

**Appendix D4**  
**Restore Seabirds to Scorpion and Orizaba Rocks**

#### **D4.1 GOALS AND NEXUS TO INJURY**

The goal of this 5-year action is to restore seabird habitat on Scorpion and Orizaba Rocks through exotic vegetation removal, installation of artificial nest boxes, and disturbance reduction. This action will directly benefit the following nesting or roosting species: the Cassin's auklet, ash storm-petrel, western gull, Xantus's murrelet, California brown pelican, and the double-crested cormorant.

Eggshell thinning and/or elevated levels of DDT have been documented in the eggs of Cassin's auklets, ash storm-petrels, western gulls, Xantus's murrelets, California brown pelicans, and double-crested cormorants in the Southern California Bight (SCB) (Kiff 1994, Fry 1994). Section 5.1.1 provides a detailed description of the seabird nexus to the injuries of the Montrose case.

#### **D4.2 BACKGROUND**

Scorpion and Orizaba Rocks, located off of Santa Cruz Island, are important nesting islands for burrow-nesting seabirds in California. Scorpion Rock is the largest of a four-rock complex. Both islets are under the jurisdiction of the National Park Service (NPS) and are within the Channel Islands National Park. Scorpion Rock supports a diverse community of breeding and roosting seabirds. Both ash storm-petrels and Cassin's auklets are confirmed breeders at the rock. Ash storm-petrels have been recorded to breed at Scorpion Rock since 1928 (Hunt et al. 1979). In 1992, the ash storm-petrel breeding population was estimated at 140 breeding birds (Carter et al. 1992). In 1992, the estimated breeding population of Cassin's auklets for the Scorpion Rock complex was 546 breeding birds (Carter et al. 1992). In 2000, nest boxes were installed on Scorpion Rock as part of a survey conducted by the U.S. Geological Survey on the foraging ecology of Cassin's auklets. In 2003, the boxes had a 90 percent attendance by Cassin's auklets (Martin, pers. comm., 2004). Xantus's murrelets have also been observed using the rock and are suspected breeders. In 1991, murrelet vocalizations were heard during the breeding season, although no nests or eggshell fragments were found (Carter et al. 1992). In addition, ash storm-petrels and Cassin's auklets are confirmed breeders at Orizaba Rock. The number of active ash storm-petrel nest sites on Orizaba Rock has been declining over the last ten years.

Other seabirds utilizing Scorpion and Orizaba Rocks include California brown pelicans, pelagic cormorants, and pigeon guillemots. California brown pelicans historically nested on Scorpion Rock (Anderson et al. 1975) but are currently not breeding there, most likely due to human disturbance. The waters around Scorpion and Orizaba Rocks are popular destinations for sea kayakers. Although Scorpion Rock is closed to the public, kayakers occasionally land on the island. This human disturbance results in the flushing of roosting seabirds (e.g., brown pelicans and cormorants) and harassment of nesting birds. Trespassers have also been documented opening the nest boxes on Scorpion Rock (Martin, pers. comm., 2004). Such disturbance can lead to the abandonment of nests and decreased productivity. Disturbance is also an issue for birds using Orizaba Rock.

### **D4.3 PROJECT DESCRIPTION AND METHODS**

This action proposes to enhance degraded habitat on Scorpion Rock through the removal of exotic plants and revegetation with native plants. Removal of exotic vegetation, primarily ice plant, will occur by mechanical removal without the use of herbicides. Native plants used to restore the area will include tree sunflower (*Coreopsis gigantea*), seaside wooly sunflower (*Eriophyllum staechadifolium*), island deer weed (*Lotus dendroideus*), one-sided blue grass (*Poa secunda*), meadow barley (*Hortium brachyantherum*), and maritime brome (*Bromus maritimus*). The use of matting or similar method to stabilize the soil may be needed in certain areas where erosion would normally prevent native plants from being established. Such measures will also limit soil erosion after the removal of invasive plants.

In addition, nest boxes will be installed on Scorpion Rock to provide a stable and secure nesting area for seabirds to improve their productivity and assist with monitoring efforts. Nest boxes will be installed on top of the rock for Cassin's auklets and Xantus's murrelets. Additional nest boxes will be placed around the top edge of the rock for ashy storm-petrels. Artificial nest sites will be insulated against the elements with dirt, sand, or rocks, depending on the topography.

Disturbance reduction efforts will also be implemented on Scorpion Rock to protect nesting and roosting seabirds from human disturbance. Signs will be posted around the rock and in the visitor center at Scorpion Ranch to inform the public that the rock is closed to protect nesting seabirds. In addition, the action will involve contributing funding for an additional NPS presence at the rock to enforce the closure and educate visitors.

Although no non-native vegetation removal or native vegetation planting will occur at Orizaba Rock, nest boxes will be deployed on the rock for ashy storm-petrels and Cassin's auklets. In addition to making the rock more attractive to petrels, the boxes will include a mechanism for measuring and confirming attendance at the site. The use of social attraction methods via playbacks will also be explored. Similar to Scorpion Rock, disturbance reduction efforts will include the posting of signs indicating that access to offshore rocks is prohibited. Light meters will also be deployed to gather information on the potential impact of high-intensity lights near these colonies.

The NPS will complete additional project planning, review, and environmental compliance before implementation of this action.

### **D4.4 ENVIRONMENTAL BENEFITS AND IMPACTS**

#### **D4.4.1 Biological**

##### *Benefits*

The elimination of invasive plants and the restoration of native plants will benefit burrow-nesting species by providing increased nesting habitat and stabilization of the rapidly eroding soil horizon on Scorpion Rock. By providing additional high-quality breeding habitat, the action seeks to increase the number of breeding seabirds, in particular Cassin's auklets, Xantus's murrelets, and ashy storm-petrels, on Scorpion and Orizaba Rocks. The use of nest boxes will

enhance suitable habitat, thereby increasing the number of successfully produced offspring and decreasing mortality.

Seabirds, such as the California brown pelican, are particularly sensitive to human disturbance (Schreiber and Risebrough 1972). Reducing human disturbance will have a positive influence on the energy budgets and survival of brown pelicans by reducing the energy costs associated with flushing and relocating due to human disturbance. Reducing disturbances will also protect nesting auklets and murrelets from harassment by trespassers on the rocks.

This action will target a suite of seabirds that demonstrate a strong nexus to the contaminants in the case. Also, seabirds such as the federally threatened California brown pelican, the rare ash-storm petrel, and the state-threatened Xantus's murrelet are priority species for restoration due to their conservation status. The creation of additional habitat and a reduction in human disturbance will provide long-term benefits to these seabirds.

### *Impacts*

This action is expected to have minimal, short-term adverse effects. The removal of exotic vegetation and the planting of native plants will be done during the non-breeding season to avoid impacts to nesting birds. However, roosting seabirds may be temporarily disturbed during the revegetation effort. Exotic vegetation will be removed through mechanical methods, thereby eliminating the need for herbicides. Mechanical removal may result in short-term impacts to surrounding native vegetation and soil. The use of matting will help minimize potential erosion and stabilize the soil. Subsequent monitoring may result in temporary disturbance to seabirds; however, the use of nest boxes will greatly minimize impacts to nesting alcids.

Roosting California brown pelicans may be disturbed during this project. The NPS will consult with the U.S. Fish and Wildlife Service regarding project implementation to ensure that California brown pelicans will not be adversely affected.

## **D4.4.2 Physical**

### *Benefits*

This action will have no known benefits to water resources, oceanographic and coastal processes, air quality, or noise receptors.

The restoration of native plants could have long-term benefits to the physical environment of Scorpion Rock by stabilizing the soil and decreasing erosion.

### *Impacts*

This action will have no known impacts to water resources, oceanographic and coastal processes, air quality, or noise receptors.

The removal of invasive plants may result in limited short-term impacts to soils by increasing erosion until native plants are established. However, the use of erosion-control measures (e.g., matting) will mitigate any short-term negative impacts.

#### D4.4.3 Human Use

##### *Benefits*

This action will have no known benefits to cultural resources, recreation, aesthetics, transportation, or human health and safety.

##### *Impacts*

This action will have no known impacts to cultural resources, recreation, aesthetics, transportation, or human health and safety. Any cultural resources on the island will be avoided during the implementation of the action. It is anticipated that nest boxes will be invisible to visitors and will not change the character of the project area.

#### D4.5 LIKELIHOOD OF SUCCESS/FEASIBILITY

This action will be determined to be successful when seabirds begin occupying the newly created nesting habitat. Both the habitat creation and the revegetation components of the action employ proven methods and techniques that have clearly demonstrated success in the past. As shown in Northern California and elsewhere, nest boxes have enhanced the population growth rate of several cavity-nesting alcid species at various sites by increasing recruitment of breeding-age birds, improving productivity, and decreasing mortality (Sydeman et al. 2000). Monitoring at Scorpion and Prince Rocks has demonstrated the effective use of pilot nest boxes to enhance degraded nesting habitat and facilitate monitoring for this species in the Channel Islands (Adams, pers. comm., 2003).

Minimal maintenance will be expected as part of this action to clean the nest boxes. The revegetation area on Scorpion Rock may require periodic removal of exotic plants.

#### D4.6 PERFORMANCE CRITERIA AND MONITORING

To quantify the efficacy of the restoration efforts, a minimum of 4 years of monitoring is proposed. The monitoring protocols for birds nesting in artificial cavities will follow those established by experts in the field of seabird ecology. A monitoring plan will be developed to evaluate the success of the restoration efforts by collecting simultaneous information on reproductive success, site occupancy, and mortality. Due to the status of Xantus's murrelets and their sensitivity to disturbance, no adults of this species will be handled. For ashy storm-petrels, monitoring will be conducted on the offshore rocks and on Santa Cruz Island to compare the effectiveness of this action to projects on other nearby colonies. Monitoring sites will include Bat Cave, Cove of the Bird Eggs, Cavern Point Caves, Dry Sandy Beach Cave, Orizaba Rock (natural and artificial sites), and Scorpion Rock (artificial sites). In addition to monitoring the caves and islets for reproductive effort and success, mist-netting will be employed at Scorpion Rock to collect population (mark/recapture) information. Also, the success of the exotic vegetation removal and the survival of native plants will be monitored using established success criteria for re-vegetation projects.

## D4.7 EVALUATION

The Natural Resource Trustees for the Montrose case (Trustees) have evaluated this action against all screening and evaluation criteria developed to select restoration actions and have concluded that this action is consistent with these selection factors. The Trustees have determined that this type and scale of action will provide long-term benefits to ashy storm-petrels, Cassin's auklets, and Xantus's murrelets. This action will also provide long-term benefits to California brown pelicans, western gulls, and double-crested cormorants from a reduction in human disturbance.

## D4.8 BUDGET

### *Year 1 estimated costs:*

• Labor (biologists, enforcement support, housing)	\$46,000
• Supplies (nest boxes, signs, plants, etc.)	\$ 23,000
• Transportation (boat, personnel)	\$6,600
• Estimated total, Year 1	\$70,600

### *Years 2-5 estimated costs:*

• Labor (biologists, enforcement support, housing)	\$180,000
• Supplies (nest box and sign replacement, plants)	\$44,000
• Transportation (boat, personnel)	\$26,400
• Estimated total, Years 2-5	\$250,400
• <b>Total estimated costs, Years 1-5</b>	<b>\$326,000</b>