affect ecosystems and the ability of the land and resources to support the military mission.

**PROJECT:** The NRC program’s proactive work in the arena of climate change benefitted both the base on a local scale and the DoD through participation in the development of the first ever DoD Guide for incorporating climate adaptation into INRMPs. During the last INRMP update, the NRC program hosted a workshop of subject matter specialists to evaluate program goals through the lens of climate change projections. This process underscored the importance of engaging mission stakeholders early in planning horizons, accelerating resiliency objectives, seeking cost-sharing partnerships, and transforming impacts into opportunities.

A poignant example of how the NRC program leveraged climate adaptation insights into mission and stewardship benefits is with the Santa Margarita River Conjunctive Use Project. This water rights development project, led by Camp Pendleton, involved installation of a 24-inch bidirectional pipeline through the base in 2018 with proposed horizontal directional drilling under Fallbrook Creek. Because the creek had a highly eroded, incised channel, the NRC program allowed open trenching vice expensive drilling, followed by streambank restoration. Not only did this allowance save the military over a million dollars, but the temporary impacts were outweighed by improved hydrological resiliency.



*Localized flooding is expected to become more common with increased frequency of extreme precipitation events under projected climate scenarios.*



*Ryan Lockwood evaluates highly incised channel along Fallbrook Creek. Streambank restoration following the SMR CUP pipeline turns impacts into opportunities.*

Recognizing the NRC program’s initiatives in the arena of climate change, NAVFAC Headquarters recommended that the Conservation Program Manager serve as an installation representative on an advisory panel for a DoD Legacy funded project to develop a DoD Guide for incorporating climate considerations into INRMPs. Applying lessons learned from an installation perspective, the Conservation Program Manager contributed extensively to the DoD Guide and was provided coauthorship by the principal investigators from the National Wildlife Federation and Naval Information Warfare Center (NIWC).

To facilitate usage of the DoD Guide, the Conservation Program Manager also helped develop and present training workshops at two national venues: the 2018 Sustaining Military Readiness Conference and 2019 National Military Fish and Wildlife Association (NMFWA) annual meeting. Serving as Co-Chairperson of the NMFWA Climate Change Working Group (CCWG), the Conservation Program Manager further generated awareness by posting the Guide on the CCWG website and publishing the first ever CCWG newsletter, “Climate Corps,” to help foster inter-agency collaborations and share lessons learned about challenges and opportunities facing the military in the context of a changing climate.

**RESULTS:** The DoD climate adaptation guide for INRMPs was officially endorsed and released by the Assistant Secretary of Defense in June 2019 and is available on the DoD’s information exchange website: [www.denix.osd.mil/nr/DoDAdaptationGuide](http://www.denix.osd.mil/nr/DoDAdaptationGuide). At least two additional training workshops are planned for 2020.

### *STREAMLINED PROJECT APPROVALS, CONSULTATIONS*

Programmatic agreements with the USFWS, strategically designed monitoring surveys, and excellent regulatory relationships are leveraged to provide timely and quality mission support. By collaborating closely with Public Works and mission stakeholders, the NRC program is informed by mission drivers and anticipates future mission risks and project needs. Monitoring surveys for threatened and endangered species are strategically designed to simultaneously track population trends and enhance mission readiness. Existing data routinely support streamlined project reviews and ESA consultations.



*Contractors, Kylie Fischer (left) and Cindy Dunn (right), survey for the threatened coastal California gnatcatcher.*



*Det. Fallbrook Conservation Program Manager, Christy Wolf (right), looks on as Drew Stokes, San Diego Natural History Museum, reviews echolocation data from bat detectors. Such surveys simultaneously document species diversity and inform management of bats within magazines and mission buildings.*

Between 2018-2019, NRC program monitoring data facilitated approval of 30 projects without requiring time-consuming and expensive project-level surveys. Endangered Species Act consultations were completed with existing data for four additional projects at an estimated cumulative savings of \$205,000.

Built-in program agility also enables natural resource personnel to respond expeditiously to emergencies, reducing downtime of facilities and mission assets. Flexibility in contract scopes has allowed the NRC program to pivot on short notice and support site-specific surveys mid-season. In 2018-2019, the NRC program was able to provide rapid assessments and facilitate impact minimization during two emergency water main breaks and an urgent powerline replacement project.

### INNOVATIVE SOLUTIONS FOR NEW ARMY RESERVE CENTER

The Army Reserve Center (ARC) is a critical asset as it consolidates two regional training centers into a more secure and capable facility. With the ARC site immediately adjacent to habitat occupied by the CAGN, the NRC program's negotiations with the USFWS were instrumental in providing both short- and long-term solutions to keep construction and operational phases below a threshold of incidental take, avoiding an Environmental Assessment, and saving tens of thousands of dollars and months of time with protracted environmental reviews. Mitigation using a temporary visual and sound barrier along two sides of the construction site further relieved the Army from project-level biomonitoring and the risk of work stoppage should CAGN nest within the vicinity.

### REGIONAL COLLABORATION AND DATA SHARING

Recognizing that ecosystems are not defined by administrative boundaries and programs are enriched by sharing lessons learned, the NRC program emphasizes partnerships with neighboring landholders and regional governmental and non-governmental agencies to help reach INRMP goals and objectives.

Cross-boundary partnerships with adjacent landowners are especially critical for the control and eradication of invasive species. To minimize re-infestation, in 2018 and 2019, the NRC program collaborated with the County of San Diego's Department of Agriculture, Weights, and Measures as well as adjacent neighbors on the control of bridal broom among other invasive species. As an additional cost-saving measure, the NRC program annually partners on shared contracts with Camp Pendleton, to include aquatic exotics control and early detection surveys for several invasive plants and bark boring beetles.



*Jon Rebman (left) of the San Diego Natural History Museum surveys for rare plants and species of potential management concern, such as emerging invasives, under a cost saving shared Cooperative Agreement with Camp Pendleton.*



*Det. Fallbrook's stewardship of the endangered Stephens kangaroo rat was featured in a March 2019 article by USFWS. Such public relations opportunities spotlight the Navy's contributions to regional conservation. The positive USFWS relationship also facilitates a collaborative approach to problem solving in support of the mission.*

The NRC program often contributes to the regional conservation community through data sharing and sponsoring base access for surveys, research, and conservation initiatives of mutual benefit. In 2018-2019, such collaborations allowed the U.S. Geological Survey to capture and band endangered least Bell's vireos and survey for endangered arroyo toads and horned lizards, a California Species of Special Concern. The NRC program also hosted an invasive bark beetle risk assessment tour for Camp Pendleton, U.S. Forest Service, Cal Fire, University of California Cooperative Extension, and NIWC.

In 2019, the NRC program presented post-Tomahawk fire lessons learned and recovery monitoring at the NMFWA annual meeting and a regional Coastal Cactus Wren Symposium, sponsored in part by CDFW and The Nature Conservancy. Det. Fallbrook data were also presented as a case study on the role of invasive plants in post-fire succession of coastal sage scrub at the 2019 California Weed Science Society Conference.