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## Emergency Stabilization Plan

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# SCORPION FIRE

Channel Islands National Park, California



Submitted by:  Digitally signed by ETHAN MCKINLEY  
Date: 2020.08.27 17:29:59 -07'00' Date: August 27, 2020

Ethan McKinley, Superintendent



**August 2020**



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## Unit Summary Information

|                        |                                      |
|------------------------|--------------------------------------|
| <b>Unit Name</b>       | Channel Islands National Park (CHIS) |
| <b>Unit Identifier</b> | CNP                                  |
| <b>NPS/DOI Regions</b> | Pacific West/Region 8                |

## Fire Summary Information

|                             |                    |
|-----------------------------|--------------------|
| <b>Fire Name</b>            | Scorpion           |
| <b>Fire Number</b>          | CACNP-001216       |
| <b>Fire Code</b>            | M5GK               |
| <b>Detection Date/Cause</b> | 31-May-2020/Human  |
| <b>Date Contained</b>       | 04-Jun-2020        |
| <b>Acreage/Jurisdiction</b> | 1,368<br>NPS=1,368 |

## Account Number(s)

### Emergency Stabilization (Plan Preparation), FY20

|                        |                   |
|------------------------|-------------------|
| <b>Fund</b>            | 20XP112585        |
| <b>Cost Center</b>     | PPPWCHIS00        |
| <b>Functional Area</b> | PF220ES85.RM0000  |
| <b>WBS</b>             | PF.FEM5GK020.00.1 |

### Emergency Stabilization (Implementation), FY20

|                        |                   |
|------------------------|-------------------|
| <b>Fund</b>            | 20XP112585        |
| <b>Cost Center</b>     | PPPWCHIS00        |
| <b>Functional Area</b> | PF220ES85.RM0000  |
| <b>WBS</b>             | PF.FEM5GK020.00.2 |

## Team Members

| <b>Position</b>                 | <b>Name &amp; Affiliation</b>                                               |
|---------------------------------|-----------------------------------------------------------------------------|
| <b>Lead/Vegetation/Wildlife</b> | Annie Little, CHIS                                                          |
| <b>Vegetation</b>               | Clark Cowan, CHIS                                                           |
| <b>Wildlife</b>                 | Laura Shaskey, CHIS                                                         |
| <b>Wildlife</b>                 | David Mazurkiewicz, CHIS                                                    |
| <b>Cultural Resources</b>       | Kristin Hoppa, CHIS                                                         |
| <b>Cultural Resources</b>       | Laura Kirn, CHIS                                                            |
| <b>Cultural Resources</b>       | Sara Stratte, CHIS                                                          |
| <b>Cultural Resources</b>       | Brian Holguin, Santa Ynez Band of Chumash Indians                           |
| <b>Cultural Resources</b>       | Julie Tumamait-Stensile, <i>Barbareño/Ventureño</i> Band of Mission Indians |
| <b>Cultural Resources</b>       | Jennifer Perry, Contract Archeologist                                       |

| <b><i>Position</i></b> | <b><i>Name &amp; Affiliation</i></b>       |
|------------------------|--------------------------------------------|
| <b>Geology</b>         | Jonathan Schwartz, USFS Los Padres NF      |
| <b>Soils/Hydrology</b> | Eric Nicita, USFS Eldorado NF              |
| <b>GIS</b>             | Rocky Rudolph, CHIS                        |
| <b>Compliance</b>      | Ken Convery, CHIS                          |
| <b>Writer/Editor</b>   | Nelson Siefkin, NPS, Regions 8, 9, 10 & 12 |

## EXECUTIVE SUMMARY

### Introduction

This Emergency Stabilization (ES, also called Burned Area Emergency Response [BAER]) plan has been prepared for the Scorpion Fire at Channel Islands National Park (CHIS), California. The Scorpion Fire, which ignited on May 31, 2020, burned approximately 1,368 acres of National Park Service (NPS) land on the northeastern corner of Santa Cruz Island.

CHIS was established by Congress in 1980 to preserve the rich and unique biological diversity and cultural resources of the California Channel Islands chain. The park consists of five islands—Santa Cruz, Santa Rosa, San Miguel, Santa Barbara and Anacapa—and the surrounding marine environment. Santa Cruz, located 20 miles off the coast of Ventura, is the largest island at 61,972 acres. It hosts important and unique biological diversity, including endemic taxa and distinctive plant and animal communities. In addition to rich paleontological resources, Santa Cruz Island preserves a copious archeological record documenting human use over many millennia, and remains an important place to contemporary Native Americans with ancestral ties to the islands. The NPS owns approximately one-quarter of Santa Cruz Island (the balance is held by The Nature Conservancy), and it provides a unique recreational opportunity for visitors.

### Policy and Guidance

The plan was developed in accordance with Department of the Interior and National Park Service (NPS) policy and guidance, including:

- *Office of Wildland Fire (OWF) Policy Memorandum 2016-01 (Post-Wildfire Recovery Program and Policy Changes)* [[LINK](#)];
- *Interagency Standards for Fire and Fire Aviation Operations, 2020* [[LINK](#)];
- *NPS Reference Manual 18 (Chapter 18)* [[LINK](#)];
- *NPS Wildland Fire & Aviation Management Business Rules, FY20* [[LINK](#)];
- *Interagency Burned Area Emergency Response Guidebook (Version 4.0)* [[LINK](#)]

The primary objective of the BAER program is to assess the need for and prescribe cost effective post-fire stabilization measures necessary to protect human life, property, and critical natural and cultural resources. BAER is conducted in accordance with approved land management plans and policies, and all relevant federal, state and local laws and regulations.

BAER is intended to address imminent (<1 year) threats caused by wildfire; it is not responsible for long-term management or rectifying deficiencies that existed prior to the fire. Department of the Interior and NPS BAER policy echoes federal wildland fire policy regarding protection priorities: human safety is first, and property and critical natural and cultural resources are ranked based on the relative values to be protected, commensurate with emergency stabilization costs.

The basis of the BAER assessment process is identifying, evaluating, and protecting, repairing or replacing values at risk (VARs)—human safety, properties, capital improvements and natural and cultural resources—located within and downstream of burned areas, and impacted by fire and/or vulnerable to post-fire conditions. When evaluating a given VAR, consideration is given to the significance of the value, probability of further damage occurring, the magnitude of potential consequences, and the feasibility to mitigate.

In addition to BAER, CHIS will request Burned Area Rehabilitation (BAR) funding in FY21 to address invasive species and native vegetation restoration issues on the Scorpion Fire (this request will be formally submitted in September 2020). The objectives of the BAR program are to protect resources by repairing or improving burned landscapes unlikely to recover naturally to desired management conditions and to repair or replace fire-damaged minor assets. BAR is intended to address short-term (3-5 years) threats caused by wildfire; it is not appropriate for emergency post-fire threats to human safety, property, or critical natural and cultural resources.

### **Local Management Plans**

Pertinent approved CHIS land and resource management plans and other documents that guided the preparation of this plan include:

- Channel Islands National Park Foundation Document (National Park Service, February 2017)
- Channel Islands National Park Final General Management Plan/Wilderness Study/Environmental Impact Statement, April 2015
- Channel Islands National Park Archaeological Overview and Assessment, Michael A. Glassow (ed), Channel Islands National Park, Department of the Interior, December 2010
- Natural resource condition assessment: Channel Islands National Park. Natural Resource Report NPS/CHIS/NRR—2019/1899
- Cultural Resources Stewardship Strategy for Channel Islands National Park
- Santa Cruz Island Primary Restoration Plan and ROD
- Santa Cruz Island Restoration: Control of fennel and other high priority non-native plants, Natural Resource Preservation Program FY2007-FY2009

### **Assessments and Specifications**

Nine specifications are proposed to address emergency post-fire issues on the Scorpion Fire in FY20 and FY21. These are summarized by costs below, and described in greater detail by subject matter area.

## SCORPION FIRE: EMERGENCY STABILIZATION SPECIFICATIONS

| SPECIFICATION NUMBER | TITLE                                       | UNIT  | UNIT COST | NUMBER OF UNITS | WORK AGENT | FY20             | FY21            | COSTS             |
|----------------------|---------------------------------------------|-------|-----------|-----------------|------------|------------------|-----------------|-------------------|
| HS-1                 | Install Warning and Closure Signs           | Signs | \$283     | 25              | F          | \$7,052          | \$0             | \$7,052           |
| HS-2                 | Increased Agency Presence                   | N/A   | N/A       | N/A             | F, S       | \$2,736          | \$11,540        | \$14,276          |
| HS-3                 | Mitigate Tree Hazards                       | Miles | \$5,204   | 1               | F          | \$3,050          | \$2,154         | \$5,204           |
| CR-1                 | Section 106 Compliance                      | N/A   | N/A       | N/A             | F, S       | \$40,604         | \$0             | \$40,604          |
| WS-1                 | Hillslope Stabilization                     | Sites | \$2,824   | 2               | F          | \$5,647          | \$0             | \$5,647           |
| VEG-1                | Develop Invasive Species Treatment Plan     | N/A   | N/A       | N/A             | F          | \$7,730          | \$0             | \$7,730           |
| VEG-2                | Early Detection/Control of Invasive Species | Acres | \$4       | 500             | F          | \$2,160          | \$0             | \$2,160           |
| ADM-1                | Implementation Leader                       | N/A   | N/A       | N/A             | F          | \$9,035          | \$0             | \$9,035           |
| ADM-2                | BAER Plan Preparation                       | N/A   | N/A       | N/A             | F, S       | \$25,751         | \$0             | \$25,751          |
| <b>TOTAL COSTS</b>   |                                             |       |           |                 |            | <b>\$103,765</b> | <b>\$13,694</b> | <b>\$ 117,459</b> |

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

### Human Safety & Public Use Management

Burned areas are inherently dangerous and fascinating places to human beings. Amplified watershed response, debris flows, rock-fall and fire-killed hazard trees are among the many threats to human safety. At the same time, loss of vegetation exposes the landscape and lessens impediments to overland travel, making burned areas attractive to enter, threatening not only human safety, but also sensitive natural and cultural resources. Eastern Santa Cruz Island is the most heavily visited region of the park, hosting an average of 65,000 visitors per year. Several popular social trails traverse the burned area, and it is known to contain significant natural and cultural resources.

Two threats to human safety from post-fire conditions were identified. First, there is an increased probability of rock-fall from the coastal cliff below the burned slope at Scorpion Anchorage. Given the heavy use of that area, it is recommended that four warning signs be placed along the base of the cliff (**HS-1 [Install Warning and Closure Signs]**). Second, one of the large fire-killed Monterey cypress trees in the Delphine's Grove poses a potential danger if it were to topple. Mitigation includes public closure of the burned area, warning employees working in the area of the threat, and inconspicuous signage installed at the perimeter of the target zone (**HS-3 [Mitigate Tree Hazards]**). In addition, to evaluate the overall condition and recovery prognosis for the grove, an NPS Regional Arborist Incident Response (AIR) Team will perform an immediate post-fire assessment and follow-up in FY21.

Public use management within the Scorpion Fire will be an important consideration over the next year due to threats to critical natural and cultural resources, including spread of invasive species, disturbance of native vegetation, stress to fire-impacted wildlife, and exposed archeological sites and historic features. Closure of the burned area is recommended until such time that the landscape has sufficiently recovered and threats have abated. Closure signs should be installed at key points on the perimeter of the burned area (**HS-1 [Install Warning and Closure Signs]**) and law enforcement and cultural resources staff should periodically monitor the burned area for signs of human activity and resource impacts (**HS-2 [Increased Agency Presence]**).

## Cultural Resources

[REDACTED]

[REDACTED]

[REDACTED]

## Geology and Soils

The area burned by the Scorpion Fire is comprised of highlands, extensive flat marine terraces, and deep, incised drainages/canyons carved into these marine terraces. Some of the canyons have very steep slopes. The terraces are terminated by steep sea cliffs. The burned area is mostly underlain by rocks of the Santa Cruz Island Volcanic Geologic Unit, coherent, erosion-resistant rocks of middle Miocene age. The soils are derived from stable marine terraces, and generally have a high proportion of clay. These so-called Vertisols expand when wet and shrink when dry, forming characteristic surface cracks. During the first post-fire rains, these cracks intercept large amounts of water that would otherwise erode and transport sediment, and trigger debris flows. Further, the retained water germinates annual grasses and forb seed, leading to rapid revegetation.

Soil burn severity was predominantly low (90%), intermixed with unburned (9%) and very small patches of moderate (<1%), which is characteristic of fires dominated by grass and light shrub

cover. As expected, the modelled post-fire erosion rates are very low (2 tons/acre in the first year, dropping to 1 ton/acre thereafter). Given the presence of the runoff-trapping Vertisols, these values should be considered a worst-case scenario, and the initial post-fire pulse of sediment and ash is not expected to significantly diminish soil productivity or water quality. Unsurprisingly, USGS debris flow modeling yielded very low probability of debris flow occurrence and volume, and an overall debris flow hazard rating of low.

Two specifications are proposed to address emergency post-fire issues related to geology and soils. First, four signs should be installed along the base of the cliff below the burned slopes at Scorpion Anchorage warning of rock-fall danger (**HS-1 [Install Warning and Closure Signs]**). Second, hillslope stabilization should be performed on steep burned slopes at Scorpion Anchorage and Smugglers Cove in order to slow erosion and protect sensitive resources (**WS-1 [Hillslope Stabilization]**). This will include the installation of wattles, collecting and dispersing native seed to enhance revegetation, and light irrigation to initiate seed germination at Scorpion Anchorage.

### Vegetation

CHIS supports a diverse terrestrial flora, including many rare, relict, and endemic species. Nine federally listed species are known to occur on Santa Cruz Island, but there are no federally-listed species presently known from the Scorpion Fire burned area. Native species of particular management concern within the burned area include California brome (*Bromus carinatus*), Beardless wild rye (*Elymus triticoides*), Santa Cruz Island buckwheat (*Eriogonum arborescens*), island buckwheat (*Eriogonum grande* var. *grande*), northern island hazardia (*Hazardia detonsa*), and Greene's dudleya (*Dudleya greenei*). The burned area has a long history of disturbance, grazing in particular, which degraded native vegetation communities and facilitated the establishment of numerous invasive plant species. Concerted restoration efforts are aiding recovery of native communities, but the Scorpion Fire has created a fertile environment for disturbance-following invasives.

Vegetation types in the Scorpion Fire were dominated by grasslands (84%), with smaller patches of coastal sage scrub. Species comprising coastal sage scrub, which serves as critical habitat for wildlife, are sensitive to fire and may have experienced high mortality. Recovery in this vegetation type will be dependent on whether new seedlings can withstand competition from non-native annuals. Ten non-native invasive species of particular concern were observed or are known in the burned area. Two of these, sweet fennel (*Foeniculum vulgare*) and Harding grass (*Phalaris aquatica*), were found re-sprouting immediately after the fire.

Four specifications are prescribed to address emergency post-fire vegetation issues on the Scorpion Fire. A technical advisory group of NPS, TNC and consulting natural resource managers should convene to develop a long-term invasives treatment plan for the Scorpion Fire area (**VEG-1 [Develop Invasive Species Treatment Plan]**). In the near-term, to help inform the development of the treatment plan, high-priority areas of the Scorpion Fire should be surveyed

for the presence of invasive species, native species of special management concern, and intact native vegetation communities (**VEG-2 [Early Detection and Control of Exotic Invasive Species]**). High-priority invasive species should be opportunistically treated when/if biologically appropriate using accepted control methods as part of that effort. Native vegetation recovery and management of invasive species will benefit from the public closure of the burned area (**HS-1 [Install Warning and Closure Signs]** and **HS-2 [Increased Agency Presence]**). In addition, an FY21 BAR funding request will be submitted to perform invasive species control and perhaps vegetation restoration activities on the Scorpion Fire.

### Wildlife

Wildlife species endemic or known to utilize Santa Cruz Island include:

- Four native mammals (Santa Cruz island fox [*Urocyon littoralis santacruzae*], island spotted skunk [*Spilogale gracilis amphiala*], Santa Cruz Island deer mouse [*Peromyscus maniculatus santacruzae*], Santa Cruz Island harvest mouse [*Reithrodontomys megalotis santacruzae*]), and at least 11 native bat species (including five confirmed breeders).
- Four native amphibians, including the endemic Channel Islands slender salamander (*Batrachoseps pacificus pacificus*).
- Six native reptiles, including the endemic island fence lizard (*Sceloporus occidentalis becki*) and island gopher snake (*Pituophis melanoleucus pumilis*).
- Numerous resident, migratory, and nesting bird species, including several endemic species and/or species of conservation concern.
- Roosting and nesting habitat for a variety of seabirds, including globally significant populations of rare species.

Direct and indirect impacts of the Scorpion Fire on wildlife are interpreted as follows:

- No instances of mammal mortality or injury were noted; however, field assessments were limited post-fire due to logistical challenges. The fire occurred during island fox and island spotted skunk pupping seasons and although some refugia remain in canyon bottoms, some mortality may have occurred. Rodents may have experienced some direct loss, although many were likely protected in burrows. Any young bats roosting in Delphine's Grove could have been affected by the fire. Indirect effects of the fire on mammals might include increased competition for food limited resources and impacts from loss of cover.
- Dead and live lizards were observed throughout the burned area. Survivorship was likely aided by the presence of numerous refugia. Salamanders and other amphibians were either underground or in moist areas that did not burn. Indirect threats to reptiles and amphibians include increased competition for food, post-fire sedimentation in aquatic habitats, and compromised refugia.
- Direct mortality of adult terrestrial birds is unlikely, but any nestlings unable to fly were likely lost. Indirect impacts will probably include expanded foraging and home ranges to compensate for reduced food availability and loss of habitat.

- Roosting and breeding seabirds were likely only temporarily impacted. No carcasses were noted either on the water or rocky cliffs, and the fire generally did not appear to burn down the cliff sides into close proximity to any nesting or roosting birds.

Wildlife in the Scorpion Fire will benefit from public closure of the burned area (**HS-1 [Install Warning and Closure Signs]**, **HS-2 [Increased Agency Presence]**) and treatments to curtail the spread of invasive species and restore native vegetation communities (**VEG-1 [Develop Invasive Species Treatment Plan]**, **VEG-2 [Early Detection and Control of Exotic Invasive Species]**).

### **Issues Dismissed from Further Analysis**

The following issue was dismissed from further analysis due to lack of significant post-fire threats:

- Infrastructure

### **Plan Organization**

This plan includes a narrative summary of the Scorpion Fire, followed by in-depth resource or issue specific burned area assessments, and itemized specifications for BAER treatments and activities. Appendices are found at the end of the plan.

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## Scorpion Fire Emergency Stabilization Plan

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### FIRE NARRATIVE

The Scorpion Fire was reported at 1018 on May 31, 2020. It eventually burned approximately 1,368 acres using the final burned area perimeter (Figure 1), with the majority of spread on the afternoon and evening of May 31. Full containment of the fire occurred on June 4 and control on June 5. The point of origin was determined to be at Scorpion Bay adjacent to the pier construction materials.

#### Firefighting Resources Ordered

A total of 46 firefighting personnel were dispatched to contain the fire from the National Park Service, Los Padres National Forest, and Santa Barbara County Fire, along with a contingent of aerial firefighting resources.

1-Forest Service Type 1 handcrew (Los Padres IHC)

1-Santa Barbara County Type 1 handcrew (Crew 10)

1-NPS Type 6 Engine 74 with crew of 4

1-Air Attack (CALFire) and relief Air Attack (USFS)

1-Santa Barbara County Helicopter Bell 212, Helicopter 3

3-Air Tankers

1-Forest Service Chief Officer

1-NPS Resource Advisor (REAF)

2-Island Packers Boats

1-Forest Service handcrew type 2IA, preposition at CHIS Headquarters, released on June 1

1-Type 1 helicopter (K-MAX, Inyo National Forest), cancelled on June 1

**May 31, 2020:** The Scorpion Fire was reported at 1018 to Mark Hnat (Chief Ranger) who then called Thomas Cline (Acting FMO). Initial report was 5 acres running uphill from Scorpion Bay with 30-foot flame lengths and 15-20 mph winds from the northwest. The FMO called Los Padres National Forest Dispatch to inform them of the incident and to activate the established WildCAD Run Card response for the CHIS. The initial response included a Type 1 handcrew and Chief Officer from the Los Padres National Forest. The Los Padres National Forest helicopter

was unavailable due to the contract starting that day. Resource Advisor (READ) and Park Archeologist Kristin Hoppa mobilized to provide information on sensitive park resources to the FMO. An NPS REAF (Clark Cowan) was requested but unavailable until the morning of June 1. The park sent initial notification of the fire to tribal partners via press release. NPS resource staff informed The Nature Conservancy resource staff the morning of 31 May.

Due to the COVID-19 pandemic, the CHIS campgrounds were closed and Island Packers boat concessionaire was not operational; both, however, were scheduled to begin operations on June 1. Scorpion Anchorage would remain closed regardless due to the pier construction work. Island Packers boats were scheduled by the Chief Ranger to transport handcrews to Scorpion. The Forest Service identified Incident Commander (Matt Aoki) and NPS AREP (Michael Wilson) were transported on the 39-foot NPS Patrol Boat to the incident.

By 1230 the fire was estimated to be over 100 acres. Air Attack confirmed the fire to be near 400 acres at 1330 with a moderate to high rate of spread to the east and strong winds. The first handcrew arrived at 1400 with Air Attack and the Incident Commander coordinating air tanker and helicopter bucket drops. Soon thereafter, the second hand crew was transported to the fire, along with two NPS fire personnel.

The fire personnel on scene utilized the existing road system from Scorpion to Smugglers Cove as the containment line as much as possible. In addition to the road, approximately 8,800 feet of handline was constructed along the western margin of the fire (Figure 1). Suppression efforts were further assisted by 10 aerial long-term fire retardant (Phos-Chek) drops, mostly along the western margin of the fire, totaling 14,000 gallons. By 2330 the westerly fire spread was stopped, with continued active burning around the eastern tip of the island into the early morning of June 1. Containment, which was estimated at 40% that afternoon, had increased substantially by 2400.

**June 1, 2020:** The firelines held overnight, with containment estimated at 90%. Full containment was projected for June 3. Crews began securing existing containment lines and mopping up near these lines. A third handcrew was ordered on May 31 and prepositioned at CHIS Headquarters for the day if needed. The NPS Engine 74, NPS fire utility and County UTV were transported to the fire on the NPS landing craft to assist with controlling the fire. All vehicles were pressure washed before loading on the landing craft for noxious weed prevention. The REAF began assessing potential fire damages and coordinating suppression repairs with fire personnel.

In compliance with Section 106 of the National Historic Preservation Act, notifications of emergency actions were provided to the California State Historic Preservation Office (SHPO), the Santa Ynez Band of Chumash Mission Indians of the Santa Ynez Reservation (Santa Ynez Band), and the Barbereno-Ventureno Band of Mission Indians (Barbareno-Ventureno Band). This notification indicated no historic structures were lost, and that more information on the fire and the effects of any emergency actions on historic properties was forthcoming.

**June 2, 2020:** Containment lines held with mop-up continuing and no issues. Burned area assessments continued with GPS data collected for control lines, retardant drops and potential cultural sites affected. Minimal mop-up was required due to brush and grass fuel type. Santa Barbara County Hand crew 10 was released from the fire. Containment was upgraded to 95%.

A tribal consultation meeting was held with the Santa Ynez Band via ZOOM to review the Scorpion Fire and emergency response. The information was also shared with the Barbareno-Ventureno Band via email.

**June 3, 2020:** Fire containment held at 95%. Fire containment lines were patrolled for the day. Los Padres IHC was released from the fire. The Forest Service Incident Commander transitioned the fire over to an NPS Incident Commander. NPS received SHPO response to the notification of emergency actions.

**June 4, 2020:** Fire containment was upgraded to 100% with control projected for June 5. The engine crew scheduled landing craft for the vehicles and crew for June 5. Burned area assessments ongoing with minimal mop-up needed.

Julie Tumamait-Stenslie, Chair of the Barbareno-Ventureno Band, participated in initial post-fire assesment of archeological resources.

**June 5, 2020:** The Scorpion Fire was declared controlled at 0700. Fire crews and vehicles demobilized from the fire on the landing craft.

**June 11-12, 2020:** NPS READ advisors (Clark Cowan and Annie Little) and Jonathan Schwartz (USFS Los Padres) conducted resource assessments of the burn area.

**June 15, 2020:** Representatives from the Santa Ynez Band and the Barbareno-Ventureno Band and key NPS staff visited the burn area to discuss the fire, emergency response, and preliminary findings from resource assessments.

**June 16-17, 2020:** NPS and tribal partners continued discussions on tribal involvement in the Burned Area Emergency Rehabilitation field assessments.

**June 21, 2020:** The Scorpion Fire was declared out by the FMO to Los Padres Dispatch. The ICS 209 final report was submitted to the Southern California Coordination Center.

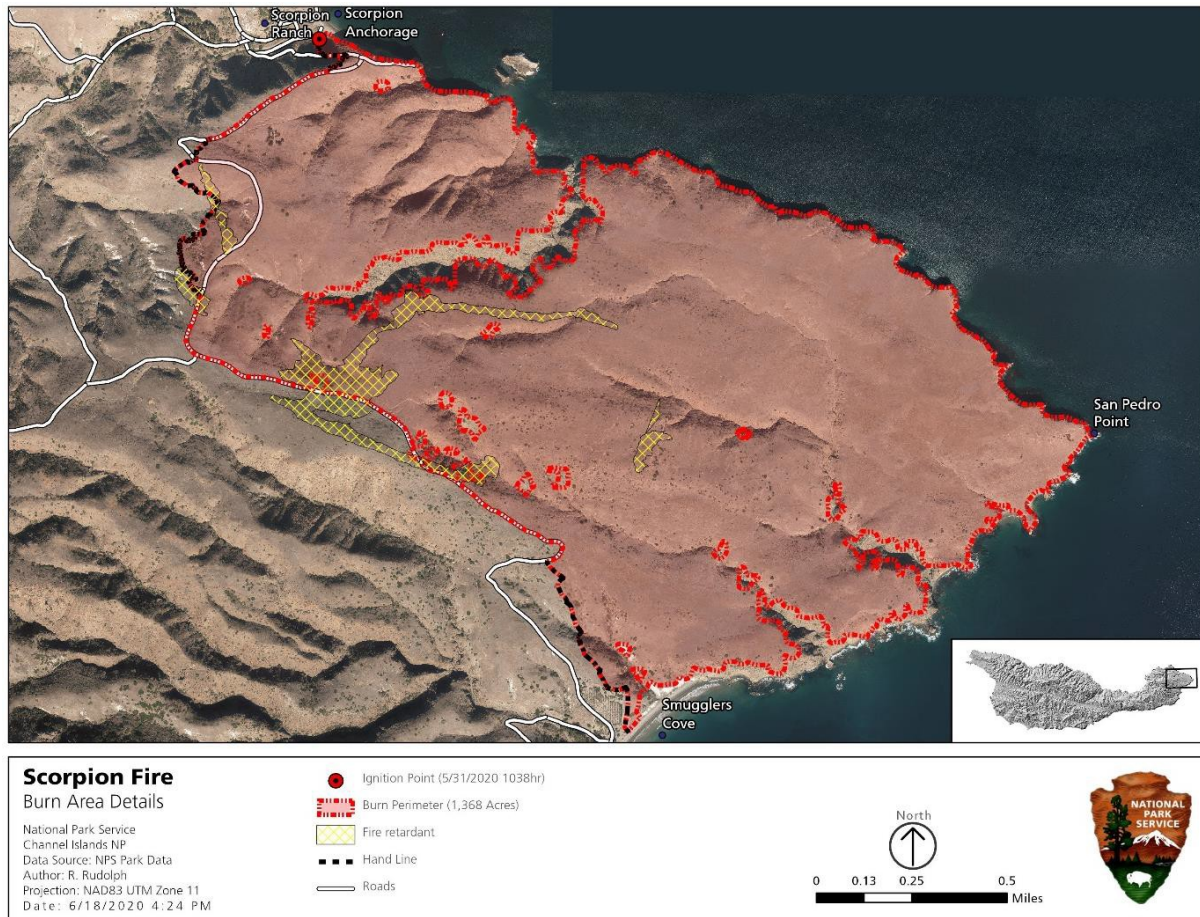


Figure 1. Scorpion Fire final perimeter, handlines, and retardant drops.

# Burned Area Assessments



Photo: Annie Little, NPS

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## **Scorpion Fire Emergency Stabilization Plan**

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### **HUMAN SAFETY & PUBLIC USE MANAGEMENT ASSESSMENT**

#### **OBJECTIVES**

- Identify the threats to public and employee safety within and downstream of the Scorpion Fire.
- Identify resource management threats related to public access within the Scorpion Fire.
- Design and prescribe treatments as necessary.

#### **ISSUES**

- Rock-fall from the burned slope above Scorpion Anchorage and at least one fire-damaged tree in Delphine's Grove pose a threat to human safety.
- Public access within the burned area could potentially result in impacts to sensitive cultural resources, impede recovery of native vegetation, spread invasive species, and further stress fire-impacted wildlife.

#### **BACKGROUND**

This assessment evaluates the post-fire threat to employee and public safety resulting from the Scorpion Fire, and potential implications of continued public access within the burned area for natural and cultural resources. Burned areas are inherently dangerous and fascinating places to human beings. Amplified watershed response, debris flows, rock-fall and fire-killed hazard trees are among the many threats to human safety. At the same time, loss of vegetation exposes the landscape and lessens impediments to overland travel, making burned areas attractive to enter, threatening not only human safety, but also sensitive natural and cultural resources.

Other than Smugglers Road on the west side of the burned area, the Scorpion Fire burn area contains no maintained trails or other recreational or administrative facilities. However, eastern Santa Cruz Island receives 70% of the visitation in the park, and Scorpion Anchorage is the most visited recreational site (especially for day-use), with over 25,000 visitors annually on average (NPS Visitor Use Statistics 2020). Smugglers Cove is a heavily-used anchorage, a popular day hike from Scorpion, and receives a significant amount of traffic from campers. Visitation peaks in June, July and August, but use is year-round.

Several well-used social trails lie within the burned area. One, which passes Delphine's Grove, is used by those wanting to shorten the distance to Smugglers Cove, and the grove itself is a

popular resting spot and picnic destination. Another trail provides access to Little Scorpion, and a few hardy souls make the trek out to San Pedro Point from Smugglers Road, either at the top of the mesa before the road drops to the former airstrip or from the airstrip, in order to go fishing. The Smugglers Road intersects the road/trail coming off the Montañon Trail from Prisoners Harbor, and backpackers travelling from Prisoners often use the road.

The Scorpion Fire contains a number of sensitive natural and cultural resources (see Cultural Resources, Vegetation and Wildlife Burned Area Assessments) that may be vulnerable to continued public use of the burned area.

## **RECONNAISSANCE METHODS**

The burned area was variously examined by members of the Scorpion Fire BAER Team and park management team. Post-fire emergency threats to human safety and natural and cultural resources from human activity were identified (see Cultural Resources, Geology and Soils, Vegetation and Wildlife Burned Area Assessments). Although the Scorpion Fire area is officially closed, as is Scorpion Anchorage due to construction of the pier, and near-term visitation may be reduced by COVID, park staff have observed members of the public, who accessed the island by private boat, exploring within the burned area.

## **FINDINGS**

### **Human Safety**

Two threats to human safety from post-fire conditions were identified. First, there is an increased probability of rock-fall from the coastal cliff below the burned slope at Scorpion Anchorage (see Geology and Soils Assessment). Given the heavy use of that area, the public and employees should be warned of this threat. Second, several large Monterey cypress (*Hesperocyparis macrocarpa*) in Delphine's Grove were killed or severely damaged by the fire (see Cultural Resources Burned Assessment). One large, dead tree (Figure 1) is a definite hazard to human safety, and others could become so over time.

### **Public Use Management**

Public use management within the Scorpion Fire will be an important consideration over the next year due to threats to critical natural and cultural resources:

- Native vegetation recovery in the burned area is dependent on minimizing post-fire disturbances and limiting the spread of invasive plant propagules and trampling of recovering vegetation.
- Certain wildlife species will likely be affected by post-fire conditions (e.g., habitat loss, diminished food supplies), and perhaps further stressed by human activity. Further, successful wildlife recovery is tied to the re-establishment of native vegetation.
- Loss of vegetation on archeological sites and historic features amplifies the risk of unauthorized collecting, looting and vandalism.

Taken together, a hard public closure of the Scorpion Fire is warranted until such time as the landscape is sufficiently recovered.



Figure 1. Hazardous Monterey cypress in Delphine's Grove (Photo: Clark Cowan, NPS)

## **RECOMMENDATIONS**

Three specifications are prescribed to address emergency post-fire issues related to human safety and public use management.

### **Specifications**

**HS-1 (Install Warning and Closure Signs):** At least 25 signs should be installed on the perimeter of the Scorpion Fire to protect public safety and delineate the hard public closure of the burned area:

- Install four signs along the base of the cliff below the burned slopes at Scorpion Anchorage warning of rock-fall danger.
- Install 21 signs on the fire perimeter along Smugglers Road, the mouths of coastal canyons, and at Delphine's Grove.

All signs should be regularly monitored for presence and condition and replaced as necessary for the duration of the closure.

**HS-2 (Increased Agency Presence):** To ensure the hard public closure is successfully implemented, select park staff should periodically monitor the burned area for unauthorized visitors and signs of activity.

- Law enforcement personnel will track the burned area for unauthorized use, initiate contacts as necessary, ensure warning and closure signs are present, and determine whether additional measures are necessary to enforce the closure.
- Cultural resource managers will continue assessments of known resources to identify those vulnerable to unauthorized artifact collection, looting, and vandalism (and other impacts, such as erosion). Further, at-risk resources will be monitored monthly for signs of human activity and damages (e.g., social trails through sites). If impacts are identified, measures will be taken to mitigate them.

**HS-3 (Mitigate Tree Hazards):** The hazard tree in Delphine's Grove will be mitigated through the burned area closure and notifying employees working in the burned area of the threat. Additionally, warning signs will be laid on the ground at the margin of the target zone. This treatment is preferred over one that might be more visible, and draw attention to the tree. These signs should be periodically monitored for presence and condition.

To evaluate the overall condition and recovery prognosis for the grove, an NPS Regional Arborist Incident Response (AIR) Team will perform an immediate post-fire assessment and follow-up in FY21.

### **Non-Specification**

None

### **REFERENCES**

NPS Visitor Use Statistics, 2020, <https://irma.nps.gov/STATS/Reports/Park/CHIS> [accessed June 26, 2020].

### **CONSULTATIONS**

Derek Lohuis, Interpretation, CHIS

**PREPARER(S)**

Nelson Siefkin, BAER Coordinator, National Park Service, Interior Regions 8, 9, 10 and 12

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## Scorpion Fire Emergency Stabilization Plan

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### CULTURAL RESOURCES ASSESSMENT

#### OBJECTIVES

- Determine if known or incidentally encountered cultural resources within, adjacent to or downstream of the Scorpion Fire were damaged by the fire, and/or are threatened by post-fire conditions. If applicable, prescribe emergency stabilization treatments to minimize, negate, or mitigate those impacts.
- Determine if any proposed emergency stabilization treatments for the Scorpion Fire have the potential to adversely impact cultural resources and, if so, prescribe actions to minimize, negate, or mitigate identified adverse effects to cultural resources to meet Section 106 of the National Historic Preservation Act (NHPA) and the Native American Graves Protection and Repatriation Act (NAGPRA) requirements.
- Meet all Federal cultural resources legal mandates and agency policies, including consultation with California State Historic Preservation Officer (SHPO) and traditionally associated American Indian Tribes and groups.

#### ISSUES

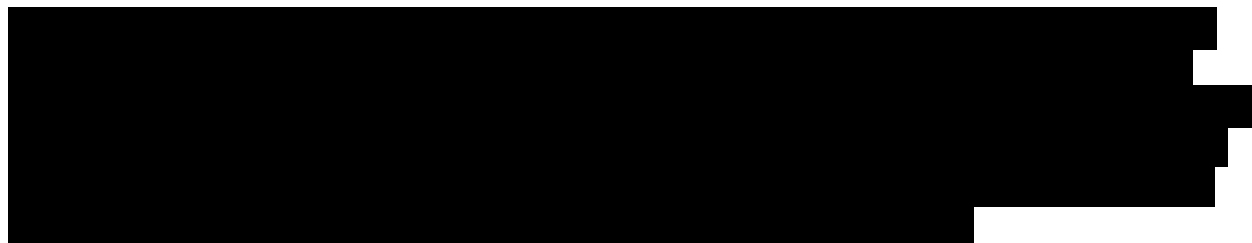
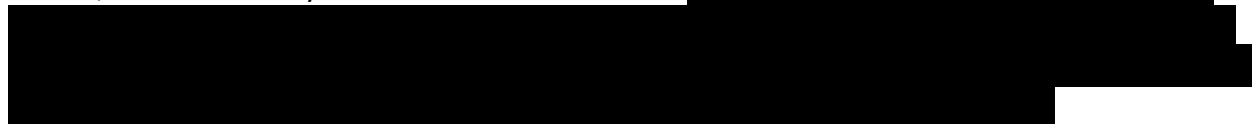
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## BACKGROUND

The archeology of the Channel Islands provides a unique opportunity to understand the historical ecology of Pacific Coast environments and the interaction of maritime peoples with dynamic coastal ecosystems. The natural abundance of the rich terrestrial resources and the surrounding sea has attracted humans to the islands for thousands of years.



During the last 500 years, Spanish and other European explorers, otter hunters, ranchers, fishers, and the military have used island resources.



### Cultural Resources and Wildland Fire

Impacts to cultural resources as a result of fire, fire management actions, and post-fire conditions can be conveniently divided into three categories: direct, operational, and indirect. Direct impacts are those caused by the wildland fire itself or its byproducts (e.g., smoke); operational impacts are caused by fire management actions made in response to wildland fires



## RECONNAISSANCE METHODS

Immediately following the fire, initial field assessments of known cultural resources located within the Scorpion Fire burn area were performed by CHIS cultural resources staff (Kristin Hoppa, Sara Stratte, and Laura Kirn); tribal partners (Julie Tumamait-Stensile, Eleanor Arellanes, and Brenda Guzman [*Barbareño/Ventureño* Band of Mission Indians]); and Brian Holguin [Santa Ynez Band of Chumash Indians]); and professional archaeologists (Jennifer Perry) between May 31 and June 25. [REDACTED]

Data searches of archaeological records and historical information were conducted by Kristin Hoppa, and cultural resources located within the area affected by the fire were ranked based on site significance and potential for fire-related impacts. [REDACTED]

[REDACTED] Given the number of cultural resources within the fire area, and limited time allowed for developing the BAER plan, fewer than half of the cultural features and archaeological sites and historic features could be assessed in the field. Documentation methods for completing field assessments included field notes and completion of BAER cultural resources assessment forms, digital photo documentation, and collection of GPS location data.

### Tribal Consultation

Notifications of emergency action and initial consultations were conducted almost immediately after the fire began, and a dedicated site visit occurred shortly thereafter. The park has long-established consultative relationships with the federally-recognized Santa Ynez Band and the federally non-recognized *Barbareño/Ventureño* Band. Several other descendant communities have expressed interest in park cultural resources and actions; several individuals contacted the park upon hearing of the fire and non-sensitive information was shared with these parties.

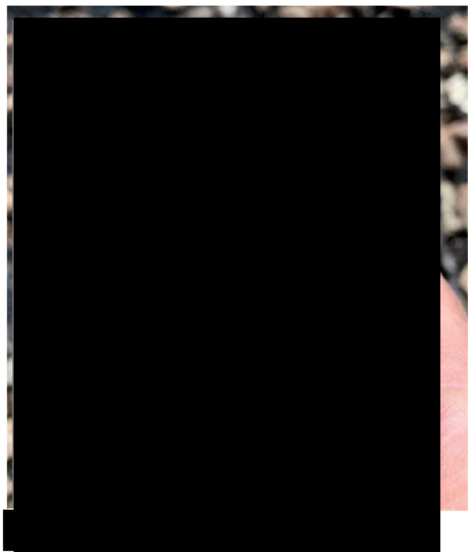
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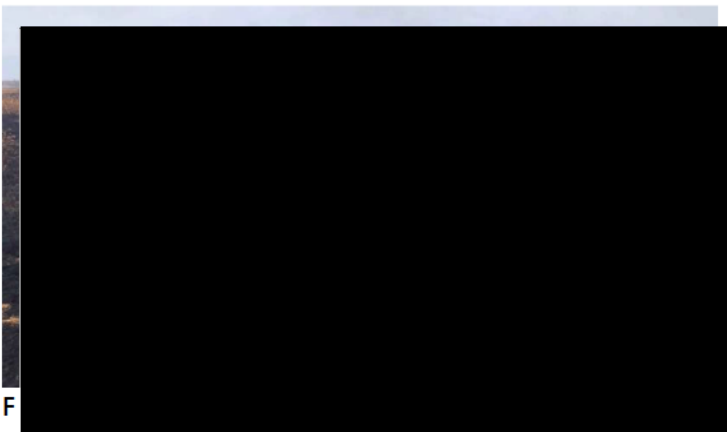
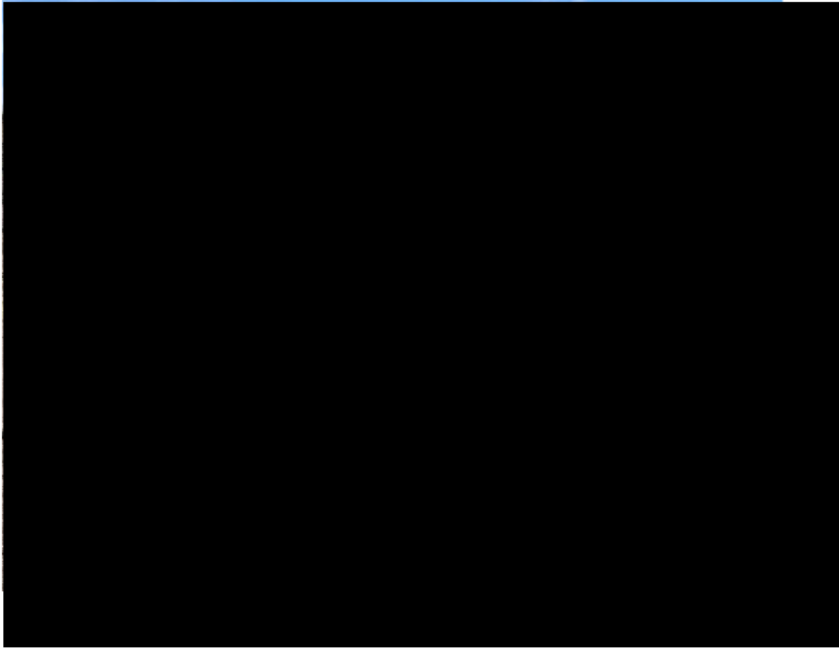
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[REDACTED]

[REDACTED]



Scorpion





## RECOMMENDATIONS

Four specifications are prescribed to address emergency post-fire cultural resource issues. In addition, three non-specification actions are recommended.

### Specifications



[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

## REFERENCES

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National Park Service. 2004. Channel Islands National Park Santa Cruz Island Ranching District, Cultural Landscape Inventory.

## **CONSULTATIONS**

California State Historic Preservation Officer (SHPO)  
Santa Ynez Band of Chumash Mission Indians of the Santa Ynez Reservation  
*Barbareño/Ventureño* Band of Mission Indians

## **PREPARER(S)**

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Laura Kirn, Chief of Cultural Resources, Channel Islands National Park  
Sara Stratte, Exhibit Specialist, Channel Islands National Park

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## **Scorpion Fire Emergency Stabilization Plan**

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### **GEOLOGY AND SOILS ASSESSMENT**

#### **OBJECTIVES**

- Identify the geologic conditions and geomorphic processes that have helped shape and alter the watersheds and landscapes within the Scorpion Fire.
- Assess the impacts from the Scorpion Fire on the geologic conditions and geomorphic processes that potentially could affect in situ and downstream values at risk (VARs).
- Prescribe treatments as necessary to mitigate threats to VARs.

#### **ISSUES**

- Threats to human safety resulting from post-fire debris flows and rock-fall.
- Impacts to natural resources, including loss of soil productivity and increased sedimentation in the intertidal and subtidal zones.
- Impacts to known cultural resources located on and below unstable burned slopes due to surface erosion and/or deposition.

#### **BACKGROUND**

##### **Geology and Geomorphology**

The Channel Islands off the coast of central California are the southernmost expression of the western Transverse Ranges. The Transverse Ranges have rotated clockwise a minimum of 70° during the past 20 Ma in a broad region of dextral shear between the North American and Pacific plates. Currently, the Channel Islands are an extension of the Santa Monica Mountains that are extruding south of the Big Bend in the San Andreas Fault (Atwater 1998). This block underwent rifting during initial rotation, erupting the Miocene volcanics that form the core of the eastern end of Santa Cruz Island. Rifting was followed by subsidence that led to the deposition of basin deposits (Monterey Formation) as sea level rose during the early Miocene. In addition to tectonic forces, land-sea interactions have had a profound effect in the shaping of the island, producing substantial topographic features in the form of wave cut platforms on eastern Santa Cruz Island. Wave-cut platforms can be preserved as marine terraces if they are removed from interaction with the high energy wave regime. This is achieved through tectonic uplift of the landmass or sea level retreat associated with eustatic sea level fall (Atwater 1998).

Santa Cruz Island is the largest, highest, and most rugged of the Northern Channel Islands. This island is about 37 km (23 mi.) long east-west and 3 to 11 km (1.8 to 6.8 mi.) wide. It is composed of two main ranges with ridges that trend slightly north of west separated by a low

valley and hill terrain. The north range is abruptly bounded along its south side by a straight geological break, the Santa Cruz Island fault. This fault is a remarkable feature that divides this island into two physiographic and geologic parts or blocks - the north block, and south block, each with different rock units. The north block, north of Santa Cruz Island fault, is composed of Miocene Santa Cruz Island Volcanics overlain by Monterey Shale. The structure of the rock units of the south block is more complex than those of the north block. The south range is eroded from basement rocks. The Santa Cruz Island fault extends offshore for unknown distances in both directions from this island (Dibblee 1982).

On the east side of the island is an isthmus about 3 km (1.8 ml) wide. Eastward from this isthmus the terrain rises slightly to the low mountain terrain known as El Montañon (Weaver et al. 1969). This terrain grades downslope into the grassy coastal terraces of the eastern part of the island. It is in this grassy coastal terrace terrain on which the Scorpion Fire burned.

The Scorpion Fire burned on the east end of Santa Cruz Island, extending from Scorpion Anchorage to the southeast, toward Smugglers Cove and out to San Pedro Point. Elevations in the burned area range from about 700 feet above sea level along the road leading to Smugglers Cove down to sea level along the coastline. The burned area includes highlands, extensive flat marine terraces, and deep incised drainages / canyons carved into these marine terraces. Some of these deep incised canyons include very steep slopes of 60+ percent (31+°). These terraces are terminated by steep sea cliffs.

The burned area is underlain mostly by the Santa Cruz Island Volcanic rocks, middle Miocene (17.0-16.3 Ma), coherent erosion resistant rocks; the Monterey Formation is a marine biogenic shale, brown but weathered cream-white, somewhat crumbly, weakly resistant to erosion, which forms many landslides, age of lower part middle Miocene (15.8-11.1 Ma); Terrace Sediments, erosional remnants of flat-lying sediments along and near the coast and in some major canyons, elevated and dissected, old alluvium (Dibblee 2001, Figure 1).

## **Soils**

The hydrologic and geologic response to the Scorpion Fire is strongly driven by the surface soil properties. The soils are derived from stable marine terraces that are approximately 400,000 years in age (Atwater 1998). The terraces themselves were originally formed by Volcanics that were uplifted due to glacial ice sheet changes and tectonic forces. Prior to the relative change in sea level, the terrace position was at sea level and were leveled by thousands of years of wave cut action.

Clay and silica are the final products of bedrock weathering. Clay tends to accumulate in higher proportions on stable and older landforms. Since the highest marine terrace on Santa Cruz Island is both old and very stable, the soils are primarily comprised of high proportions of clay (in relationship to silt and sand). These soils, defined as Vertisols, have a high clay content and shrink-swell potential associated with wetting and drying. These soils will expand when wet and shrink when dry. When the soils shrink, they form characteristic surface cracks.

These cracks have significant ecologic and hydrologic implications that drive the post-fire response. The shrinking and swelling of the soil that cause cracks also exerts significant shear on roots. Perennial vegetation has difficulty occupying these sites, resulting in annual grasses and forbs as the primary vegetation with small isolated stands of shrubs and oaks. Annual grasses tend to recover rapidly after the first post-fire rain. More importantly, these cracks store large amounts of water during the first rains. Rather than running over the surface to erode soil, transport sediment and accelerate debris flows, the first rains fill the cracks, facilitating soil absorption and rapid germination of annual grass and forb species.

## **RECONNAISSANCE METHODS**

Reconnaissance of the burn area was performed on June 11-12 and 15, 2020. Investigation was rapid and included primarily general ground surveys (including slopes above select cultural resources) and analysis of various imagery (e.g., Soil Burn Severity, LiDAR, pre-fire vegetation). Additionally, survey of the burned coastline was performed from the NPS Sea Ranger II vessel. All field surveys included measurements of slopes, identification of geological units (Dibblee geology maps), field verification of Soil Burn Severity, analysis of LiDAR images, notes of observations and photography.

### **Soil Burn Severity**

The effects of the fire to soil properties at and below the soil surface was evaluated. Changes in physical, chemical and biological properties determine the post-fire response. Decreases in soil stability, rooting mass and chemical bonds reduces the ability of water to infiltrate soil and resist transport during precipitation. This increases runoff, which increases flooding and debris flows potentials.

The magnitude of these changes is reflected in the Soil Burn Severity (SBS). SBS is initiated by a remotely-sensed product called the Burned Area Reflectance Classification (BARC). This initial SBS data is field validated. Based on this field validation, adjustments are made, and the final SBS map is produced.

### **Erosion Rates**

The ERMiT (Erosion Risk Management Tool) model was used to predict the erosion rates and spatially display erosion source areas. ERMiT is a WEPP-based application developed by USFS Rocky Mountain Research Station specifically for use with post-fire erosion modeling (USDA 2014). ERMiT models erosion potential based on single hillslopes, single-storm “runoff events,” and post-fire soil burn severity.

### **USGS Debris Flow Assessment**

In order to assess the probability and potential volumes of debris flows in the burned area the assistance of the US Geological Survey (USGS) - Landslide Hazards Program was obtained. Their ongoing research has developed empirical models for forecasting the probability and the likely

volume of such debris flow events. To run their models, the USGS uses geospatial data related to basin morphometry, soil burn severity, soil properties, and rainfall characteristics to estimate the probability and volume of debris flows that may occur in response to a design storm (Staley et al. 2016). Estimates of probability, volume, and combined hazard are based upon a design storm with a peak 15-minute rainfall intensity of 12 – 40 millimeters per hour (mm/h) rate. After receiving the final Scorpion Fire burn severity map, the USGS conducted a debris flow assessment of the fire area that presented debris flow hazard classes, probability of occurrence, and volumes of materials occurring for multiple precipitation events.

Based on [NOAA Atlas 14 Precipitation Frequency Estimates](#), we selected a design storm of a peak 15-minute rainfall intensity of 20 mm/h (0.78 inch/hr) rate to evaluate debris flow potential and volumes. This magnitude of storm seems likely to occur in any given year. Debris flow probability and volume were estimated for each basin in the burned area as well as along the upstream drainage networks, where the contributing area is greater than or equal to 0.02 km<sup>2</sup>, with the maximum basin size of 8 km<sup>2</sup>.

The **probability model** was designed to predict the probability of debris-flow occurrence at a point along the drainage network in response to a given storm. Probabilities predicted by the model potentially range from 0 (least likely) to 100 percent (most likely). The predicted probabilities are assigned to one of five equal (20 percent) interval classes for cartographic display.

The **volume model** was designed to estimate the volume (in m<sup>3</sup>) of material that could issue from a point along the drainage network in response to a storm of a given rainfall magnitude and intensity. Volume estimates were classified in order of magnitude scale ranges 0–1,000 m<sup>3</sup>; 1,000–10,000 m<sup>3</sup>; 10,000–100,000 m<sup>3</sup>; and greater than 100,000 m<sup>3</sup> for cartographic display.

**Debris-flow hazards** from a given basin can be considered as the combination of both probability and volume. For example, in a given setting, the most hazardous basins will show both a high probability of occurrence and a large estimated volume of material. Slightly less hazardous would be basins that show a combination of either relatively low probabilities and larger volume estimates or high probabilities and smaller volume estimates. The lowest relative hazard would be for basins that show both low probabilities and the smallest volumes.

Kean et al. (2013) and Staley et al. (2016) have identified that rainfall intensities measured over durations of 60 minutes or less are best correlated with debris-flow initiation. It is important to emphasize that local data (such as debris supply) influence both the probability and volume of debris flows. Unfortunately, local specific data are not presently available at the spatial scale of the post-fire debris-flow hazard assessment done by the USGS. As such, local conditions that are not constrained by the model may serve to dramatically increase or decrease the probability and/or volume of a debris flow at a basin outlet.

## **FINDINGS**

### **Soil Burn Severity**

In the Scorpion Fire burn area, the initial BARC data indicated that approximately 5% of the area burned at Moderate SBS. Field validation revealed that the Moderate SBS was limited to very small, unmappable areas. The SBS map was adjusted to only reflect Low (91%) and Unburned (9%) severity within the Scorpion Fire (Figure 2). Low SBS, which was likely driven by the light grass fuels, generally correlates with no change to the mineral soil surface and reflects the reduction in soil cover. This is the worst case scenario; it is likely that a portion of the Low SBS will respond more like unburned because the remaining biomass of the annual grass material after the burn.

### **General Observations**

During ground surveys, evidence of some past mass wasting, surface erosion, debris slide and rock-fall were observed throughout the burned area, mostly on steep canyon slopes and along the coastal cliffs. Canyon slopes are in some cases very steep (60+ percent), which contributes to a rugged canyon terrain (Figure 3). From on-the-ground observations it is clear that some of these drainages dissecting the marine terraces are loaded with unsorted, unconsolidated materials available to be transported.

The burned slope above the fire point of origin is a steep slope (60+ percent) which largely experienced a Low SBS with some very small pockets of Moderate SBS. Along the majority of this slope vegetation and organic materials are intact. This vegetation is expected to re-establish once rainfall commences (likely in the fall) via new sprouts and the existing seed bank. Both remaining vegetation and organic matter on the surface of the slope are expected to reduce soil erosion on the face of this slope. The heightened concern for erosion on the face of this slope is focused on a few pre-fire erosional features, in particular, an incised channel on the east-end (Photo 1). This channel most likely developed as a result of pre-fire surface flows on the road above that were diverted off the road and onto the face of the slope. The effects of this runoff are likely to be exacerbated by the loss of vegetation as a result of the Scorpion Fire.

Adjacent to this burned slope and along the beach at Scorpion Anchorage is a coastal cliff vulnerable to rock-fall. With the loss of vegetation above this coastal cliff, the potential for rock-fall is elevated, which poses a threat to human safety (Photo 2).

Draining the burned area are a series of drainages and canyons dissecting the flat highlands and marine terraces. Southeast of Scorpion Canyon and Scorpion Anchorage are four (4) main drainages dissecting and draining the north part of the fire (Figure 4). The first three (3) are unnamed drainages and the fourth one is Little Scorpion Canyon. Along the slopes of each drainage surface erosional features were observed (Photo 3). At the bottom of each of these drainages are unsorted, unconsolidated materials (sediments and rocks) available to be transported (Photos 4 & 5). Because the majority of the highlands and marine terraces were

burned, high intensity rainstorms could transport some of the ash and available sediments down to the ocean, which, in turn, might impact the intertidal and subtidal zones. Based on ground observations and the soil burn severity map (Figure 2), it is clear that along Little Scorpion Canyon not all slopes were burned (Photo 6). In addition, along the bottom of Little Scorpion Canyon there are a series of waterfalls and water-holes. These water-holes could function as sediment traps, reducing the flow of sediments directly into the ocean.

Between Little Scorpion Canyon and San Pedro Point are about seven (7) very small drainages flowing directly to the north and northeast into the ocean. The majority of this large marine terrace/flat-land between Little Scorpion Canyon, San Pedro Point and Smugglers Cove is drained via four (4) canyons flowing southeast to the ocean. The closest canyon to San Pedro Point, named Hungryman Gulch, is relatively short. The next two are large drainages, including San Pedro Canyon and an unnamed canyon. The fourth is a relatively shorter drainage pouring into the northeast end of Smugglers Cove.

Fire burned all the way down to the beach at Smugglers Cove. There is a burned slope located above the coastal bluff and below the constructed hand-line (Photo 7). This slope, which is about 70 meters long and about 60 meters high (at its highest point), has a gradient of 35-45% and experienced a Low SBS. At base of this slope is a cultural site that might experience some erosion with the onset of rainfall events.

As expected the erosion-rates in a fire dominated by Low SBS are expected to be very low. Based on the ERMiT model, erosion rates fire-wide were calculated at 2 tons/acre, dropping to 1 ton/acre after the first year post-fire. The erosion rates modeled for this fire should be considered worst-case scenario because of the extensive soil surface cracking, which is expected to substantially reduce the effective runoff potential and consequent erosion of the first storms. The cracks observed within the Scorpion Fire are approximately 0.5-1.5 inches wide and 5-14 inches deep and progressively deepen as the lower layers of the soil continue to dry (Photo 8). By the time the soil absorbs enough water to seal the surface cracks, annual grasses will have started germinating, further reducing erosion potential. Potential inaccuracies of the ERMiT model notwithstanding, erosion does not pose a significant risk to soil productivity or water quality.

### **USGS Debris Flow Assessment**

Based on the USGS debris flow modeling (peak 15-minute rainfall intensity of 20 millimeters [0.78 inches] per hour), the probabilities of debris flow initiation in the drainages impacted by the Scorpion Fire are very low. Most drainages in the burn area present probabilities ranging from 0-20%, with a few shorter drainages presenting probabilities of 20-40% (Figure 5). Estimated volumes of debris flows in these same drainages are less than 1,000 m<sup>3</sup> (Figure 6). Thus, the combined hazard (probabilities + volumes) map presents low hazard category in these drainages impacted by the Scorpion Fire (Figure 7). Considering the Low SBS, topography and other physical conditions, these model results are not surprising.

## RECOMENDATIONS

Two specifications are prescribed to address emergency post-fire watershed issues on the Scorpion Fire. In addition, one non-specification action is recommended.

### Specifications

**HS-1 (*Install Warning and Closure Signs*):** As part of the larger effort to control public access within the burned area, install four signs along the base of the cliff below the burned slopes at Scorpion Anchorage warning of rock-fall danger. These signs should be regularly monitored for presence and condition and replaced as necessary until the rock-fall threat abates.

**WS-1 (*Hillslope Stabilization*):** Hillslope stabilization should be performed at Scorpion Anchorage and Smugglers Cove as a means of slowing erosion and protecting sensitive resources.

At Scorpion Anchorage, the following treatments are recommended:

- At the bottom of the burned slope, install wattles to deflect surface runoff away from sensitive resources. Wattles should be obtained from the source utilized by CHIS for other projects in order to minimize the possibility of biocontamination.
- At the top of the burned slope, to slow erosion in the incised channel on the east end of the slope, install a set of wattles between the road and incised channel. Wattles should be installed perpendicular to the slope contours.
- Collect and broadcast native seed on slope as appropriate.
- Install temporary irrigation systems to encourage growth of vegetation prior to first winter rain.

At Smugglers Cove, the following treatments are recommended:

- On the face of the burned slope, install a set of wattles in order to slow surface erosion above the sensitive resource.
- Collect and broadcast native seed on slope as appropriate.

These treatments should be monitored for effectiveness and condition and maintained as necessary until the burned areas have stabilized.

### Non-Specification

**Reconfigure Drainage on Smugglers Road:** Drainage from Smugglers Road is contributing to the slope erosion issues at Scorpion Anchorage associated with treatment WS-1 above. The current water bar/rolling dip should be relocated downslope in order to lessen the amount of runoff entering the incised channel. NPS personnel will perform this work with regular program funds.

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Weaver, D., W., Doerner, D., P., and Nolf, B., eds. 1969, Geology of the northern Channel Islands: Pacific Sections, American Association of Petroleum Geologists and Society of Economic Paleontologists and Mineralogists Special Publication, 200 p.

## CONSULTATIONS

None

## PREPARER(S)

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Eric Nicita, Soil Scientist, Eldorado NF

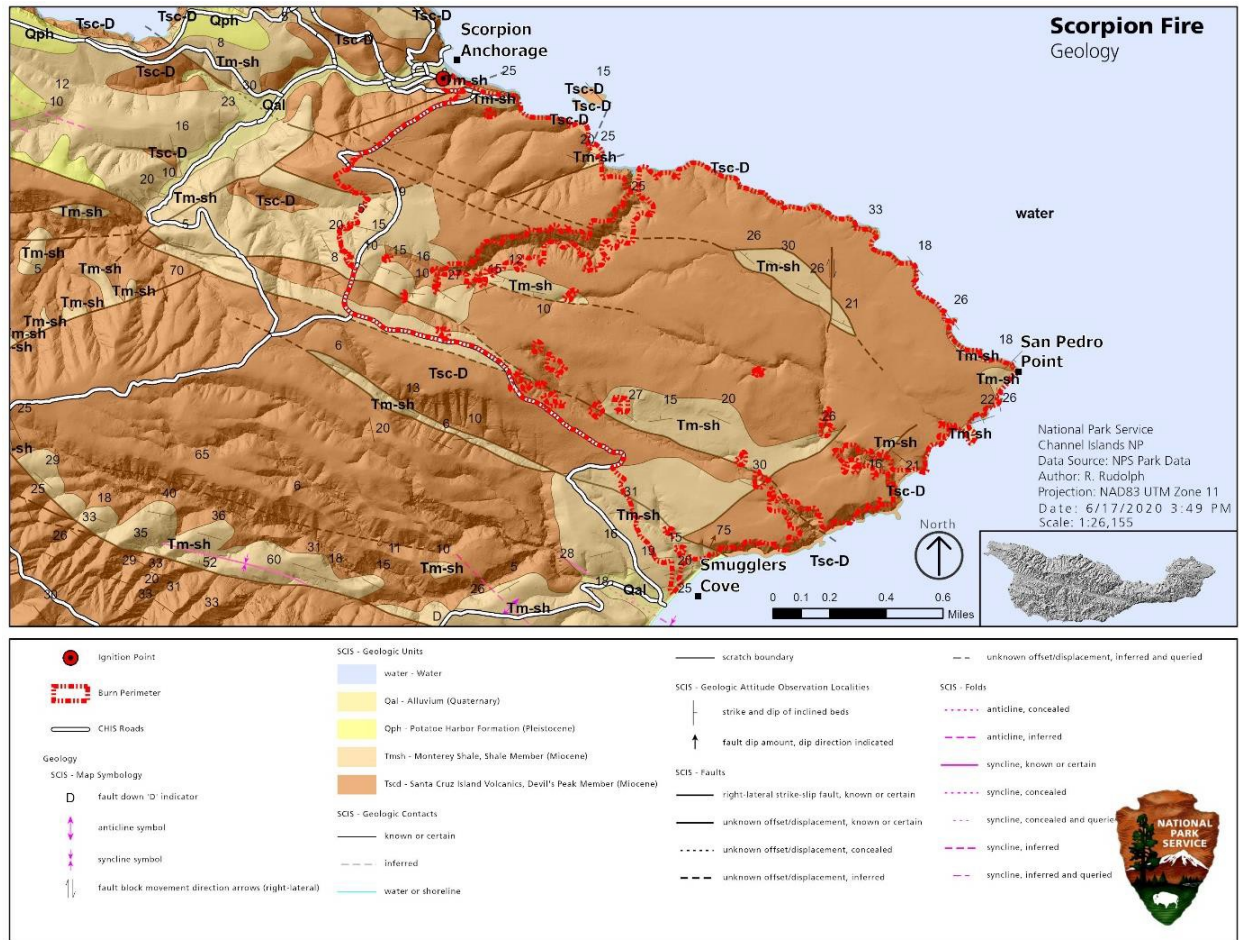


**Figure 1:** Geology map of the Scorpion Fire area.

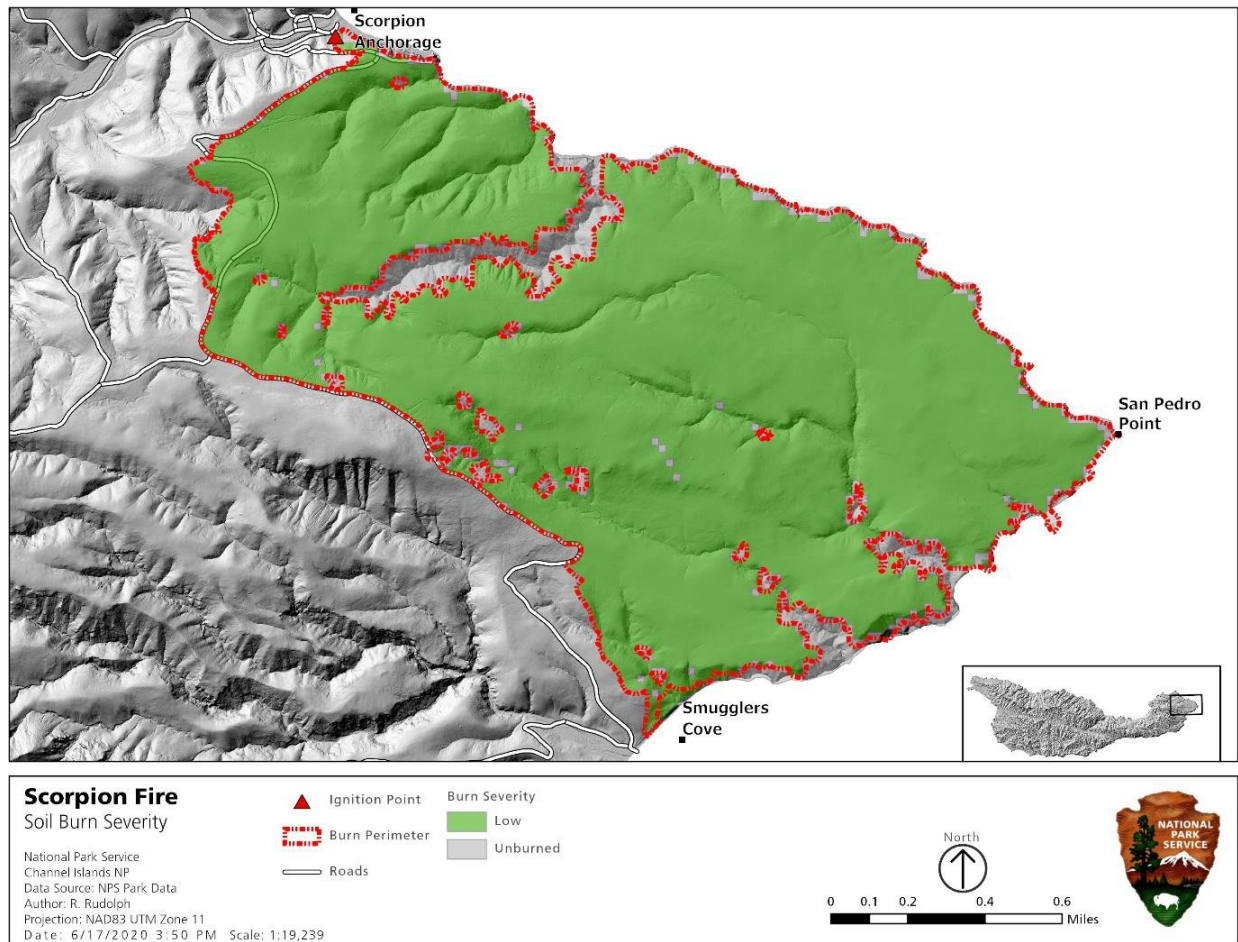


**Figure 2:** Soil Burn Severity map of the Scorpion Fire area.

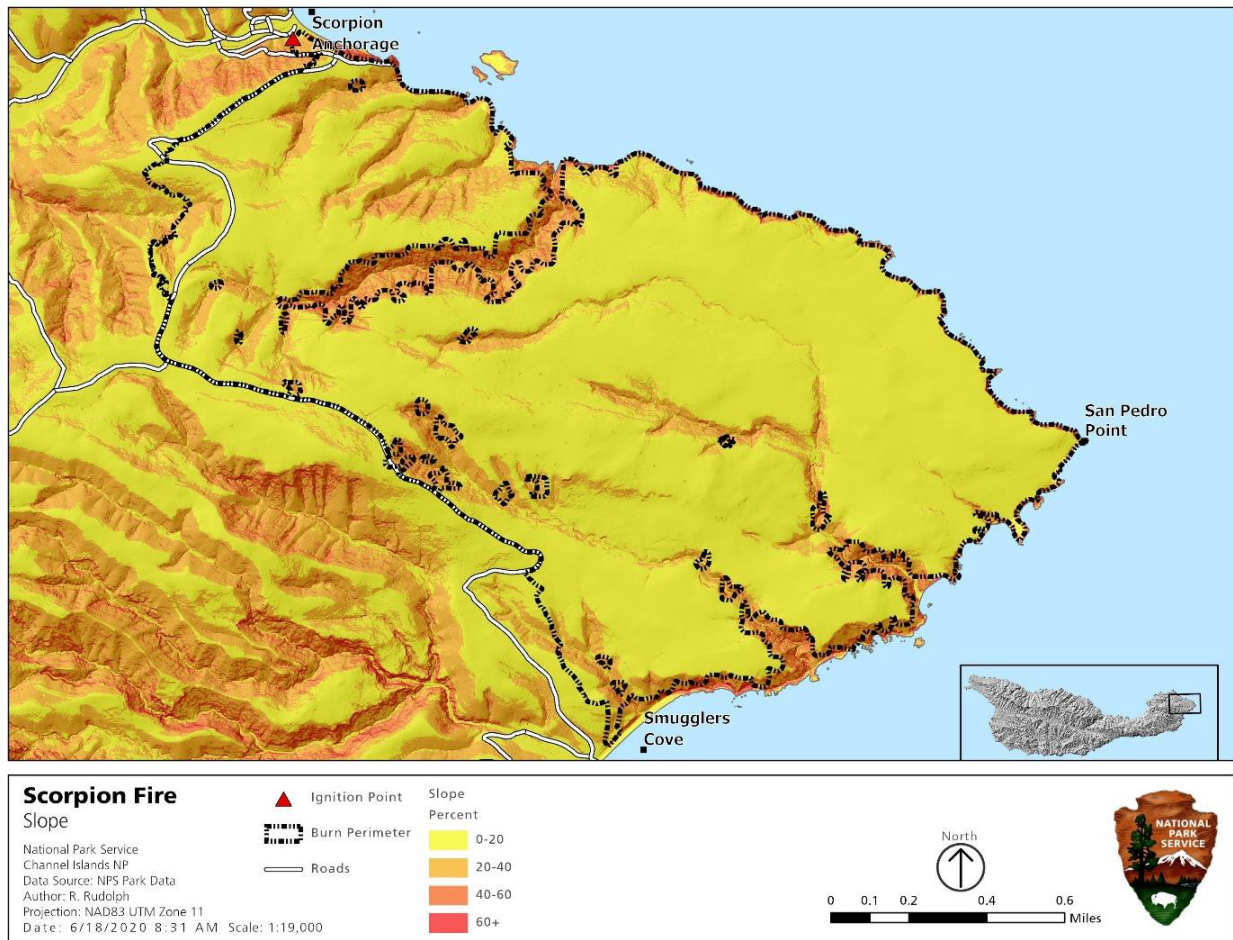


**Figure 3:** Slope in percentage (%) map of the Scorpion Fire area.

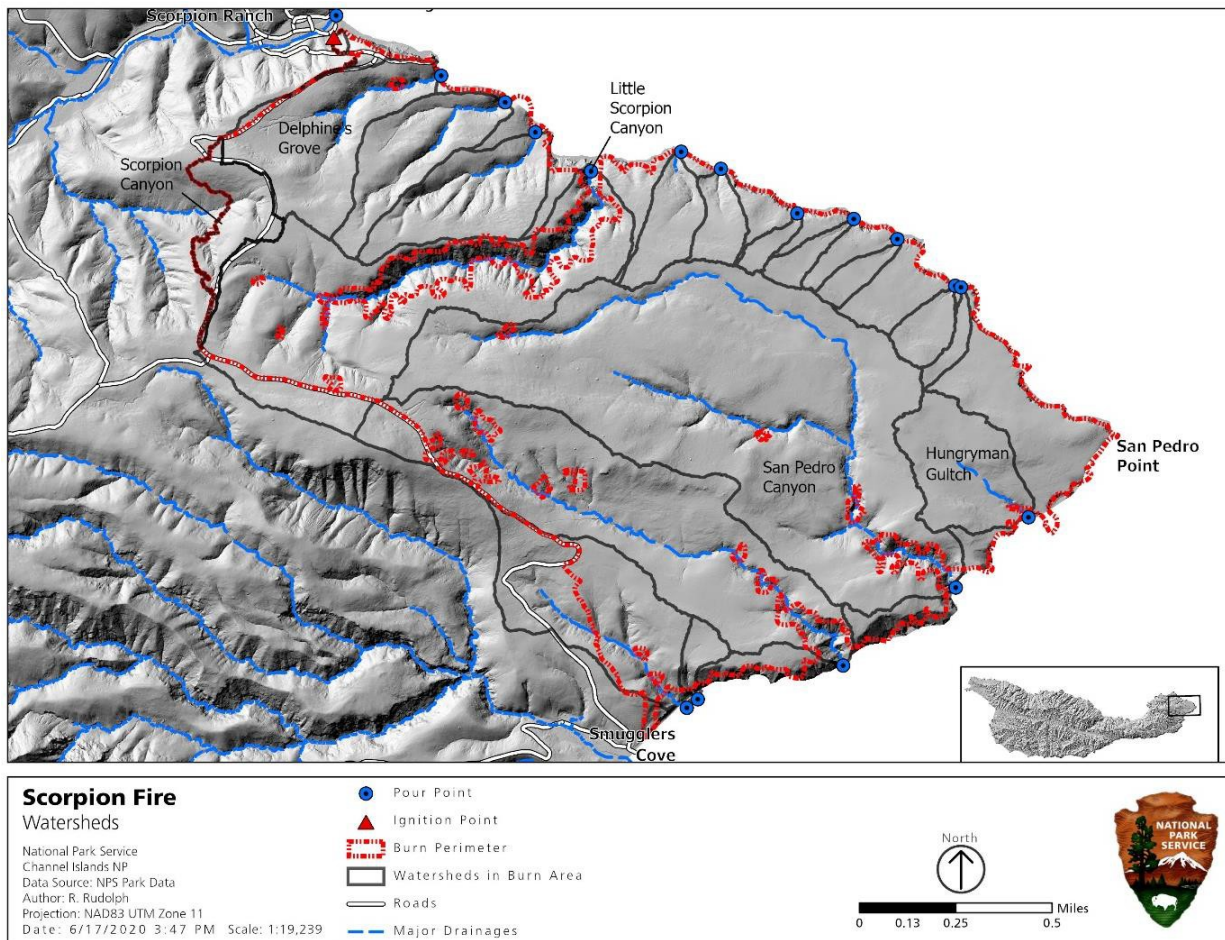


**Figure 4:** Watersheds in the Scorpion Fire area.

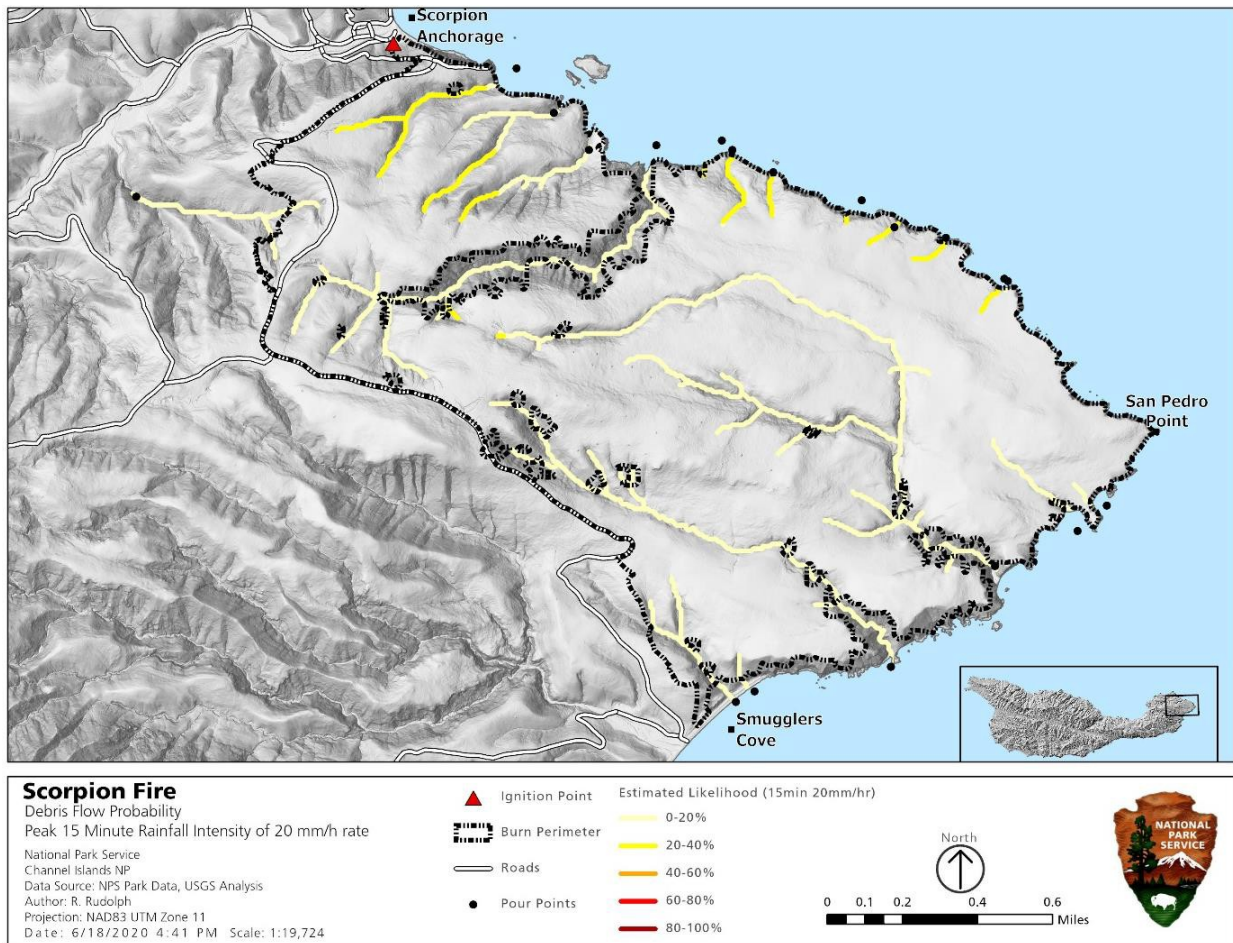


**Figure 5:** Debris Flow Probability based on a peak 15-minute rainfall intensity storm of 20 mm/h rate storm.

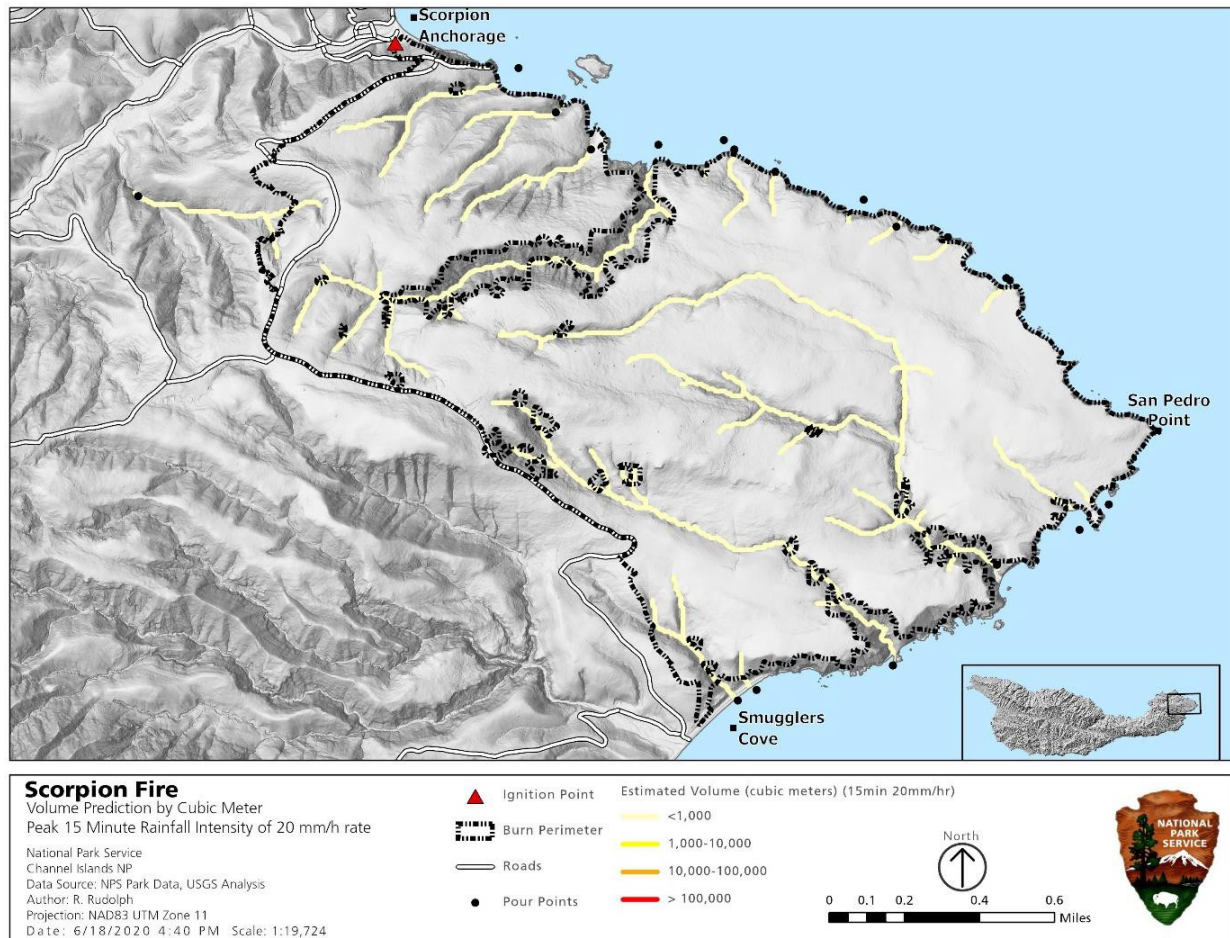


**Figure 6:** Debris Flow Estimated Volume based on a peak 15-minute rainfall intensity storm of 20 mm/h rate storm.

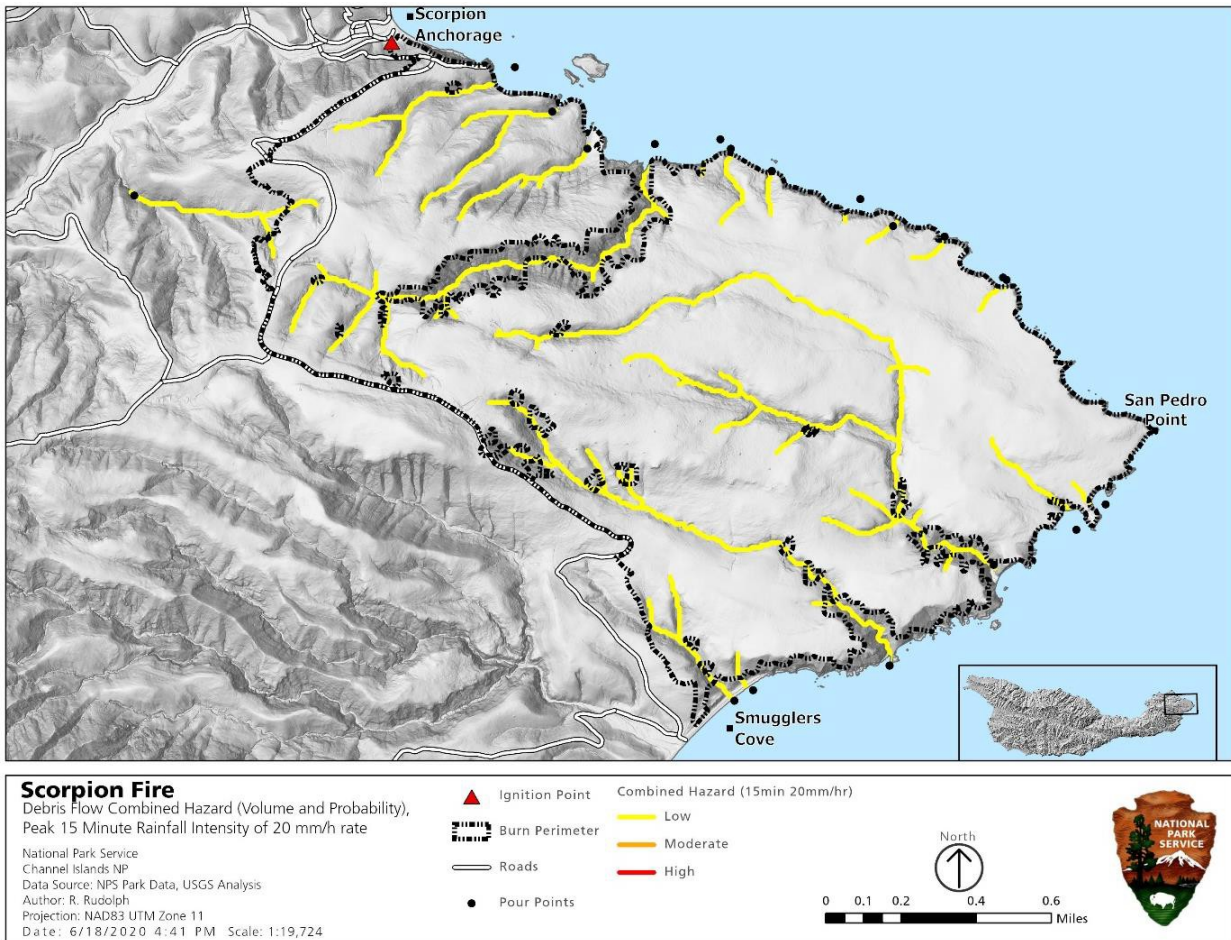


**Figure 7:** Debris Flow Combined Hazard based on a peak 15-minute rainfall intensity storm of 20 mm/h rates.



**Photo 1** – Pre-fire erosional feature; incised gully on the east-end of the burn slope at Scorpion Anchorage.



**Photo 2** – Burned slope above coastal cliff at Scorpion Anchorage vulnerable to rock-fall.



**Photo 3** - Surface erosional features along drainage slopes – Scorpion Fire.



**Photo 4** - Unsorted, unconsolidated materials (sediments and rocks) available to be transported at the bottom of unnamed drainages.



**Photo 5** - Unsorted, unconsolidated materials (sediments and rocks) available to be transported at the bottom of unnamed drainages.



**Photo 6** – Unburned slopes along Little Scorpion Canyon.



**Photo 7** - Burned slope at the south-end of the fire at Smugglers Cove.



**Photo 8** – Cracked Vertisols in the burn area containing high clay content.

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## **Scorpion Fire Emergency Stabilization Plan**

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### **VEGETATION ASSESSMENT**

#### **OBJECTIVES**

- Assess effects of fire on vegetation, particularly the direct and indirect effects that could impact native plant communities and endemic plant species and exacerbate the spread of invasive non-native species.
- Evaluate the effects of the fire on island grassland, coastal sage scrub, and island scrub oak chaparral vegetation types.
- Identify impacts of the fire suppression efforts to endemic plant species, including ground disturbance associated with handline construction, and applications of long-term fire retardant.
- Develop treatment recommendations, if necessary.
- Identify future monitoring needs, if necessary.

#### **ISSUES**

- Direct fire mortality and the ability of endemic and native species to recover.
- Expansion of non-native invasive species and displacement of native plant species as a result of fire, operational (ground disturbance, long-term fire retardant), and post-fire (public access) disturbances within the burned area.
- The effects of reduced vegetation cover on post-fire watershed risks to cultural sites and the marine intertidal from erosion and sedimentation and within and downstream of the fire.

#### **BACKGROUND**

The purpose of a burned area vegetation assessment is to determine the effect of the fire and the post-fire conditions and the risk to important vegetation resources. Identification of values at risk occurs through consultation with individuals and non-governmental organizations, state and federal agencies, and field investigation. If emergency conditions are found, and values at risk are identified and confirmed, then the magnitude and scope of the emergency is described, values at risk and resources to be protected are analyzed, and treatment prescriptions are developed to protect values at risk. Risk to vegetation often means related risks to other values; for example, watershed values, wildlife and cultural landscapes.

## Vegetation

Channel Islands National Park supports a diverse terrestrial flora, including many rare, relict, and endemic species, as well as many nonnative species. Numerous plants are rare on the islands but have a wider distribution on the mainland. On the other hand, due to environmental conditions and isolation from the mainland, many of the plants are only found on the islands and are not on the California mainland. A total of about 790 plant taxa, including species, subspecies, varieties, and forms, have been identified in the park, of which about 578 are native and 205 are nonnative (Junak et al. 1995).

Each island supports a unique assemblage of vegetative communities, which differ due to climate, microhabitats, topography, geology, soils, plant colonization history, isolation, and land use history. Many of the islands' native vegetative communities have been greatly altered by people and the introduction of nonnative species and are in various stages of recovery. The major vegetative community types on the islands include coastal bluff, coastal sage scrub, *Baccharis* scrub, grasslands, chaparral, island oak woodlands, mixed hardwood woodlands, pine stands, and riparian areas. Currently, the most extensive vegetation communities on the islands are grassland and coastal sage scrub with significant areas of chaparral on Santa Cruz Island (Figure V-1). Various phases of coastal bluff scrub constitute the next largest category. Mixed broadleaf woodland stands, oak woodlands, and pine stands are scattered throughout on sheltered slopes and canyons, or on ridges exposed to frequent moist fogs. Smaller but no less significant vegetation communities include coastal dune, caliche scrub, and wetlands.

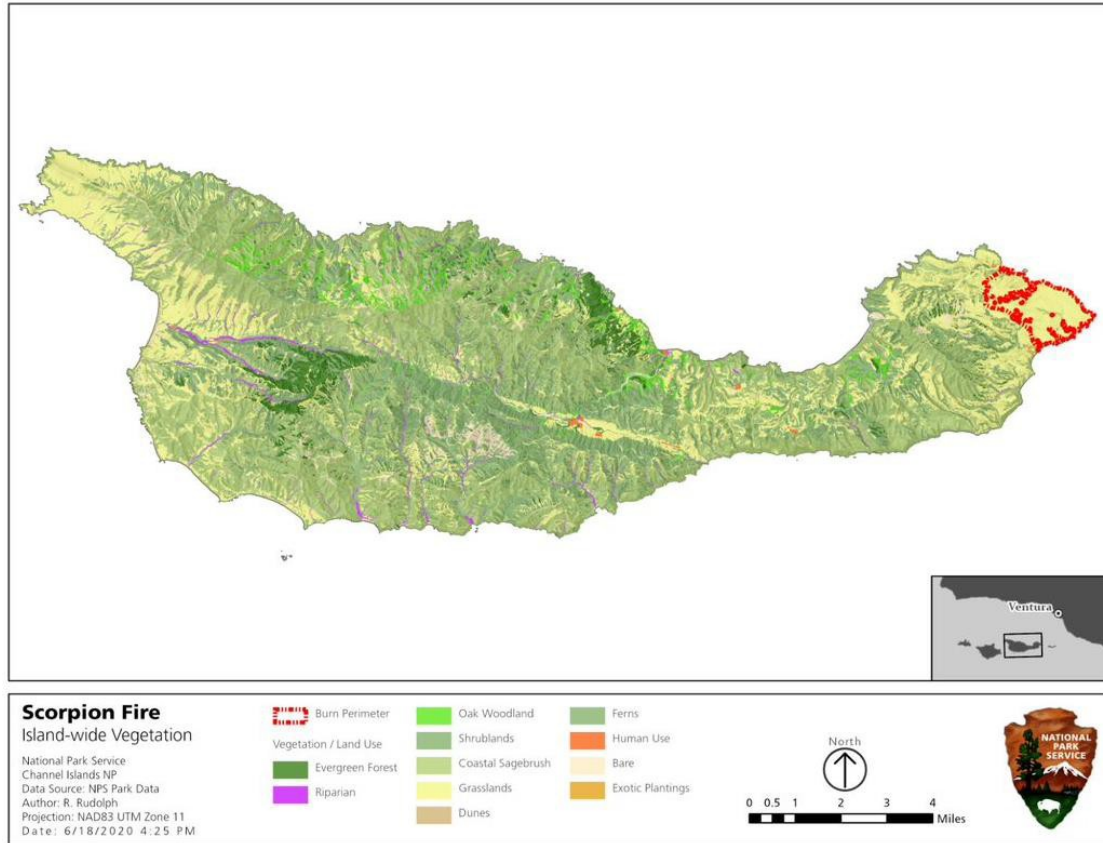


Figure V-1: Santa Cruz Island Vegetation.

Chaparral is a plant community composed of woody shrubs that are well adapted to a Mediterranean climate. The chaparral found on the Channel Islands is known as island chaparral, and while it is similar to mainland chaparral, there are some differences. The dominant island chaparral species tend to be taller and more tree-like resulting in an open woodland appearance. This may be due in part to climatic differences, a lower fire frequency, or the effects of long-term, intensive grazing. Additionally, some of the species that characterize mainland chaparral communities, such as manzanita, are replaced in island chaparral by endemic species that are unique to the Channel Islands. On Santa Cruz Island, island chaparral shrubs include species such as chamise (*Adenostoma fasciculatum* var. *fasciculatum*), prostrate chamise (*A. fasciculatum* var. *prostratum*), Santa Cruz Island manzanita (*Arctostaphylos insularis*), island ceanothus (*Ceanothus arboreus*), toyon (*Heteromeles arbutifolia*), and mountain mahogany (*Cercocarpus betuloides* var. *blancheae*) among other species. Towards the east end of Santa Cruz Island and on the isthmus, Santa Cruz Island manzanita is replaced by McMinn's manzanita (*Arctostaphylos viridissima*). Island chaparral is highly valued by a diverse array of wildlife. Birds especially enjoy the dense cover provided by mature chaparral for building their nests. Species like Allen's Hummingbird, Bewick's Wrens, Orange-crowned Warblers and Island Scrub-jays may all be found in island chaparral.

environments. Island foxes, which are known to have a taste for manzanita berries, and other animals like mice, lizards, and frogs might also be concealed in the understory.

Coastal sage scrub is a very extensive vegetation community on the Channel Islands, although less extensive than grasslands. It is present on every island, especially on drier, south-facing slopes. In some areas coastal sage scrub has been disturbed by invasive species and decades of past grazing. In the most heavily impacted areas, the habitat can appear as coastal sage scrub species scattered amidst a sea of exotic grasses. Healthier, more intact areas of coastal sage scrub on Santa Cruz Island, are nearly impenetrable thickets of three- to four-foot-tall shrubs. At their edges, coastal sage scrub communities often mix with grassland, chaparral, and other scrub communities. Plant species that characterize coastal sage scrub communities include the pleasantly aromatic California sagebrush (*Artemisia californica*), bright yellow bush sunflower (*Encelia californica*), lemonade berry (*Rhus integrifolia*), goldenbush (*Isocoma menziesii*), coastal prickly pear cactus (*Opuntia littoralis* and *O. oricola*), and black sage (*Salvia mellifera*), and the mostly endemic Island buckwheat (*Eriogonum grande* var. *grande*) and Santa Cruz Island buckwheat (*Eriogonum arborescens*). Coastal sage scrub also serves as important habitat for a variety of Channel Islands animals. The Channel Islands Song Sparrow, for example, prefers to nest in many of the shrubs, characteristic of coastal sage scrub habitat. Song sparrow populations on San Miguel and Santa Rosa islands have grown as scrub habitat has improved following the removal of non-native grazers. Island Loggerhead Shrikes, Orange-crowned Warblers, Channel Island foxes, Channel Island slender salamanders, and island deer mice are among the many other species that make use of coastal sage scrub habitat.

Grasslands are among the most widespread plant communities on the Channel Islands, along with coastal sage scrub. They are found on all of the islands, particularly on coastal terraces and slopes where extensive grazing once occurred. Introduced annual grasses are the most common plant species within the Channel Islands' grassland communities. These include rip-gut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), wild oats (*Avena fatua*), slender wild oats (*Avena barbata*), Italian rye grass (*Lolium multiflorum*), red brome (*Bromus madritensis* ssp. *rubens*), and foxtail (*Hordeum murinum*). Native forbs and perennial bunchgrasses also occur in the grassland communities, although they are less common. These species include golden stars (*Bloomeria crocea* ssp. *crocea*), wild hyacinth (*Dichelostemma capitatum*), gold fields (*Lasthenia gracilis*), tidy tips (*Layia platyglossa*), California buttercup (*Ranunculus californicus*), blue-eyed grass (*Sisyrinchium bellum*), purple needlegrass (*Stipa pulchra*), and meadow barley (*Hordeum brachyantherum* ssp. *californicum*).

On Santa Cruz and Santa Rosa Islands, solitary native shrubs such as lemonade berry (*Rhus integrifolia*) and toyon (*Heteromeles arbutifolia*) are found in the middle of large annual grasslands. Their presence indicates that native shrub communities previously existed in those areas. Seedlings of these shrubs are increasing rapidly. It is believed that with the removal of non-native herbivores, and the help of some active habitat restoration, these shrubs will continue to expand and change what is now exotic annual grassland back to native shrub or woodland communities.

## Special-Status Species

Nine federally listed species are known to occur on Santa Cruz Island (Appendix B. Federally Listed Plant Species on Santa Cruz Island), but there are no federally listed species presently known from the Scorpion Fire burn area. One rare species, island rushrose (*Crocanthemum greenei*, previously *Helianthemum greenei*), can be abundant following fire, although the status of potential populations of island rushrose within the Scorpion Fire is unknown.

Among the other native species of particular management concern within the burned area include *Bromus carinatus*, *Elymus triticoides*, Santa Cruz Island buckwheat, island buckwheat, northern island hazardia, and Greene's dudleya.

## Ecosystem threats from non-native invasive species

Plants and animals living on islands are especially vulnerable to extinction due to the physical boundaries, limited populations, and lack of genetic variability. A major threat to island species is non-native invasive species. The term "invasive species" is used by resource managers to describe non-native plants that grow or spread aggressively, reduce native biodiversity, reduce available plant and wildlife habitat, or fail to provide critical ecosystem services. For example, the herbaceous weeds that predominate on the Channel Islands do not perform the vital ecosystem function of soil stabilization that native shrublands do, so erosion increases and causes sedimentation of streams, harming aquatic wildlife and water quality. Finally, even species that are less aggressive are an unnatural element in the unique and isolated Channel Islands flora so their eventual removal is important as part of the long-term restoration of the island ecosystem.

Channel Islands National Park is vulnerable to colonization and recolonization by non-native plants because of human transport to the islands and natural processes such as wind and sea currents. As a result, more than 25 percent of the plants known from the park are introduced. As the number and variety of non-native plants increase on the nearby mainland and as the park visitation and operations increase, the chance of accidental introductions of plants also increases. The primary visitor landing points on the park islands are often where non-native plants are first found. Recently arrived non-native plants are easy to eliminate if detected and acted upon promptly. The cost and feasibility of control increases exponentially each year a non-native species is left to spread uncontrolled.

## Management of non-native invasive species on Santa Cruz Island

Much of coastal California experienced exotic invasions following European contact which resulted in conversion of ecosystems dominated by native perennial grass and annual and perennial dicot species to ecosystems dominated by Mediterranean annual grasses and forbs (Mack 1989). Because invasive plant species are known to out-compete native plants in recovering ecosystems, reduce biodiversity, and alter ecosystem function (Wilcove et al. 1998, Bossard et al. 2000, Pimentel et al. 2000) many studies have examined the mechanisms by

which exotic annuals prevail over native perennial species in California's grasslands. Levine et al. (2003) suggested that the ability of exotic species to establish and spread is related to their ability to competitively suppress resident species. On the other hand, Corbin and D'Antonio (2004) found evidence that native perennial grasses are strongly competitive once established and disturbance such as agriculture, grazing, and severe drought were likely important factors in compositional shifts in community composition in California. Seabloom et al. (2003) found that exotic annual grasses were competitively superior only with repeated disturbance and that recruitment limitation of native perennials was a factor maintaining dominance of exotic annual species in Santa Ynez Valley, CA.

Restoration efforts often focus on shifting community composition from exotic dominance to native dominance by control of exotic species while native vegetation recovers. Often controlling exotic species is a disturbance itself and favors the resident exotics. Studies have shown that treating one invasive species without augmenting the native plant community is often followed by re-invasion or establishment of a novel invader (see Kettenring and Adam 2011) and that a depauperate native seed bank contributes, in part, to the success of exotics following control actions (Seabloom et al. 2003).

Santa Cruz Island, the largest island within Channel Islands National Park, is home to eight endemic plant species (Schoenherr et al. 1999) and 16 vegetation communities (Junak et al. 1995). In many areas, the native plant communities, including grassland, coastal-bluff scrub, coastal sage scrub, and grasslands were disturbed by agriculture, extensive grazing by introduced sheep (*Ovis aries*), pigs (*Sus scrofa*), and cattle (*Bos primigenius*) and a suite of exotic plant species which comprise 26 percent of the current flora (Junak et al. 1995). Furthermore, decades of overgrazing significantly reduced woody vegetation in coastal scrub and chaparral communities, and in many areas, artificially maintained grasslands composed in large part of exotic annual grasses (Junak et al. 1995).

Since 2001, Channel Islands National Park, in cooperation with The Nature Conservancy (TNC) and other partners has been actively undertaking actions to restore the park's natural ecosystem. Projects have included reintroduction of bald eagles, relocation of golden eagles, restoration of the formerly federally endangered island fox, eradication of feral pigs – the last of the large, introduced nonnative animals - and control of invasive plant species. Furthermore, the removal of nonnative animals has been coupled with the control of non-native fennel and other weeds that have the potential to spread even in the absence of the disturbance caused by pigs (Zavaleta et al. 2001).

The removal of introduced ungulates from Santa Cruz Island has largely benefited native vegetation (Cohen et al. 2009). However, an unintended consequence of exotic animal removal was the rapid expansion of exotic fennel (*Foeniculum vulgare*) (Dash and Gliessman 1994, Brenton and Klinger 1994, Brenton and Klinger 2002). Concerted efforts to control and treat fennel and other priority invasive plant species has been on-going throughout Santa Cruz Island, including within the Scorpion Fire burn area (Figure V-2).

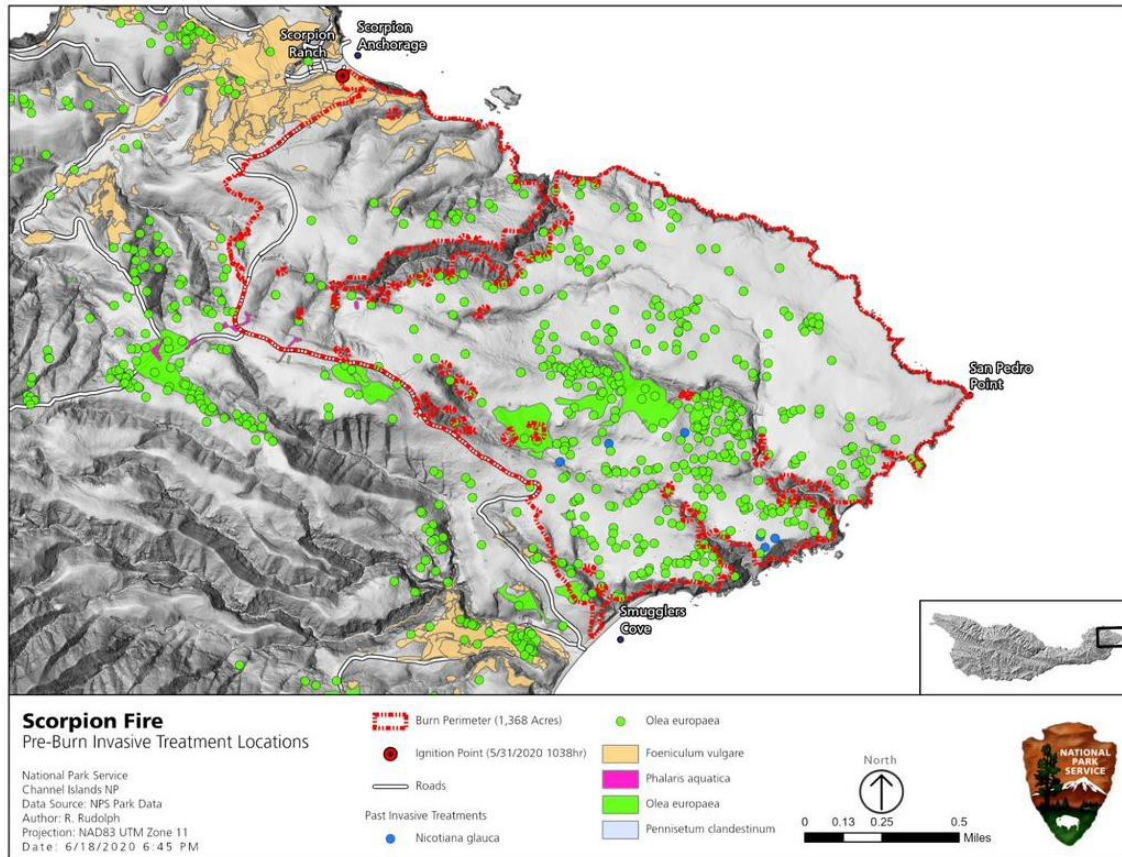


Figure V-2: Pre-burn Invasive Plant Treatment Locations.

Channel Islands National Park, in cooperation with numerous partners has conducted a thorough assessment of all alien plants on Santa Cruz Island (Santa Cruz Island Vegetation Map, Santa Cruz Island Weed Map, Junak et al. 1995; Randall 1996; and Zimdahl 1993) culminating in a Santa Cruz Island Weed Management Plan. The plan organized alien species into functional groups based on elements of their life histories. Weedy species were then categorized and prioritized using California Invasive Pest Council’s “List of Exotic Pest Plants of Greatest Ecological Concern in California” (1999) and Hiebert’s “Prioritizing weeds: The alien plant ranking system” (2001).

Santa Cruz Island is within the boundaries of Channel Islands National Park and is jointly owned and managed by the NPS and TNC. The NPS owns the eastern 24% of the island and TNC owns the remaining 76%. The Park’s enabling legislation recognizes the value of managing the island as a single ecological unit and authorizes the expenditure of funds island-wide. The NPS and TNC partner on the island-wide restoration of the ecosystem. Similarly, TNC funds needed ecological work regardless of land ownership.

The Environmental Impact Statement for the Santa Cruz Island Primary Restoration Plan (EIS) identified feral pig eradication and fennel control as the “two most important actions that can

be implemented in order to abate ongoing resource degradation and recover unique island resources” (NPS 2002). Feral pig eradication was completed in 2005; however, fennel remains a significant component of the island plant community. Fennel now infests approximately 270 acres east of the Montañon from the acreage mapped and treated. There are approximately 25 acres in the burn area which represents fennel coverage; however, the total area of invasive coverage is higher.

The park and its partners including TNC, the University of California Natural Reserve System and others have been conducting a coordinated assault on invasives. Each partner emphasizes a different, but complementary effort in island-wide weed control. The Nature Conservancy has developed a weed map, updated a Weed Management Plan for Santa Cruz Island, and has a program to treat incipient and remote weeds island-wide. The University of California Natural Reserve System provides on-the-ground observations of new invaders and the spread of outliers. The California Exotic Plant Management Team brings to the effort extensive expertise in weedy species control, data management, and reporting. The NPS has expended considerable time and expense in major control efforts of sweet fennel and invasive olive at the eastern end of Santa Cruz Island and continues to coordinate and cooperate with each agency and organization to manage an extensive weed database and align efforts and ensure maximum benefit in the control or eradication of invasive plant species.

Channel Islands National Park, together with TNC and the Navy, jointly developed and manage a biosecurity program designed specifically to prevent new introductions of invasive species to the California Islands. The park does not allow the transport of plants or firewood to the islands. The park is developing additional requirements to minimize the potential for inadvertent spread of undesirable plants. The park and our partners give presentations and have developed educational materials regarding the impact of non-native plants and actions the public should take to clean their boots and gear before traveling to the islands. The environmental and management impacts of non-native plants can range from negligible to very serious based on a number of factors.

### **Fire Suppression Activities and Vegetation**

Some fire suppression activities have the potential to create or exacerbate existing invasive species issues in wildlands (Brooks 2008). For example,

- Firefighters and firefighting equipment can serve as vectors for introducing propagules of novel invasive species and spreading those of species currently present.
- Ground disturbance, such as the construction of firelines, can displace native vegetation and create ecological pathways (e.g., increased access to light, moisture and/or nutrients) that are favorable to the establishment and spread of certain invasive species.
- Long-term fire retardants, which are comprised largely of agricultural fertilizer (ammonium phosphate), can enrich nutrient-poor terrestrial ecosystems, thereby favoring invasive species that are efficient at nutrient uptake.

The phytotoxic impacts of long-term retardants on plants are not well documented in scientific literature (USDA, Forest Service 2011). Studies revealed full and partial mortality, leaf deformities, and inhibited and slowed germination and growth. Complicating factors include site-specific variables (e.g., species vulnerability, timing of application, volume of application) and the long-term retardant formulation applied (e.g., toxic additives, such as sodium ferrocyanide, have been removed outright, and quantities of nitrogen and phosphorus reduced through time). Regionally, on San Bernardino National Forest, a direct long-term retardant misapplication on Cushenbury buckwheat (*Eriogonum ovalifolium* var. *vineum*) produced no short-term foliar burn, phytotoxicity, or mortality.

Long-term retardant persistence in the environment appears to be variable, although most studies suggest little or no effect after one to two years (USDA, Forest Service 2011). Further, discerning the fertilizer response from long-term retardant verses that resulting from soil changes due to fire (and removal of vegetation due to other suppression actions) can be complicated. Soils with high clay and organic matter content, such as those comprising much of the Scorpion Fire burned area (see Geology and Soils Assessment), tend to bind tightly to nitrogen and phosphorus, which limits mobilization via runoff. However, these same characteristics also mean that nitrogen, in particular, and phosphorus may be readily available for use by plants. Timing of applications can also be important; late spring tends to be lower risk for soil impacts in areas with a summer dormant season.

## **RECONNAISSANCE METHODS**

From June 1-5, 2020, Clark Cowan served on-site during the Scorpion Fire as the READ/REAF. In addition to providing guidance on minimizing impacts to natural and cultural resources, he mapped areas of remaining habitat within the burn area and noted any high value native plant communities, as well as documenting suppression-related vegetation impacts.

From June 11-12, 2020, additional assessment work in the burn area was conducted by Clark Cowan, Annie Little, and Yonni Schwartz (USFS). Additional mapping and assessment work was conducted by Clark Cowan in the burn area from June 19-21, 2020.

## **FINDINGS**

### **Fire Effects on Vegetation**

The fire area was mostly comprised of grassland vegetation including large expanses of non-native grasses mixed with native bunch grass and coyotebrush (*Baccharis pilularis*). The non-native grasses are comprised of *Avena* spp., *Bromus diandrus*, and *Festuca multiflorum* with patches of *Stipa miliacea* and *Phalaris aquatica*. The fire generally burned with low intensity, except for scattered small areas of moderately burned coyotebrush and chaparral on some of the slopes as well as downed trunks in Delphine's Grove, an historic Monterey cypress grove. The majority of the vegetation types burned (1,318 acres) were native but there were non-native grasses throughout the area (Table V-1 and Figures V-3, V-4, V-5). High-quality patches

of endemic species within the burned area included *Bromus carinatus*, Santa Cruz Island buckwheat, island buckwheat, northern island hazardia, and Greene's dudleya (Figure V-6).

Fully intact fennel crowns were visible scattered within the burn area, and fennel, rice grass (*Stipa miliacea*) and Harding grass (*Phalaris aquatica*) were observed resprouting. Coastal sage scrub is more sensitive to fire and there may be high mortality of mature *Artemisia californica* and *Eriogonum* species (Figure V-5), as was observed in the Santa Cruz fire. However, these species were observed with a large flush of seedlings where conditions allowed with some resprouting where the burn intensity was low in the Santa Cruz fire. The degree of competition from non-native annuals to new seedlings will likely determine whether the coastal sage scrub recovers or whether grassland predominates.

Table V-1: Vegetation Types Burned by Scorpion Fire

| Vegetation Types Burned by Scorpion Fire                  |             |                |
|-----------------------------------------------------------|-------------|----------------|
| Common Name                                               | Sum Acres   | Percent        |
| Californian Grassland & Meadow Mapping Unit               | 607         | 46.03%         |
| Needlegrass - Melic Grassland Alliance                    | 513         | 38.92%         |
| Island Buckwheat Scrub Alliance                           | 115         | 8.72%          |
| Lemonade Sumac Coastal Bluff Scrub Alliance               | 33          | 2.53%          |
| Coyotebrush Scrub Alliance                                | 33          | 2.51%          |
| Baja Semi-Desert Coastal Succulent Scrub Group            | 13          | 1.02%          |
| Californian Cliff, Scree & Rock Vegetation Group          | 2           | 0.15%          |
| Planted trees and shrubs Mapping Unit                     | 1           | 0.06%          |
| Menzies' Goldenbush Shrubland Alliance                    | 0           | 0.03%          |
| Coastal and Island Scrub Oak Chaparral Alliance           | 0           | 0.03%          |
| Sparsely vegetated drainage channels & seeps Mapping Unit | 0           | 0.00%          |
| Urban/disturbed Mapping Unit                              | 0           | 0.00%          |
| <b>Total</b>                                              | <b>1318</b> | <b>100.00%</b> |

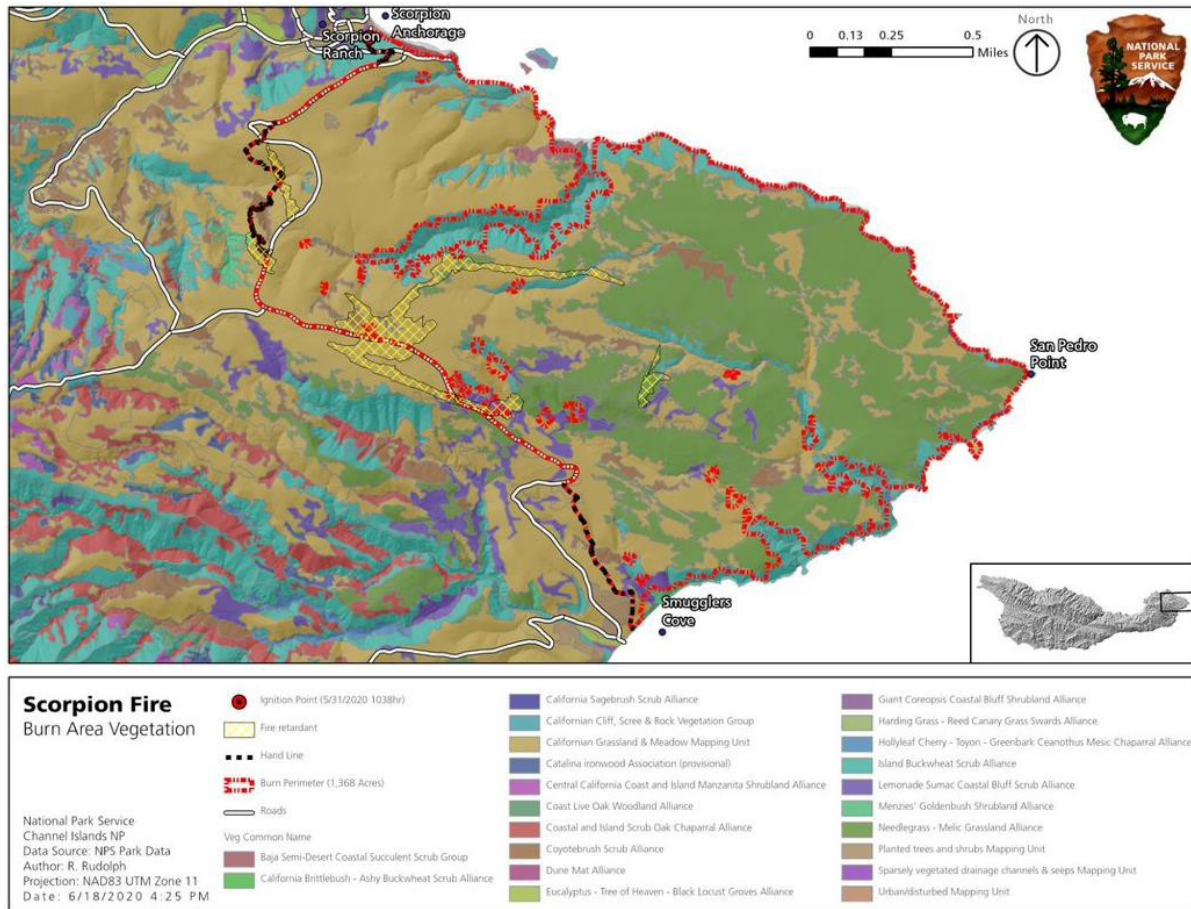


Figure V-3: Pre-Fire Vegetation Types Burned in the Scorpion Fire (5/31/2020).



Figures V-4 and V5: Pre-burn coastal sage scrub vegetation on Scorpion slope versus post-burn. Photos by NPS and CIES.



Figure V6: Burned patch of island endemic plants including northern island hazardia and island buckwheat. Photo: Annie Little, NPS.

## Invasive Species

Problematic invasive species observed in and near the Scorpion Fire included:

***Sweet fennel*** [Isolated patches throughout, unknown survivorship, commenced resprouting]

Scientific Name: *Foeniculum vulgare*

Origin: Mediterranean region

Fennel, an erect perennial herb native to the Mediterranean area, was introduced to Santa Cruz Island in the late 1800s (Junak et al. 1995). Common in coastal-bluff scrub, coastal sage scrub, chaparral, and riparian plant communities at lower elevations, it is particularly aggressive in abandoned agricultural fields, grazed areas, and recently abandoned fields (Beatty 1991). Fennel forms a leafy green rosette in the spring and fibrous, persistent reproductive stalks growing to 2 - 2.5 meters in height during summer months, dwarfing grasses and native shrubs and forbs in the understory. Fennel is a prolific seed producer, but it is unknown (>15 years at present) how long seeds remain viable in the soil. The NPS in collaboration with The Nature Conservancy began a program to control fennel using 2 % concentration Triclopyr in target

areas along roads and trails island-wide in 2007 to present. Control efforts were largely successful east of the Montañon Ridge, but fennel remains a threat to many plant communities across much of the island including the Central Valley and West and East ends.

***Rice grass, Smilo grass*** [observed in the burn area]

Scientific Name: *Stipa miliacea*

Origin: Eurasia

Rice grass is a tufted perennial grass that thrives in dry or moist sites in disturbed areas. This species has spread rapidly since it was first collected in Cañada de la Portezuela in April 1967.

***Harding grass*** [observed in the burn area]

Scientific Name: *Phalaris aquatica*

Origin: Europe

Harding grass is an erect, waist-high, stout perennial bunch grass. It easily displaces and outcompetes native species and large, dry stands present a fire hazard. This species has spread rapidly since it was first collected on the South Ridge in July 1982. There is a large stand in the Potato Harbor area west of the campgrounds along with numerous satellite populations that are expanding on the east end, including the burn area.

***Kikuyu grass*** [known in burn area]

Scientific Name: *Pennisetum clandestinum*

Origin: East Africa

Kikuyu grass is a prostrate, rhizomatous perennial grass, capable of engulfing existing vegetation where moisture is adequate. It can form a dense mat up to 3 feet thick, presenting a fire hazard. There is a known patch following a drainage in Hungryman Canyon near an old dam abutment for a stock tank.

***Summer mustard and Black mustard*** [known in burn area]

Scientific name: *Hirschfeldia incana*, *Brassica nigra*

Origin: Eurasia

Both mustards are invasive, *Hirschfeldia* and *Brassica nigra* are allelopathic and can modify the soil to make establishment of native vegetation difficult. *Hirschfeldia* behaves as a short lived perennial, resprouting from the root for more than one season while *Brassica* behaves as an annual weed with both species dominating disturbed grasslands especially along roads and trails.

***Common Horehound*** [known in burn area]

Scientific name: *Marrubium vulgare*

Origin: Europe

Horehound is an herbaceous perennial plant thriving in disturbed areas of grassland and coastal bluff scrub throughout the island. Within the burn area it forms scattered patches in both grassland and canyon bottoms mixed with scrub vegetation.

***Tree tobacco*** [known in burn area]

Scientific name: *Nicotiana glauca*

Origin: South America

Tree tobacco forms a tree/shrub up to 20 feet tall and is short lived. It thrives in disturbed soils, grassland and canyon bottoms. It is on the list of invasives of concern for the island since it does not occur west of the Montañon ridge and so far is confined to the eastern portion of the park property.

**European olive** [known in burn area]

Scientific name: *Olea europaea*

Olives were introduced in the late 1800's as what remains as an historic olive grove at Smugglers but had spread throughout the burn area previously through introduced sheep and pigs. Without control it would become a major constituent of the shrub component of chaparral and coastal bluff scrub. Numerous individuals have been removed from natural areas and the effort is ongoing.

**Spanish broom** [known in burn area]

Scientific name: *Spartium junceum*

Spanish broom is a tall shrub, a prolific seed producer with a long-lived seed bank that responds readily to fire and disturbance. It forms dense stands, adding to the fuel load and excluding native vegetation and so presents a threat to post-fire recovery of native vegetation.

**Common Russian thistle** [known in burn area]

Scientific Name: *Salsola tragus*

Origin: Southeast Russia and Siberia

Russian thistle is a 1-2 foot tall annual that has invaded the south side of Santa Cruz Island and is spreading inland along roads and trails. It is known from Smugglers Beach, along the bluffs toward San Pedro Point, and along the Smugglers Road. It is a federally-listed noxious weed and listed in the California Invasive Plant Council's [Inventory](#). With the fire and subsequent soil disturbance, Russian thistle presents a threat to native revegetation in the burned area.

## **Fire Suppression Impacts**

Fire suppression impacts on the Scorpion Fire included handline construction and aerial long-term fire retardant drops.

Three sections of handline, totally approximately 8,800 feet, were constructed along the western margin of the fire (Figure V-2), principally in areas where the road between Scorpion Anchorage and Smugglers Cove would not serve as effective fireline. The handline—which was a narrow ( $\leq 2$  ft.) scrape to mineral soil—was largely constructed in grassland (Californian Grassland & Meadow Mapping Unit), with small sections intersecting Island Buckwheat Scrub Alliance, Lemonade Sumac Coastal Bluff Scrub Alliance, and Coyotebrush Scrub Alliance (Figure V-2).

On a steep the handline above Scorpion, individuals of *Dudleya greenei*, a small endemic succulent, were uprooted and replanted as part of the handline repair by the fire crews. At the locations where sections of handline intersected lemonade berry shrubs, these areas were cut back as part of the line construction but will resprout readily.

The ground disturbance associated with handline construction and repair may create an environment favorable to invasive establishment and spread. Further, although firefighting personnel cleaned vehicles, it is unknown if other equipment and personal gear were cleaned prior to deployment on the fireline. These are the locations—as well as the fire camp near the Scorpion housing area—where introduction of novel invasives is of greatest concern.

The ten aerial long-term fire retardant drops occurred on the western margin and central interior of the Scorpion Fire (Figure V-2), covering an area of approximately 55 acres within and immediately adjacent to the burned area. Retardant applications occurred primarily in grassland (Californian Grassland & Meadow Mapping Unit, Needlegrass - Melic Grassland Alliance) with smaller intersections in Island Buckwheat Scrub Alliance, Lemonade Sumac Coastal Bluff Scrub Alliance, and Coyotebrush Scrub Alliance (Figure V-2).

A significant proportion of the area where retardant was applied burned during the fire (often through the thatch understory, leaving some retardant-coated standing grass stems unburned). This combined with the high winds during application, which caused considerable retardant drift, made accurate mapping of the drops difficult. The upside is that a percentage of retardant likely volatilized through consumption and that which remains on the landscape is often more thinly distributed as opposed to a continuous slurry.

Finally, although remaining retardant is unlikely to mobilize given the factors described above, additional nitrogen and phosphorus may be available with the resumption of the growing season. As such, it will be important to monitor drop areas for invasives.

## RECOMMENDATIONS

The Scorpion Fire has created the potential to increase the abundance of fennel, a target species for ongoing invasive plant management by TNC and NPS, and to expand the distribution and abundance of a whole suite of additional target weed species. In the absence of immediate, emergency treatment, these species will become well established and expand their distributions. Even areas of native vegetation are vulnerable to increased cover of non-native herbaceous species that will slow or inhibit recovery of natives that are dependent on recruitment from the seed bank. Native recovery in predominantly non-native vegetation types is unlikely to occur naturally postfire in the absence of active control measures to reduce competition. Conversely, postfire conditions provide an extraordinary opportunity to control target invasive species while they are particularly vulnerable to treatment.

In addition to treating invasive species, limiting human activity in the burned area will be key for re-establishment of native vegetation and preventing further spread of invasives.

## **Specifications**

Four specifications are prescribed to address emergency post-fire vegetation issues on the Scorpion Fire. Additionally, an FY21 Burned Area Rehabilitation (BAR) funding request will be submitted in September 2020 to fund ongoing invasive species detection and control. The contents of this request will be formulated based on the recommendations and findings of specifications VEG-1 and VEG-2, as well as several proposed non-specification activities.

***VEG-1 (Develop Invasive Species Treatment Plan):*** In FY20, convene a technical advisory group of NPS, TNC and consulting natural resource managers and experts to develop a long-term invasives treatment plan for the Scorpion Fire. Tasks will include identifying priority species, treatment areas, control methods and long-term restoration objectives. The plan will be developed from existing data and new information obtained as part of specification VEG-2, and serve as the basis for formulating the FY21 BAR request. This specification will include one site visit to the Scorpion Fire.

***VEG-2 (Early Detection and Control of Exotic Invasive Species):*** In FY20, perform the following tasks:

- Systematically survey high-priority areas in the Scorpion Fire and locations impacted by suppression activities for the presence of invasive species, native species of special management concern, and intact native vegetation communities.
- Opportunistically treat (e.g., hand pulling, herbicide, etc.) encountered high-priority invasive species when/if biologically appropriate using accepted control methods. Immediate action on invasive species during early stages of growth will increase likelihood of success on invasive control.

If BAR funds are not forthcoming in FY21, BAER funds will be requested to continue detection and treatment activities, particularly as the burned and suppression-impacted areas begin to green-up following the onset of winter rains.

***HS-1 (Install Warning and Closure Signs):*** At least 21 signs should be installed on the fire perimeter (along Smugglers Road, the mouths of coastal canyons, and at Delphine's Grove) to delineate the hard public closure of the burned area as means of protecting natural and cultural resources. All signs should be regularly monitored for presence and condition and replaced as necessary for the duration of the closure.

***HS-2 (Increased Agency Presence):*** To ensure the hard public closure is successfully implemented, select park staff should periodically monitor the burned area for unauthorized visitors and signs of activity. Law enforcement personnel will track the burned area for unauthorized use, initiate contacts as necessary, ensure warning and closure signs are present, and determine whether additional measures are necessary to enforce the closure.

## **Non-Specification**

The following recommendations are intended to assist the park in meeting general NPS management goals related to vegetation resources.

**Restoration:** Rehabilitation in the Scorpion burn area on Santa Cruz Island would be integrated with other efforts to restore ecosystem and hydrologic function by the park and other partners and researchers.

**Invasive Weed Mapping:** Collaborate with TNC to conduct a 2020 survey of high priority weed species on East Santa Cruz Island.

**Ongoing Vegetation Risk Assessment:** Provide for ongoing assessment of the burn area by experienced local botanists and/or park staff to identify the location of native species on the site relative to the vegetation map; identify how the fire affected them and if they are capable of re-establishment. This is a time-critical activity. Provide an assessment of the treatment options to promote re-establishment of native species and limit expansion of nonnative species.

**Native seed collection and broadcast seeding.** A depauperate native seed bank contributes, in part, to the success of exotics following control actions (Power et al. 2015; Seabloom et al. 2003), therefore native seed including native grasses, coastal sage scrub and chaparral species must be collected during summer and fall months. Other native plant species should be broadcast by hand after priority invasive species have been brought to maintenance control levels.

**Monitoring:** For the long-term Inventory and Monitoring vegetation sites within the Scorpion Fire, initiate the post-fire monitoring protocol for two years post-burn.

**Prepare funding request.** Some outplanting may be required and plans should be prepared for growing nursery stock and outplanting of priority native species.

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## **CONSULTATIONS**

No known federally listed species are known in the burn area. USFWS was informally consulted on June 3, 2020, and provided information about on-going suppression efforts. CHIS and partners will conduct surveys for listed and rare species in Spring of 2021 and will provide the results of findings to USFWS.

In addition to NPS personnel, the following area specialists were consulted via phone or email during the course of this investigation:

John Knapp, Ecologist, California Islands Project, The Nature Conservancy  
Andrew Yamagiwa, California Institute for Environmental Studies  
Kathryn McEachern, Research Plant Ecologist, U.S. Geological Survey

## **PREPARER(S)**

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Clark Cowan, Biological Technician, Channel Islands National Park

## WILDLIFE ASSESSMENT

### OBJECTIVES

- Determine any effects to special status wildlife and/or wildlife habitat from the fire and fire suppression activities.
- Prescribe and implement emergency and non-emergency treatments as needed to mitigate any negative impacts.
- Prescribe any surveys for special status species populations that may have been affected by fire and fire suppression activities.
- Prevent non-native terrestrial invertebrate species introduction.

### ISSUES

- Fire occurred during island fox and island spotted skunk pupping season.
- Eastern Santa Cruz Island and Scorpion Canyon supports a high density of island foxes and island spotted skunks.
- Fire occurred during the nesting season for many bird species, including cliff and cave nesting seabirds along the north-east coastline.
- Fire suppression activities (handline construction, long-term retardant applications) were carried out in and adjacent to the burned area.
- Recovery of native vegetation as high quality wildlife habitat can take years.
- Controlling the spread of invasive plants within burn area.

### BACKGROUND

#### Mammals

Four mammal species are endemic to Santa Cruz Island: Santa Cruz island fox (*Urocyon littoralis santacruzae*), island spotted skunk (*Spilogale gracilis amphiala*), Santa Cruz Island deer mouse (*Peromyscus maniculatus santacruzae*), and Santa Cruz Island harvest mouse (*Reithrodontomys megalotis santacruzae*). At least 11 native bat species are also known to use the island throughout the year, and 5 of these species are confirmed breeders on Santa Cruz Island. These bats generally roost in trees, caves, or buildings, and they give birth to pups in May or early June.

#### *Island Fox:*

The island fox is endemic to six of the eight Channel Islands and each island population is recognized as a separate endemic or unique subspecies. It is a descendant of the mainland gray fox and is the largest of the Channel Islands' native mammals, but one of the smallest canid species in the world.

Four island fox subspecies underwent catastrophic declines in the 1990s. On San Miguel, Santa

Rosa and Santa Cruz Islands at Channel Islands National Park, the decline was attributed to predation by golden eagles. The presence of nonnative ungulates as a food source in addition to the DDT-caused decline of bald eagles, a natural competitor, facilitated the establishment of golden eagles as resident breeders on the islands. By 2000, predation on island foxes resulted in population declines to 15 individuals on San Miguel and Santa Rosa Islands, and less than 80 on Santa Cruz Island. In 2004, each of the park's island fox subspecies were federally listed as endangered under the Endangered Species Act.

In 1999, Channel Islands National Park began an island fox recovery program that included captive breeding and reintroduction of foxes, removal of resident golden eagles, re-establishment of bald eagles, and removal of non-native ungulates. This coordinated, organized and highly focused strategy was able to reverse the certain extinction of an endangered population. The island fox was delisted in 2016 from the Endangered Species Act. Population trend and annual survival are currently monitored to ensure that recovery continues and future threats to the park's island fox subspecies are identified. Today, the population has recovered within the park, and the estimated abundance of foxes on Santa Cruz Island in 2019 was approximately 2,900 individuals (adults and pups) (TNC unpublished data). On Santa Cruz Island, Scorpion Canyon and the eastern part of the island support a high density of island foxes. The island fox breeding season is between February to June, with pups being born from late April through early May.

#### *Spotted Skunk:*

The island spotted skunk is endemic to San Miguel, Santa Rosa, and Santa Cruz Islands; however, today it is only found on Santa Rosa and Santa Cruz Islands. With a limited distribution on only two islands and a total population size likely less than 1,000 individuals, the island spotted skunk is considered one of the rarest mammalian carnivores globally (ISSWG 2020). Although not federally listed, the island spotted skunk is listed as a Subspecies of Special Concern by the State of California.

Although skunks are currently rare on Santa Cruz Island, the highest documented density of skunks is in the Scorpion region, and therefore they were likely to be in the fire area. Western spotted skunks mate in September and October, and following delayed implantation and a 210-310 day gestation, give birth in April and May. Both adult and juvenile skunks hide in dens during the day, which generally consist of large bushes, debris piles, or rock crevices. Based on telemetry studies, spotted skunks on Santa Cruz Island showed a preference for chaparral-grassland, open grassland, fennel-grassland, and ravines.

#### *Santa Cruz Island Deer Mouse and Santa Cruz Island Harvest Mouse:*

Both the deer mouse and harvest mouse are endemic to Santa Cruz Island. There are no long-term monitoring plots for these species on Santa Cruz Island; therefore, our understanding of their abundance and distribution within the burn area is limited. However, monitoring of rodents throughout the Scorpion region (including within the burn perimeter) was conducted in

2014-2016 to assess disease prevalence (J. Orrock, unpublished data). Captures were heavily dominated by deer mice, however, a few harvest mice were captured in the grassland area near the Scorpion pier.

## **Bats**

Bat species documented breeding on Santa Cruz Island include the Townsend's big-eared bat (*Corynorhinus townsendii*), Western red bat (*Lasiurus blossevillii*), Pallid bat (*Antrozous pallidus*), California myotis (*Myotis californicus*), and Yuma myotis (*Myotis yumanensis*), however an additional six bat species have also been detected on the island (Brown and Rainy 2018). An active Townsend big-eared bat maternal roosting colony occurs at the historic bakery at the Scorpion Ranch, which is actively monitored by the park through remote cameras. The species is highly imperiled in North America and the colony is one of the few known maternal roosting sites on the California coast. Other than monitoring of the maternal colony at the bakery, there is no ongoing monitoring of bats on eastern Santa Cruz Island and knowledge of current bat distributions is limited. While many bats on the island form their maternity colonies in historic buildings, some species prefer to roost in trees. Pups are generally born during the month of May.

## **Reptiles and Amphibians**

On Santa Cruz Island, there are four native amphibians, including the endemic Channel Islands slender salamander (*Batrachoseps pacificus pacificus*). There are six native reptiles, including the endemic island fence lizard (*Sceloporus occidentalis becki*) and island gopher snake (*Pituophis melanoleucus pumilis*). There is no long-term monitoring data on these species on eastern Santa Cruz Island; therefore, our understanding of their baseline abundance and distribution with the burn area is limited.

## **Terrestrial Birds**

Numerous resident, migratory, and nesting bird species use Santa Cruz Island, including several endemic species and/or species of conservation concern. Endemic or sensitive nesting terrestrial bird species on Santa Cruz Island include the island scrub jay (*Aphelocoma insularis*), Santa Cruz Island rufous-crowned sparrow (*Aimophila ruficeps obscura*), Channel Island song sparrow (*Melospiza melodia graminea*), loggerhead shrike (*Lanius ludovicianus anthonyi*), horned lark (*Eremophila alpestris insularis*), and grasshopper sparrow (*Ammodramus savannarum*).

Spring into early Summer is generally the breeding season for many bird species. As part of the Inventory and Monitoring program, there are multiple long-term landbird monitoring sites within and adjacent to the Scorpion Fire burn area. Observations from the 2019 monitoring season within the burn area included the following species: rufous-crowned sparrow, song sparrow, spotted towhee (*Pipilo maculatusmegalonyx*), western meadowlark (*Sturnella neglecta*), chipping sparrow (*Spizella passerine*), Bewick's wren (*Thryomanes bewickii*

*nesophilus*), house finch (*Haemorhous mexicanus*), northern mockingbird (*Mimus polyglottos*), Savannah sparrow (*Passerculus sandwichensis*), common raven (*Corvus corax*), and western tanager (*Piranga ludoviciana*). Additional species documented adjacent to the burn area in 2019 include: barn swallow (*Hirundo rustica*), horned lark, loggerhead shrike, Anna's hummingbird (*Calypte anna*), Ash-throated flycatcher (*Myiarchus cinerascens*), black phoebe (*Sayornis nigricans*), lesser goldfinch (*Carduelis psaltria*), and pacific-slope flycatcher (*Empidonax difficilis*).

A 2017 survey identified a peregrine falcon (*Falco peregrinus*) nesting location along the northern coastal cliffs adjacent to the burn area. No bald eagle (*Haliaeetus leucocephalus*) nesting territories are known from the burn area, although there were no surveys conducted this year due to restrictions on fieldwork from COVID-19.

### **Seabirds**

The Channel Islands are critical nesting and roosting habitat for seabirds in southern California, including globally significant populations of rare seabirds such as the ash storm-petrel (*Oceanodroma homochroa*) and Scripps's murrelet (*Synthliboramphus scrippsi*). Santa Cruz Island supports at least seven nesting seabird species and provides roosting habitat for additional species. The Scorpion area includes important nesting habitat on the adjacent offshore Scorpion Rock and Little Scorpion Rock for multiple species, including the Cassin's auklet (*Ptychoramphus aleuticus*), pigeon guillemot (*Cepphus columba*), western gull (*Larus occidentalis*), pelagic cormorant (*Phalacrocrax pelagicus*), and Brandt's cormorant (*Phalacrocrax penicillatus*). The northern and eastern coastal cliffs along the burn perimeter support nesting for cormorants, as well as roosting habitat for California brown pelicans (*Pelecanus occidentalis californicus*). Sea caves along the northern coast supports nesting ash storm-petrels and pigeon guillemots. Shoreline habitat includes nesting locations for black oystercatchers (*Haematopus bachmani*) along the entire north-east coastline.

### **Fire Suppression Activities and Wildlife**

As described in the Vegetation Assessment, ground disturbance, such as handline construction, can directly impact native vegetation and create a fertile environment for the establishment and spread of invasive species. Direct mortality or injury to wildlife as a result of ground disturbance is extremely unlikely in all but the least mobile of wildlife species.

Visual and auditory intrusions associated with fire suppression, such as aircraft activity, can negatively impact wildlife species during sensitive periods (e.g., breeding, nesting). Surface nesting and roosting seabirds can be particularly vulnerable to disturbance.

Although studies are limited, wildlife exhibit differential vulnerability to long-term fire retardants (USDA, Forest Service 2011). It is well known that aquatic species (fish, amphibians) are particularly susceptible to direct and indirect retardant applications. No habitats of that type occur within or downstream of the Scorpion Fire. Granivorous species, such as rodents

and some birds and insects, may directly consume retardant-coated plant materials, resulting in bio-accumulation which could prove fatal, and/or move up the food chain as carnivores and insectivores consume those organisms. Lethal doses of retardant for most species, however, are very unlikely to be attained under anything but exceptional circumstances.

## **RECONNAISSANCE METHODS**

From June 1-5, 2020, Clark Cowan served on-site during the Scorpion Fire as the lead READ advisor. In addition to providing guidance on minimizing impacts to natural and cultural resources, he mapped areas of remaining habitat within the burn area and noted any injured or dead wildlife.

On June 3, 2020, Jim Howard and Andrew Yamagiwa of the California Institute for Environmental Studies (CIES) surveyed the coastal shoreline of the burn perimeter to assess impacts to nesting and roosting seabird areas (Figure W1). The focus of the survey was to document any abandonment or significant disturbances of nesting seabirds, raptors, or other species.



Figure W1: Unburned coastal cliffs faces along northern burn perimeter. Photo: California Institute for Environmental Studies.

From June 11-12, additional assessment work in the burn area was conducted by Clark Cowan, Annie Little, and Jonathan Schwartz (USFS). Katy Carter (CIES) conducted a Cassin's auklet survey on Scorpion Rock on June 11, 2020. Additional mapping and assessment work was conducted by Clark Cowan in the burn area from June 19-21, 2020.

## **FINDINGS**

Except for some remaining native vegetation in canyons, the majority of the vegetation and wildlife habitat was burned. In addition to some coastal canyon vegetation that was unburned, there were patches of lemonade berry that remained intact or slightly burned that can continue to serve as wildlife habitat. Controlling invasive plant species is a significant concern for vegetation recovery within and adjacent to the burn area. Wildlife recovery in the burn area will be in large part dependent on the recovery of native vegetation communities which provide essential habitat for foraging and shelter. With the majority of the highlands and marine terraces burned, high intense rainstorms are predicted to transport some of the ash and available sediments down to the ocean, which could impact available water sources and quality for wildlife, as well as sensitive seabird and marine resources.

### **Mammals**

The fire occurred during the island fox pupping season and it is likely that foxes and young fox pups were in the fire area, either inside or outside of their dens. During the field visits on June 1-5, June 11-12, June 15, and June 19-21, there were no observations of fox carcasses or injured foxes. On June 11, three foxes were observed foraging in the burn area (Figure W2). Given the size of the fire area, it is very difficult to assess potential mortality of foxes and skunks from the fire. However, with the low burn severity and fast-moving nature of the fire, it is possible that some foxes and skunks that were sheltered in crevices or unburned vegetation patches were able to survive the fire.

Data from monitoring grids adjacent to the burn area can provide an estimate of baseline numbers of foxes prior to the burn and subsequent monitoring may indicate changes in the fox population and reproductive success in the burn area post-fire. The trapping grid directly adjacent to the burn area had an estimated density of 9.5 adult foxes per km<sup>2</sup> (80% CI: 4.6-19.7) in summer 2019 (NPS and TNC, unpublished data). If adult fox densities were similar within the 5.7 km<sup>2</sup> burn area this spring 2020, between 26 to 112 adult foxes may have been directly impacted by the fire. Although many adult foxes could have escaped the fire, young pups may have not survived unless they were near refugia. Despite these localized impacts to foxes, the fire is not anticipated to have a significant impact on the Santa Cruz Island fox population, due to the robust size of the current island-wide population.

Significant fire spread occurred during daytime hours, when both adult and juvenile spotted skunks would have been sleeping in their dens. Island spotted skunks are strictly nocturnal, while island foxes can be active day or night. Skunk den locations are variable and can be in large bushes, debris piles, and rock crevices. Skunks (both adults and pups) not hidden in rock crevice dens or unburned vegetation likely experienced direct mortality from the fire. Although skunks are currently rare on Santa Cruz Island, the highest documented density of skunks is in the Scorpion region, and therefore they may have been in the burn area. Most recently (January 2020), a total of 10 individual skunks were trapped in Scorpion Canyon alone.

Fortunately, there was some unburnt vegetation in some of the coastal canyon bottoms, which may have provided suitable denning habitat and refugia for skunks during the fire.

We assume that for foxes and skunks whose territories were completely within the burn area, these individuals will have to shift territories outside of the burn area in order to find sufficient food resources. This will likely lead to increased competition with other territorial animals in adjacent habitat. The deer mouse population likely experienced some direct mortality from the fire, though many mice could have sheltered in their underground burrows. Island deer mice are likely to be more significantly impacted by a reduction in habitat quality and food resources within the burn area. Although some vegetation recovery will occur in the short-term, habitat recovery could take between 5-10 years. As with other types of soil disturbance, there is concern about invasive plant species expanding and outcompeting native vegetation. Sustained efforts on controlling invasive weeds will be needed to facilitate recovery of native plant communities.

The fire did not directly impact Townsend-big eared bats at the Scorpion bakery in Scorpion Canyon and the maternity colony is currently showing signs of a successful pupping season. Prior to the fire, the last evening exit count on May 18 documented a total of 140 bats. The first survey post fire documented 173 bats on Jun 10, and a more recent survey documented 201 bats on June 20. These increases are a possible indicator of reproductive success as pups are becoming volant. However, within the fire area, there are concerns that the burned Monterey Cypress grove may have supported roosting bats. Western red bats are known to breed on the island and they roost in trees. On the Farallon Islands, Monterey cypress trees are used regularly by migrating Lasiurine bats (Cryan and Brown 2007). It is possible that resident red bats on Santa Cruz Island also used the Cypress trees, and their young may have been in the trees at the time of the fire.



Figure W2: Island fox foraging in burn area near old airport strip. Photo by Jonathan Schwartz, USFS.

## Reptiles and Amphibians

Although there are areas of crevice habitat throughout the burn area and exposed cracks in the soil where reptiles could shelter, burnt lizards were documented in the burn area (Figure W3). During the site visit on June 11-12, numerous live lizards were documented along the coastal canyons, in rock crevices and piles (Figure W4). We anticipate that the fire directly insect abundance throughout the burn area, which would in turn negatively impact reptiles.



Figures W3 and W4: Burnt southern alligator lizard (*Elgaria multicarinata*) in burn area on June 15, 2020, and side blotched lizard (*Uta stansburiana*) on June 12, 2020. Photos: Annie Little, NPS.

Much of the burn area is coastal terraces without permanent water sources; therefore, we do not anticipate significant direct impacts to native tree frogs as a result of the fire. Salamanders occur under rocks, logs, and soil litter across island vegetation communities, however they generally descend underground to moist areas by the late spring. Therefore, it is unlikely that salamanders experienced direct mortality from the fire. Impacts to amphibians from retardant use is not expected due to retardant drops being conducted in the late spring when drainages were dry and salamanders were underground. Amphibians located in near the canyon mouth of Little Scorpion Canyon likely survived due to refugia provided by the unburnt vegetation. However, increased sedimentation post-fire could negatively impact water quality and availability for amphibians. The fire is also expected to impact the abundance of terrestrial invertebrate prey and the availability of surface habitat cover for slender salamanders across the burn area. The subterranean refugia for salamanders may also become hotter due to more exposed ground. Impacts to salamanders may last for several years until the habitat recovers.

## Terrestrial Birds

As birds were likely able to fly from the fire area, direct mortality of adults was likely low. However, any nestlings unable to fly would have been killed by the fire. Several endemic or

sensitive bird species that nest in grasslands, including the rufous-crowned sparrow, song sparrow, and grasshopper sparrow, were documented within and adjacent to the burn area in 2019. These species may have been particularly vulnerable to impacts from the fire since the majority of the habitat that burned was grassland. Island scrub jays were not documented in 2019 and nesting habitat for this species is limited within the burn area.

Bird recovery within the burn area will depend on several factors, including vegetation recovery and precipitation. During the assessment on June 11-12, 2020, bird activity was documented in Delphine's Grove as well as within remnant patches of vegetation along coastal cliff areas and unburned areas of the coastal canyons. A common raven nest was documented in Little Scorpion Canyon on June 12, 2020. Given that seed and insect abundance was directly impacted by the fire, birds will likely need to expand their foraging effort and home ranges.

There were no known impacts to bald eagle or peregrine falcon nesting locations, although thorough surveys were not conducted this season due to COVID-19 restrictions.

### **Seabirds**

Roosting and breeding seabirds were likely only temporarily impacted as the fire did not burn coastal cliff faces. During the focused survey of June 3, 2020, no carcasses were noted either on the water or rocky cliffs. In general, the fire did not appear to burn down the cliff sides into close proximity to any nesting or roosting birds. The dearth of plants growing at the eroded edges appeared to keep the burned area several feet back from the cliff edges. Birdsong from song sparrows, rock wrens, and barn swallows were audible for most of the survey, and were clearly present in the unaffected seacliff vegetation.

During the monitoring on Scorpion Rock, Katy Carter documented active nesting of Cassin's auklets in both artificial and natural burrows underground. This species and other crevice nesting seabirds were likely unaffected by fire suppression activities. Although surface nesting seabirds on Scorpion Rock and the north-eastern coastline may have been temporarily affected by aircraft used in fire suppression activities, it is unlikely to have resulted in nesting failure.

### **Marine Resources**

Nearshore biological communities, particularly those located in the intertidal zone, are vulnerable to terrestrial processes, including sedimentation (Airoidi, 1998; Airoidi and Cinelli, 1997; Seapy and Littler, 1982; Thom and Widdowson, 1978). While some intertidal species such as anemones (Littler et al., 1983) are capable of withstanding chronic disturbances resulting from relatively long periods of sedimentation, others, including barnacles, limpets and several algae, can be impacted by random, punctuated sedimentation events (Airoidi and Hawkins, 2007; Schiel et al., 2006; Seapy and Littler, 1982)(Airoidi and Hawkins 2007; Schiel et al. 2006; Seapy and Littler 1982). Perhaps of greatest concern are the potential impacts to the endangered black abalone (*Haliotis cracherodii*), which primarily inhabits the mid and low zones of rocky intertidal habitats, including portions of Santa Cruz Island adjacent to the area

impacted by the Scorpion Fire. The effects of sedimentation on black abalone are unclear, but they have the potential to be acute and widespread. Consequently, sedimentation has been identified in the NOAA NMFS Black Abalone Recovery Plan as a significant threat to black abalone since it can potentially result in loss of critical habitat. Given the presence of the runoff-trapping Vertisols and the low burn intensity of the fire, the initial post-fire pulse of sediment and ash is not expected to significantly diminish soil productivity or water quality in the nearshore environment.

## **RECOMMENDATIONS**

Four specifications are prescribed to address emergency post-fire wildlife issues on the Scorpion Fire. In addition, several non-specification actions are recommended.

### **Specifications**

***VEG-1 (Develop Invasive Species Treatment Plan):*** The recovery of wildlife in the burn area will largely depend on the recovery of diverse native vegetation communities that provide critical habitat for foraging, shelter, and breeding. The development of a robust, long-term invasive treatment plan will benefit wildlife as it will help guide and facilitate the recovery of native habitat, as well as protect existing patches of intact native vegetation.

***VEG-2 (Early Detection and Control of Exotic Invasive Species):*** The timely identification and control of priority invasive weeds in the burn area is essential to protecting the integrity of the wildlife habitat both within and adjacent to the burn area. Soil and vegetation disturbance from a fire can lead to a rapid growth in invasive weeds by providing an opportunity for introduction and expansion without native plant competition. Landscapes dominated by invasive weeds provide minimal habitat value for native wildlife; therefore, the early detection and control of invasive weeds will provide for the long-term protection of native plant communities and the wildlife that depend on them.

***HS-1 (Install Warning and Closure Signs):*** At least 21 signs should be installed on the fire perimeter (along Smugglers Road, the mouths of coastal canyons, and at Delphine's Grove) to delineate the hard public closure of the burned area as means of protecting natural and cultural resources. All signs should be regularly monitored for presence and condition and replaced as necessary for the duration of the closure.

***HS-2 (Increased Agency Presence):*** To ensure the hard public closure—which will benefit natural resource recovery—is successfully implemented, select park staff should periodically monitor the burned area for unauthorized visitors and signs of activity. Law enforcement personnel will track the burned area for unauthorized use, initiate contacts as necessary, ensure warning and closure signs are present, and determine whether additional measures are necessary to enforce the closure.

### **Non-Specification**

**Island Fox Trapping:** In Summer 2020, conduct island fox trapping at long-term population monitoring grids adjacent to burn area and at regular fox/skunk trapping sites in the Scorpion Valley.

**Rodent Trapping:** In Summer 2020, replicate rodent trapping efforts previously conducted in 2014-2016 within the perimeter of the current burn area and in nearby unburned habitat.

**Shoreline and Off-Shore Rock Surveys:** Conduct continued Summer 2020 shoreline and off-shore rock surveys to evaluate nesting success in seabird species. In Winter/Spring/Summer 2021, conduct shoreline and offshore rock surveys for seabirds to examine possible damages from cliffside erosion or other habitat damage.

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## **CONSULTATIONS**

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**Scorpion Fire  
Emergency Stabilization Plan**

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# Specifications



# **SCORPION FIRE: EMERGENCY STABILIZATION SPECIFICATIONS**

| SPECIFICATION NUMBER | TITLE                                       | UNIT  | UNIT COST | NUMBER OF UNITS | WORK AGENT | FY20             | FY21            | COSTS             |
|----------------------|---------------------------------------------|-------|-----------|-----------------|------------|------------------|-----------------|-------------------|
| HS-1                 | Install Warning and Closure Signs           | Signs | \$283     | 25              | F          | \$7,052          | \$0             | \$7,052           |
| HS-2                 | Increased Agency Presence                   | N/A   | N/A       | N/A             | F, S       | \$2,736          | \$11,540        | \$14,276          |
| HS-3                 | Mitigate Tree Hazards                       | Miles | \$5,204   | 1               | F          | \$3,050          | \$2,154         | \$5,204           |
| CR-1                 | Section 106 Compliance                      | N/A   | N/A       | N/A             | F, S       | \$40,604         | \$0             | \$40,604          |
| WS-1                 | Hillslope Stabilization                     | Sites | \$2,824   | 2               | F          | \$5,647          | \$0             | \$5,647           |
| VEG-1                | Develop Invasive Species Treatment Plan     | N/A   | N/A       | N/A             | F          | \$7,730          | \$0             | \$7,730           |
| VEG-2                | Early Detection/Control of Invasive Species | Acres | \$4       | 500             | F          | \$2,160          | \$0             | \$2,160           |
| ADM-1                | Implementation Leader                       | N/A   | N/A       | N/A             | F          | \$9,035          | \$0             | \$9,035           |
| ADM-2                | BAER Plan Preparation                       | N/A   | N/A       | N/A             | F, S       | \$25,751         | \$0             | \$25,751          |
| <b>TOTAL COSTS</b>   |                                             |       |           |                 |            | <b>\$103,765</b> | <b>\$13,694</b> | <b>\$ 117,459</b> |

Work Agent: **C**=Coop Agreement, **F**=Force Account, **G**=Grantee, **P**=Permittees, **S**=Service Contract, **T**=Timber Sales Purchaser, **V**=Volunteer

| INDIVIDUAL SPECIFICATION     |                                   |                                 |      |
|------------------------------|-----------------------------------|---------------------------------|------|
| TREATMENT/ACTIVITY NAME      | Install Warning and Closure Signs | PART E SPECIFICATION #          | HS-1 |
| NFPORS TREATMENT CATEGORY*   | Human Life & Safety               | FISCAL YEAR(S) (list each year) | 2020 |
| NFPORS TREATMENT TYPE *      | Warning & Safety Signs            | WUI? Y / N                      | N    |
| IMPACTED COMMUNITIES AT RISK | N/A                               | IMPACTED T&E SPECIES            | N/A  |

**WORK TO BE DONE** (describe or attach exact specifications of work to be done):

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>A. General Description</b> At least 25 signs should be installed on the perimeter of the Scorpion Fire to protect public safety and delineate the hard public closure of the burned area.</p> <p>(1) Install four signs along the base of the cliff below the burned slopes at Scorpion Anchorage warning of rock-fall danger.</p> <p>(2) Install 21 signs on the fire perimeter along Smugglers Road, the mouths of coastal canyons, and at Delphine's Grove.</p> |
| <p><b>B. Location/(Suitable Sites)</b> Scorpion Fire, Channel Islands National Park, California (see attached map).</p>                                                                                                                                                                                                                                                                                                                                                  |
| <p><b>C. Design/Construction Specifications</b> See attached diagrams.</p>                                                                                                                                                                                                                                                                                                                                                                                               |
| <p><b>D. Purpose of Treatment Specifications</b> To protect public safety and delineate the hard public closure of the burned area.</p>                                                                                                                                                                                                                                                                                                                                  |
| <p><b>E. Treatment Effectiveness Monitoring Proposed</b> All signs should be regularly monitored for presence and condition and replaced as necessary for the duration of the closure.</p>                                                                                                                                                                                                                                                                               |

| LABOR, MATERIALS AND OTHER COST                                                                                                                                                                            |  | COST / ITEM |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------|
| PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item)<br>Do not include contract personnel costs here (see contractor services below).                                            |  |             |
| FY20: GL-09 @ \$57/hr X 36 hrs X 1 FY (for sign installation)                                                                                                                                              |  | \$ 2,052    |
|                                                                                                                                                                                                            |  |             |
|                                                                                                                                                                                                            |  |             |
| TOTAL PERSONNEL SERVICE COST                                                                                                                                                                               |  | \$ 2,052    |
| EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item)<br>Note Purchases require written justification that demonstrates cost benefits over leasing or renting. |  | COST / ITEM |
| NA                                                                                                                                                                                                         |  | \$ -        |
|                                                                                                                                                                                                            |  |             |
|                                                                                                                                                                                                            |  |             |
| TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST                                                                                                                                                             |  | \$ -        |
| MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item)                                                                                                                           |  | COST / ITEM |
| FY20: Sign @ \$200/each X 25 signs X 1 FY                                                                                                                                                                  |  | \$ 5,000    |
|                                                                                                                                                                                                            |  |             |
|                                                                                                                                                                                                            |  |             |
| TOTAL MATERIALS AND SUPPLY COST                                                                                                                                                                            |  | \$ 5,000    |
| TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item)                                                                                                                      |  | COST / ITEM |
| NA                                                                                                                                                                                                         |  | \$ -        |
|                                                                                                                                                                                                            |  |             |
|                                                                                                                                                                                                            |  |             |
| TOTAL TRAVEL COST                                                                                                                                                                                          |  | \$ -        |
| CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item)                                                                                                                        |  | COST / ITEM |
| NA                                                                                                                                                                                                         |  | \$ -        |
|                                                                                                                                                                                                            |  |             |
|                                                                                                                                                                                                            |  |             |
| TOTAL CONTRACT COST                                                                                                                                                                                        |  | \$ -        |
| TOTAL ALL COSTS                                                                                                                                                                                            |  | \$ 7,052    |

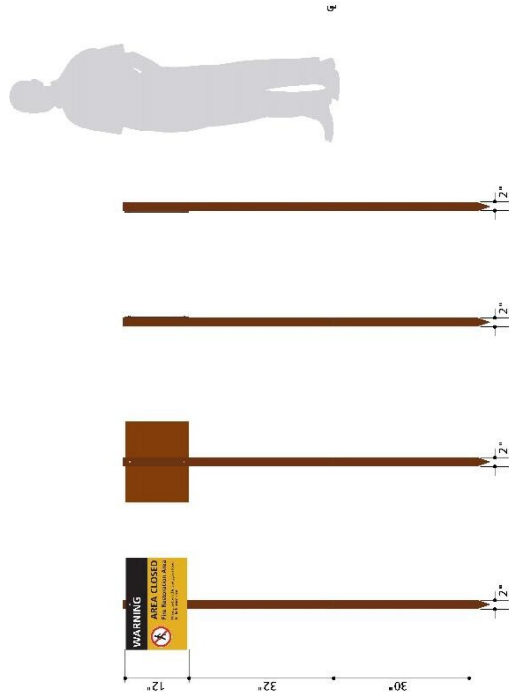
| FISCAL YEAR | PLANNED INITIATION DATE (M/D/YYYY) | PLANNED COMPLETION DATE (M/D/YYYY) | WORK AGENT | UNITS | UNIT COST | PLANNED ACCOMPLISHMENTS | PLANNED COST |
|-------------|------------------------------------|------------------------------------|------------|-------|-----------|-------------------------|--------------|
| 2020        | 06/26/20                           | 09/01/20                           | F          | Signs | \$283     | 25                      | \$ 7,052     |
|             |                                    |                                    |            |       |           |                         |              |
|             |                                    |                                    |            |       |           |                         |              |
|             |                                    |                                    |            |       |           |                         |              |
| TOTAL       |                                    |                                    |            |       |           |                         | \$ 7,052     |

### SOURCE OF COST ESTIMATE

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression



Approximate locations of warning and closure sign installations, Scorpion Fire.

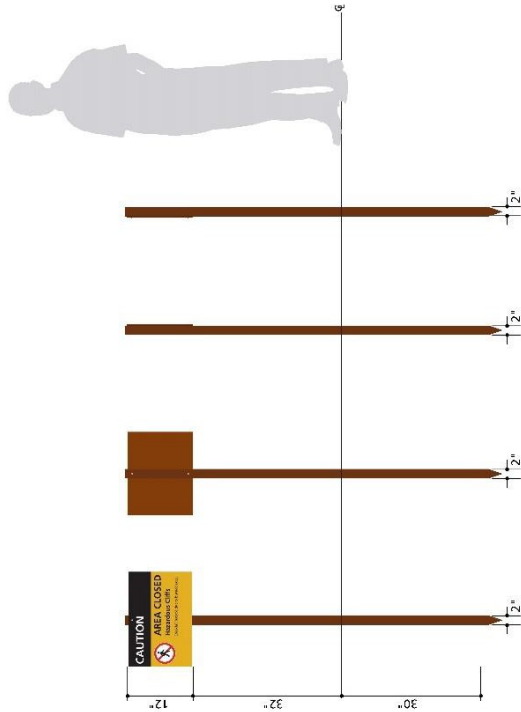


Closure sign, Scorpion Fire

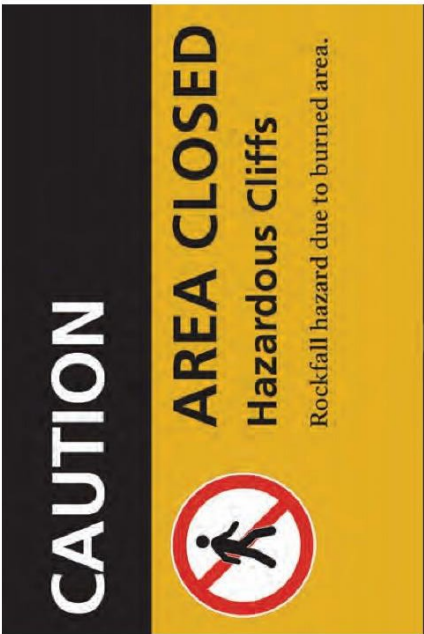


Area Closed Warning - 18" x 12"  
Qty: 21

|                                                                                                                                          |                |                    |                                                                                                                                                                                                                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------------|----------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Channel Islands National Park</b><br>V/S - Pedestrian Directional<br>National Park Service   Harper's Ferry Center   NPS Sign Program | Project Number | Location Number(s) | Description   Notes<br>Direct-Imaged, Powder-Coated .060" Aluminum panel, reverse side PMS 1615, mounting holes as shown, & hardware to be mounted on post. Predrilled 2"x 2" x .0625" weathering steel hollow post w/ pointed end & flat solid top to be hammered into the ground. |
|                                                                                                                                          | Drawing Date   |                    |                                                                                                                                                                                                                                                                                     |
|                                                                                                                                          |                |                    | Page <b>2</b>                                                                                                                                                                                                                                                                       |



Warning sign, Scorpion Fire



Rockfall Caution - 18" x 12"  
Qty: 4

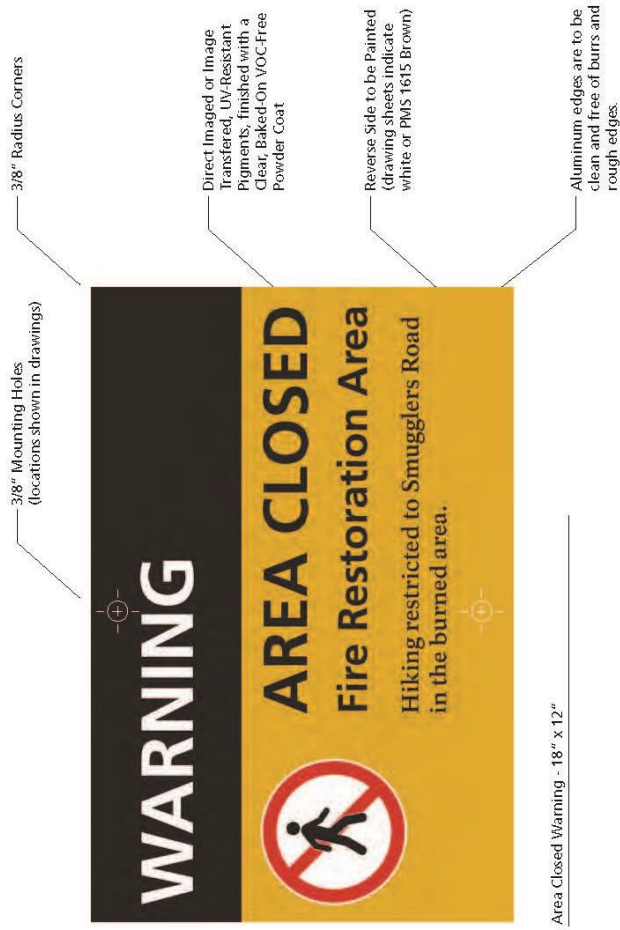
|                                                                                                                                                                 |                |                    |                                                                                                                                                                                                                                                              |                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <div>Channel Islands<br/>National Park</div> <div>VIS - Pedestrian Directional</div> <div>National Park Service   Harpers Ferry Center   NPS Sign Program</div> | Project Number | Location Number(s) | Description   Notes                                                                                                                                                                                                                                          | <div></div> <div>Page <b>2</b></div> |
|                                                                                                                                                                 | Drawing Date   |                    | Direct-imaged, Powder-Coated .080" Aluminum panel, reverse side PMS 1615, mounting holes as shown, & hardware to be mounted on post. Predrilled 2"x 2" x .0625" weathering steel hollow post w/ pointed end & flat solid top to be hammered into the ground. |                                                                                                                         |
|                                                                                                                                                                 |                |                    |                                                                                                                                                                                                                                                              |                                                                                                                         |

**DIRECT-IMAGED, POWDER-COATED ALUMINUM PANELS**

Panels shall be high-resolution capable of single and or double-sided. Panels are direct imaged or image transferred using UV resistant pigments on 0.080" thick aluminum, finished with a clear baked on VOC free powder coat, and 3/8" radius corners. Panels shall have the capability to display a matte surface. Vinyl wrapped aluminum panels are not acceptable. Panel backs will be labeled with their corresponding drawing number. The contractor will provide galvanized mounting hardware for each panel.

Warning and closure sign specifications, Scorpion Fire

Panel Detail



Area Closed Warning - 18" x 12"

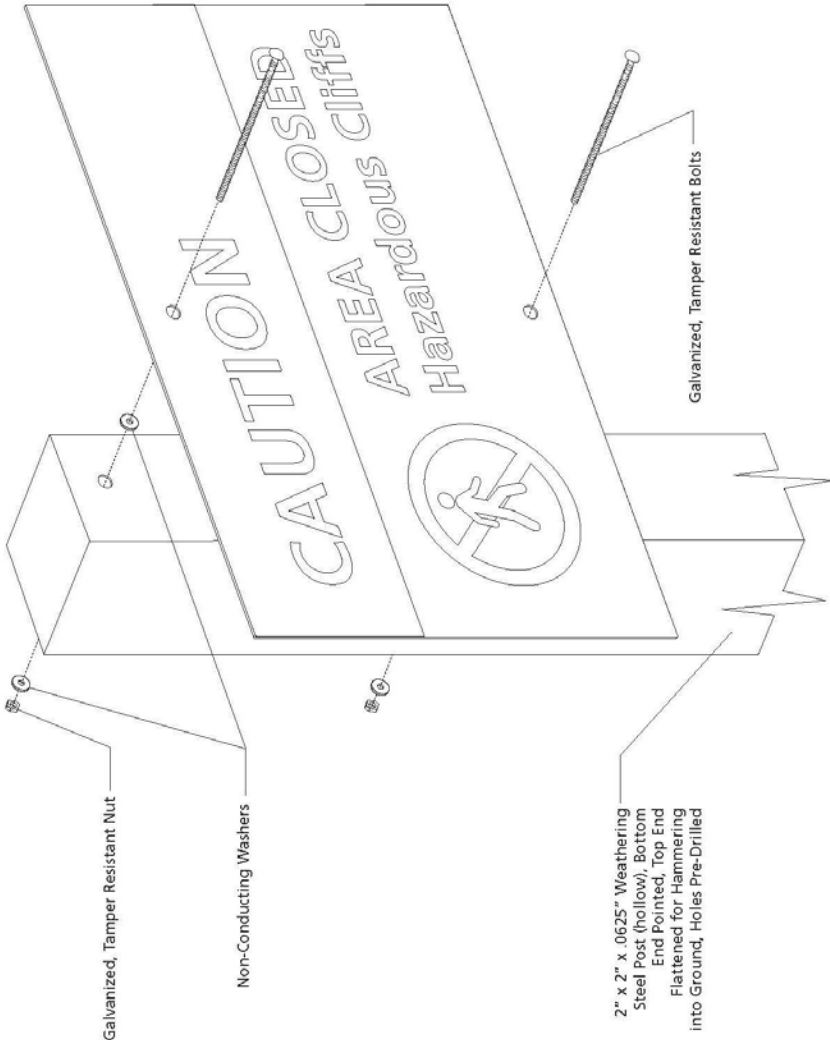
|                                      |                                                                                                 |                |                    |                                                                                                          |
|--------------------------------------|-------------------------------------------------------------------------------------------------|----------------|--------------------|----------------------------------------------------------------------------------------------------------|
| <b>Channel Islands National Park</b> | V/S - Pedestrian Directional<br>National Park Service   Hearnes Ferry Center   NPS Sign Program | Project Number | Location Number(s) | Description/Notes<br>Direct-Imaged, Powder-Coated .080" Aluminum panel with mounting holes and hardware. |
|                                      |                                                                                                 | 0909-807-CHS   |                    |                                                                                                          |
|                                      |                                                                                                 | Drawing Date   | Scale              |                                                                                                          |
|                                      |                                                                                                 | 1007119        |                    |                                                                                                          |
|                                      |                                                                                                 |                |                    | Page<br><b>A.0</b>                                                                                       |

POST-MOUNT ALUMINUM SIGNS

Each panel and post shall be labeled with their associated sign drawing number so panels can be easily matched. Predrilled holes in panels and posts must align.

Contractor to supply galvanized, tamper-resistant hardware.

Exploded View of Post-Mount Aluminum Sign Fabrication and Hardware



|                                                                 |                |  |                    |                     |
|-----------------------------------------------------------------|----------------|--|--------------------|---------------------|
| Channel Islands<br>National Park                                | Project Number |  | Location Number(s) | Description / Notes |
|                                                                 | 0909-807-CHS   |  |                    |                     |
|                                                                 | Drawing Date   |  | Scale              |                     |
|                                                                 | 10/0119        |  |                    |                     |
| VIS - Pedestrian Directional                                    |                |  |                    |                     |
| National Park Service   Harpers Ferry Center   NPS Sign Program |                |  |                    |                     |
|                                                                 |                |  |                    | Page<br>A.1         |

Material Fabrication Example for all Weathering Steel Signs

Warning and closure sign installation detail, Scorpion Fire

### INDIVIDUAL SPECIFICATION

|                              |                                    |                                  |            |
|------------------------------|------------------------------------|----------------------------------|------------|
| TREATMENT/ACTIVITY NAME      | Increased Agency Presence          | PART E SPECIFICATION #           | HS-2       |
| NFPORS TREATMENT CATEGORY*   | Monitoring                         | FISCAL YEAR(S) (list each year): | 2020, 2021 |
| NFPORS TREATMENT TYPE *      | Treatment Effectiveness Monitoring | WUI? Y / N                       | N          |
| IMPACTED COMMUNITIES AT RISK | N/A                                | IMPACTED T&E SPECIES             | N/A        |

\* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries

**WORK TO BE DONE** (describe or attach exact specifications of work to be done):

| Number and Describe Each Task: |                                                     |
|--------------------------------|-----------------------------------------------------|
| 1                              | Identify the main purpose of the document.          |
| 2                              | Summarize the key points of the document.           |
| 3                              | Identify the author's main argument or conclusion.  |
| 4                              | Identify the evidence used to support the argument. |
| 5                              | Identify the audience for the document.             |
| 6                              | Identify the tone of the document.                  |
| 7                              | Identify the style of the document.                 |
| 8                              | Identify the structure of the document.             |
| 9                              | Identify the language used in the document.         |
| 10                             | Identify the format of the document.                |

**A. General Description:** The Scorpion Fire will be periodically monitored by law enforcement personnel and cultural resource managers to ensure that the burned area closure is successfully implemented, and to document unauthorized visitation and resource impacts.

**B. Location/(Suitable Sites):** Scorpion Fire, Channel Islands National Park, California

**C. Design/Construction Specifications:** This activity includes two components:

(1) In FY20, between July and September, law enforcement personnel will track the burned area for unauthorized use, initiate contacts as necessary, ensure warning and closure signs are present, and determine whether additional measures are necessary to enforce the closure.

D. Purpose of Treatment Specifications: To ensure the hard public closure of the burned area is successfully implemented in order to protect sensitive natural and cultural resources.

|                                                     |
|-----------------------------------------------------|
| E. Treatment Effectiveness Monitoring Proposed: N/A |
|-----------------------------------------------------|

LABOR, MATERIALS AND OTHER COST:

| PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):<br>Do not include contract personnel costs here (see contractor services below). | COST / ITEM      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| FY20: GL-09 @ \$57/hr X 48 hrs [16hrs/mon h for 3 months: July-Sept]                                                                                              | \$ 2,736         |
| FY21: Law Enforcement TBD                                                                                                                                         | \$ -             |
| FY21: CR GS-11 @ \$50/Hour x 108 Hours (27 hrs/month for 4 months: Oct-Jan)                                                                                       | \$ 5,400         |
| FY21: CR GS-09 @ \$43/Hour x 108 Hours (27 hrs/month for 4 months: Oct-Jan)                                                                                       | \$ 4,644         |
| <b>TOTAL PERSONNEL SERVICE COST</b>                                                                                                                               | <b>\$ 12,780</b> |

| EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item):<br>Note: Purchases require written justification that demonstrates cost benefits over leasing or renting. | COST / ITEM |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| NA                                                                                                                                                                                                           | \$ -        |
| <b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>                                                                                                                                                        | <b>\$ -</b> |

| MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item): | COST / ITEM |
|-----------------------------------------------------------------------------------|-------------|
| NA                                                                                | \$ -        |
| <b>TOTAL MATERIALS AND SUPPLY COST</b>                                            | <b>\$ -</b> |

| TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item): | COST / ITEM     |
|----------------------------------------------------------------------------------------|-----------------|
| FY21: 2 CR Personnel @ \$187/RT x 4 RT x FY21                                          | \$ 1,496        |
| <b>TOTAL TRAVEL COST</b>                                                               | <b>\$ 1,496</b> |

|                                                                                             |  |                    |
|---------------------------------------------------------------------------------------------|--|--------------------|
| <b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b> |  | <b>COST / ITEM</b> |
| NA                                                                                          |  |                    |
| <b>TOTAL CONTRACT COST</b>                                                                  |  | <b>\$</b>          |

|                 |  |    |        |
|-----------------|--|----|--------|
| TOTAL ALL COSTS |  | \$ | 14,276 |
|-----------------|--|----|--------|

**SPECIFICATION COST SUMMARY**

| FISCAL YEAR | PLANNED<br>INITIATION DATE<br>(M/D/YYYY) | PLANNED<br>COMPLETION<br>DATE<br>(M/D/YYYY) | WORK AGENT | UNITS | UNIT COST | PLANNED<br>ACCOMPLISH<br>MENTS | PLANNED COST |
|-------------|------------------------------------------|---------------------------------------------|------------|-------|-----------|--------------------------------|--------------|
| 2020        | 06/26/20                                 | 09/30/20                                    | F          | N/A   | N/A       | N/A                            | \$ 2,736     |
| 2021        | 10/01/20                                 | 01/31/21                                    | F          | N/A   | N/A       | N/A                            | \$ 11,540    |
|             |                                          |                                             |            |       |           |                                |              |
|             |                                          |                                             |            |       |           |                                |              |
|             |                                          |                                             |            | TOTAL |           |                                | \$ 14,276    |

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

|                                                                                          |   |
|------------------------------------------------------------------------------------------|---|
| 1. Estimate obtained from 2-3 independent contractual sources.                           |   |
| 2. Documented cost figures from similar project work obtained from local agency sources. | T |
| 3. Estimate supported by cost guides from independent sources or other federal agencies. |   |
| 4. Estimates based upon government wage rates and material cost.                         | P |
| 5. No cost estimate required - cost charged to Fire Suppression Account.                 |   |

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

Specification Form Created September 23, 2008

## INDIVIDUAL SPECIFICATION

|                              |                              |                                  |            |
|------------------------------|------------------------------|----------------------------------|------------|
| TREATMENT/ACTIVITY NAME      | Mitigate Tree Hazards        | PART E SPECIFICATION #           | HS-3       |
| NFPORS TREATMENT CATEGORY*   | Human Life & Safety          | FISCAL YEAR(S) (list each year): | 2020, 2021 |
| NFPORS TREATMENT TYPE *      | Hazard Removal-Other (miles) | WUI? Y / N                       | N          |
| IMPACTED COMMUNITIES AT RISK | N/A                          | IMPACTED T&E SPECIES             | N/A        |

\* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

### WORK TO BE DONE (describe or attach exact specifications of work to be done):

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Number and Describe Each Task:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <p><b>A. General Description:</b> The Scorpion Fire burned through the historic Delphine's Grove of Monterey cypress. The grove is a contributing element of the Santa Cruz Island Ranching Historic District. Sixteen mature trees appear to have been killed, seven will likely experience delayed mortality, and three others may also expire. Dead trees pose a threat to employees and the public. One large tree appears to be an imminent threat to human safety, and others could be a risk in the future.</p> <p><b>B. Location/(Suitable Sites):</b> [REDACTED] Scorpion Fire, Channel Islands National Park, California.</p> <p><b>C. Design/Construction Specifications:</b> There are two tasks associated with this treatment:<br/>         (1) [REDACTED] mitigated through the burned area closure and notifying employees working in the burned area of the threat. Additionally, warning signs will be laid on the ground at the margin of the target zone. This treatment is preferred over one that might be more visible, and draw attention to the tree.<br/>         (2) An NPS Regional Arborist Incident Response Team (AIR) should perform an immediate post-fire assessment of the grove and follow-up in FY21 to document condition, ongoing threats and prospects for recovery of the grove.</p> <p><b>D. Purpose of Treatment Specifications:</b> (1) To protect employees and the public from post-fire hazards; (2) Because Delphine's Grove is a contributing element of the Santa Cruz Island Ranching Historic District, to meet policy and regulatory requirements, actions taken to mitigate tree hazards will require consideration of potential effects. Further, fire-killed and damaged trees may constitute a threat to other trees in the grove that retain integrity.</p> <p><b>E. Treatment Effectiveness Monitoring Proposed:</b> Delphine's Grove should be monitored for human activity and warning signs checked periodically for presence and condition. This monitoring may extend into FY21 (and beyond). The AIR will perform at least one follow-up monitoring site visit to assess the potential rejuvenation of mature cypress. Hazard trees will be mitigated as appropriate.</p> |

### LABOR, MATERIALS AND OTHER COST:

|                                                                                                                                                                          |                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| <b>PERSONNEL SERVICES:</b> (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):<br>Do not include contract personnel costs here (see contractor services below). | <b>COST / ITEM</b> |
| FY20: NR GS-7 \$40/hour X 8 hours X 1 FY                                                                                                                                 | \$ 320             |
| FY20: GS-09 Preservation Arborist \$47/hr X 40 hrs X FY20                                                                                                                | \$ 1,880           |
| FY21: GS-09 Preservation Arborist \$47/hr X 32 hrs X FY21                                                                                                                | \$ 1,504           |
| <b>TOTAL PERSONNEL SERVICE COST</b>                                                                                                                                      | <b>\$ 3,704</b>    |
| <b>Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.</b>                                                            | <b>COST / ITEM</b> |
| NA                                                                                                                                                                       | \$ -               |
| <b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>                                                                                                                    | <b>\$ -</b>        |
| <b>MATERIALS AND SUPPLIES</b> (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):                                                                                 | <b>COST / ITEM</b> |
| FY20: Warning signs - generic, "Danger keep out" and "Warning falling limbs", 8 total                                                                                    | \$150              |
| <b>TOTAL MATERIALS AND SUPPLY COST</b>                                                                                                                                   | <b>\$ 150</b>      |
| <b>TRAVEL COST</b> (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):                                                                            | <b>COST / ITEM</b> |
| FY20: Travel for AIR Team: Est. \$700 per person, 1 team member, 1 FY20 site visit                                                                                       | \$ 700             |
| FY21: Travel for AIR Team: Est. \$650 per person, 2 team members, 1 FY21 site visit                                                                                      | \$ 650             |
| <b>TOTAL TRAVEL COST</b>                                                                                                                                                 | <b>\$ 1,350</b>    |
| <b>CONTRACT COST</b> (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):                                                                              | <b>COST / ITEM</b> |
| NA                                                                                                                                                                       | \$ -               |
| <b>TOTAL CONTRACT COST</b>                                                                                                                                               | <b>\$ -</b>        |
| <b>TOTAL ALL COSTS</b>                                                                                                                                                   | <b>\$ 5,204</b>    |

### SPECIFICATION COST SUMMARY

| FISCAL YEAR | PLANNED INITIATION DATE (M/D/YYYY) | PLANNED COMPLETION DATE (M/D/YYYY) | WORK AGENT | UNITS        | UNIT COST | PLANNED ACCOMPLISHMENTS | PLANNED COST    |
|-------------|------------------------------------|------------------------------------|------------|--------------|-----------|-------------------------|-----------------|
| 2020        | 07/01/20                           | 09/30/21                           | F          | 1            | \$ 3,050  | 1                       | \$ 3,050        |
| 2021        | 10/01/20                           | 09/30/21                           | F          | 1            | \$ 2,154  | 1                       | \$ 2,154        |
|             |                                    |                                    |            |              |           |                         |                 |
|             |                                    |                                    |            |              |           |                         |                 |
|             |                                    |                                    |            | <b>TOTAL</b> |           |                         | <b>\$ 5,204</b> |

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

**SOURCE OF COST ESTIMATE**

|                                                                                          |      |
|------------------------------------------------------------------------------------------|------|
| 1. Estimate obtained from 2-3 independent contractual sources.                           |      |
| 2. Documented cost figures from similar project work obtained from local agency sources. | M, T |
| 3. Estimate supported by cost guides from independent sources or other federal agencies. |      |
| 4. Estimates based upon government wage rates and material cost.                         | P    |
| 5. No cost estimate required - cost charged to Fire Suppression Account.                 |      |

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

## INDIVIDUAL SPECIFICATION

|                              |                        |                                  |      |
|------------------------------|------------------------|----------------------------------|------|
| TREATMENT/ACTIVITY NAME      | Section 106 Compliance | PART E SPECIFICATION #           | CR-1 |
| NFPORS TREATMENT CATEGORY*   | Planning               | FISCAL YEAR(S) (list each year): | 2020 |
| NFPORS TREATMENT TYPE *      | Consultation           | WUI? Y / N                       | N    |
| IMPACTED COMMUNITIES AT RISK | No                     | IMPACTED T&E SPECIES             | N/A  |

\* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

**WORK TO BE DONE** (describe or attach exact specifications of work to be done):

| Number and Describe Each Task:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>A. General Description:</b> Several of the specifications in Scorpion Fire BAER plan will require sufficient information on historic properties and NAGPRA resources to support consultation and compliance under Section 106 of the NHPA and, potentially, NAGPRA plans of action. The work described here addresses these needs for specifications HS-1, HS-2, HS-3, WS-1, VEG-1 and VEG-2 (and subsequent BAR treatments).</p>                                                                                                                                                                                                                                                                                                                        |
| <p><b>B. Location/(Suitable Sites):</b> Scorpion Fire, Channel Islands National Park, California</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <p><b>C. Design/Construction Specifications:</b> This specification consists of four components:</p> <ul style="list-style-type: none"> <li>(1) Document handline disturbance to two village sites with highly sensitive cultural and archeological materials.</li> <li>(2) Inventory of up to 778 acres of land to support treatment activities, including HS-1, HS-2, HS-3, WS-1, VEG-1 and VEG-2 (and subsequent BAR treatments).</li> <li>(3) Document identified resources sufficiently to support Section 106 and NAGPRA consultation for above treatments.</li> <li>(4) Consult with SHPO and tribal partners to ensure adverse effects to sensitive resources are avoided, minimized or resolved through the 36 CFR 800 regulatory process.</li> </ul> |
| <p><b>D. Purpose of Treatment Specifications:</b> Provide compliance with legislative and agency mandates to avoid or mitigate impacts to cultural resources and to provide sound cultural resource stewardship.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <p><b>E. Treatment Effectiveness Monitoring Proposed:</b> N/A</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

**LABOR, MATERIALS AND OTHER COST:**

|                                                                                                                                                                                                                            |                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| <b>PERSONNEL SERVICES: (Grade @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item):</b><br><b>Do not include contract personnel costs here (see contractor services below).</b>                                             | <b>COST / ITEM</b> |
| FY20: CR GS-11 @ \$50/Hour x 252 Hours                                                                                                                                                                                     | \$ 12,600          |
| FY20: CR GS-9 @ \$41/Hour x 54 Hours                                                                                                                                                                                       | \$ 2,214           |
| FY20: CR AD-K @ \$42/Hour x 225 Hours                                                                                                                                                                                      | \$ 9,450           |
| <b>TOTAL PERSONNEL SERVICE COST</b>                                                                                                                                                                                        | <b>\$ 24,264</b>   |
| <b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item):</b><br><b>Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.</b> | <b>COST / ITEM</b> |
| NA                                                                                                                                                                                                                         | \$ -               |
| <b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>                                                                                                                                                                      | <b>\$ -</b>        |
| <b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>                                                                                                                                   | <b>COST / ITEM</b> |
| NA                                                                                                                                                                                                                         |                    |
| <b>TOTAL MATERIALS AND SUPPLY COST</b>                                                                                                                                                                                     | <b>\$ -</b>        |
| <b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>                                                                                                                              | <b>COST / ITEM</b> |
| FY20: \$176/RT x 10 RT                                                                                                                                                                                                     | \$ 1,760           |
| <b>TOTAL TRAVEL COST</b>                                                                                                                                                                                                   | <b>\$ 1,760</b>    |
| <b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>                                                                                                                                | <b>COST / ITEM</b> |
| FY20: Tribal Archeologist @ \$97/Hour x 90 Hours                                                                                                                                                                           | \$ 8,730           |
| FY20: Tribal Cultural Monitor @ \$65/Hour x 90 Hours                                                                                                                                                                       | \$ 5,850           |
| <b>TOTAL CONTRACT COST</b>                                                                                                                                                                                                 | <b>\$ 14,580</b>   |
| <b>TOTAL ALL COSTS</b>                                                                                                                                                                                                     | <b>\$ 40,604</b>   |

### SPECIFICATION COST SUMMARY

| FISCAL YEAR | PLANNED<br>INITIATION DATE<br>(M/D/YYYY) | PLANNED<br>COMPLETION<br>DATE<br>(M/D/YYYY) | WORK AGENT | UNITS | UNIT COST | PLANNED<br>ACCOMPLISH<br>MENTS | PLANNED COST |
|-------------|------------------------------------------|---------------------------------------------|------------|-------|-----------|--------------------------------|--------------|
| FY20        | 07/09/20                                 | 09/30/20                                    | F, S       | N/A   | N/A       | N/A                            | \$ 40,604    |
|             |                                          |                                             |            |       |           |                                |              |
|             |                                          |                                             |            |       |           |                                |              |
|             |                                          |                                             |            |       |           |                                |              |
| TOTAL       |                                          |                                             |            |       |           |                                | \$ 40,604    |

Work Agent: **C**=Coop Agreement, **F**=Force Account, **G**=Grantee, **P**=Permittees, **S**=Service Contract, **T**=Timber Sales Purchaser, **V**=Volunteer

**SOURCE OF COST ESTIMATE**

| SOURCE OF COST ESTIMATE                                                                  |      |
|------------------------------------------------------------------------------------------|------|
| 1. Estimate obtained from 2-3 independent contractual sources.                           |      |
| 2. Documented cost figures from similar project work obtained from local agency sources. | T, C |
| 3. Estimate supported by cost guides from independent sources or other federal agencies. |      |
| 4. Estimates based upon government wage rates and material cost.                         | P    |
| 5. No cost estimate required - cost charged to Fire Suppression Account.                 |      |

**P** = Personnel Services, **E** = Equipment, **M** = Materials/Supplies, **T** = Travel, **C** = Contract, **F** = Suppression

## INDIVIDUAL SPECIFICATION

|                              |                                 |                                  |            |
|------------------------------|---------------------------------|----------------------------------|------------|
| TREATMENT/ACTIVITY NAME      | Hillslope Stabilization         | PART E SPECIFICATION #           | WS-1       |
| NFPORS TREATMENT CATEGORY*   | Cultural & Heritage Resources   | FISCAL YEAR(S) (list each year): | 2020, 2021 |
| NFPORS TREATMENT TYPE *      | Protect Cultural/Heritage Sites | WUI? Y / N                       | N          |
| IMPACTED COMMUNITIES AT RISK | N/A                             | IMPACTED T&E SPECIES             | N/A        |

\* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

### WORK TO BE DONE (describe or attach exact specifications of work to be done):

| Number and Describe Each Task:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A. General Description: Steep, burned slopes above Scorpion Anchorage and Smugglers Cove are at risk from post-fire erosion, threatening downslope resources and increasing sedimentation. Stabilization measures will be taken to slow and/or redirect overland flow and expedite the recovery of vegetative ground cover.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| B. Location/(Suitable Sites): Scorpion Anchorage, Smugglers Cove, Channel Islands National Park, California (see attached photos)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| C. Design/Construction Specifications: At Scorpion Anchorage, the following treatments are recommended:<br>(1) At the bottom of the burned slope, install wattles to deflect surface runoff away from sensitive resources. Wattles should be obtained from the source utilized by CHIS for other projects in order to minimize the possibility of biocontamination.<br>(2) At the top of the burned slope, to slow erosion in the incised channel on the east end of the slope, install a set of wattles between the road and incised channel. Wattles should be installed perpendicular to the slope contours.<br>(3) Collect and broadcast native seed on slope as appropriate.<br>(4) Install temporary irrigation systems to encourage growth of vegetation prior to first winter rain.<br>At Smugglers Cove, the following treatments are recommended:<br>(1) On the face of the burned slope, install a set of wattles in order to slow surface erosion above the sensitive resource.<br>(2) Collect and broadcast native seed on slope as appropriate. |
| D. Purpose of Treatment Specifications: Hillslope stabilization should be performed at Scorpion Anchorage and Smugglers Cove as a means of slowing erosion and protecting sensitive resources.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| E. Treatment Effectiveness Monitoring Proposed: These treatments should be monitored for effectiveness and condition and maintained as necessary until the burned areas have stabilized.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

### LABOR, MATERIALS AND OTHER COST:

| PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):<br>Do not include contract personnel costs here (see contractor services below).                                             | COST / ITEM     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| FY20: NR GS-7 \$40/hour X 24 hours (Wattle deployment)                                                                                                                                                        | \$ 960          |
| FY20: WG-11 @ \$52/hr X 24 hrs (Wattle deployment)                                                                                                                                                            | \$ 1,248        |
| FY20: NR GS-7 \$40/hour X 8 hours (Irrigation)                                                                                                                                                                | \$ 320          |
| FY21: Irrigation planning and implementation - TBD                                                                                                                                                            |                 |
| <b>TOTAL PERSONNEL SERVICE COST</b>                                                                                                                                                                           | <b>\$ 2,528</b> |
| EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X # Fiscal Years = Cost/Item):<br>Note: Purchases require written justification that demonstrates cost benefits over leasing or renting. | COST / ITEM     |
| NA                                                                                                                                                                                                            | \$ -            |
|                                                                                                                                                                                                               |                 |
| <b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>                                                                                                                                                         | <b>\$ -</b>     |
| MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):                                                                                                                             | COST / ITEM     |
| FY20: Coco fiber wattle 12 ft x 10 ft @ \$65.72/each X 20 wattles (Scorpion)                                                                                                                                  | \$ 1,314        |
| FY20: Coco fiber wattle 9 ft x 20 ft @ \$117.15/each X 11 wattles (Smugglers)                                                                                                                                 | \$ 1,289        |
| FY20: Coco fiber wattle 9 ft x 20 ft @ \$117.15/each X 4 wattles (Smugglers)                                                                                                                                  | \$ 469          |
| FY20: Staples for both slopes: box of 9 in x 6 in staples @ \$47/box X 1 box                                                                                                                                  | \$ 47           |
| FY20: 3/4 inch garden hose, 100 ft hose (Gilmour) @ 65.13                                                                                                                                                     | \$ 66           |
| FY21: TBD                                                                                                                                                                                                     |                 |
| <b>TOTAL MATERIALS AND SUPPLY COST</b>                                                                                                                                                                        | <b>\$ 3,119</b> |
| TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):                                                                                                                        | COST / ITEM     |
| NA                                                                                                                                                                                                            | \$ -            |
|                                                                                                                                                                                                               |                 |
| <b>TOTAL TRAVEL COST</b>                                                                                                                                                                                      | <b>\$ -</b>     |
| CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):                                                                                                                          | COST / ITEM     |
| NA                                                                                                                                                                                                            | \$ -            |
|                                                                                                                                                                                                               |                 |
| <b>TOTAL CONTRACT COST</b>                                                                                                                                                                                    | <b>\$ -</b>     |
| <b>TOTAL ALL COSTS</b>                                                                                                                                                                                        | <b>\$ 5,647</b> |

**SPECIFICATION COST SUMMARY**

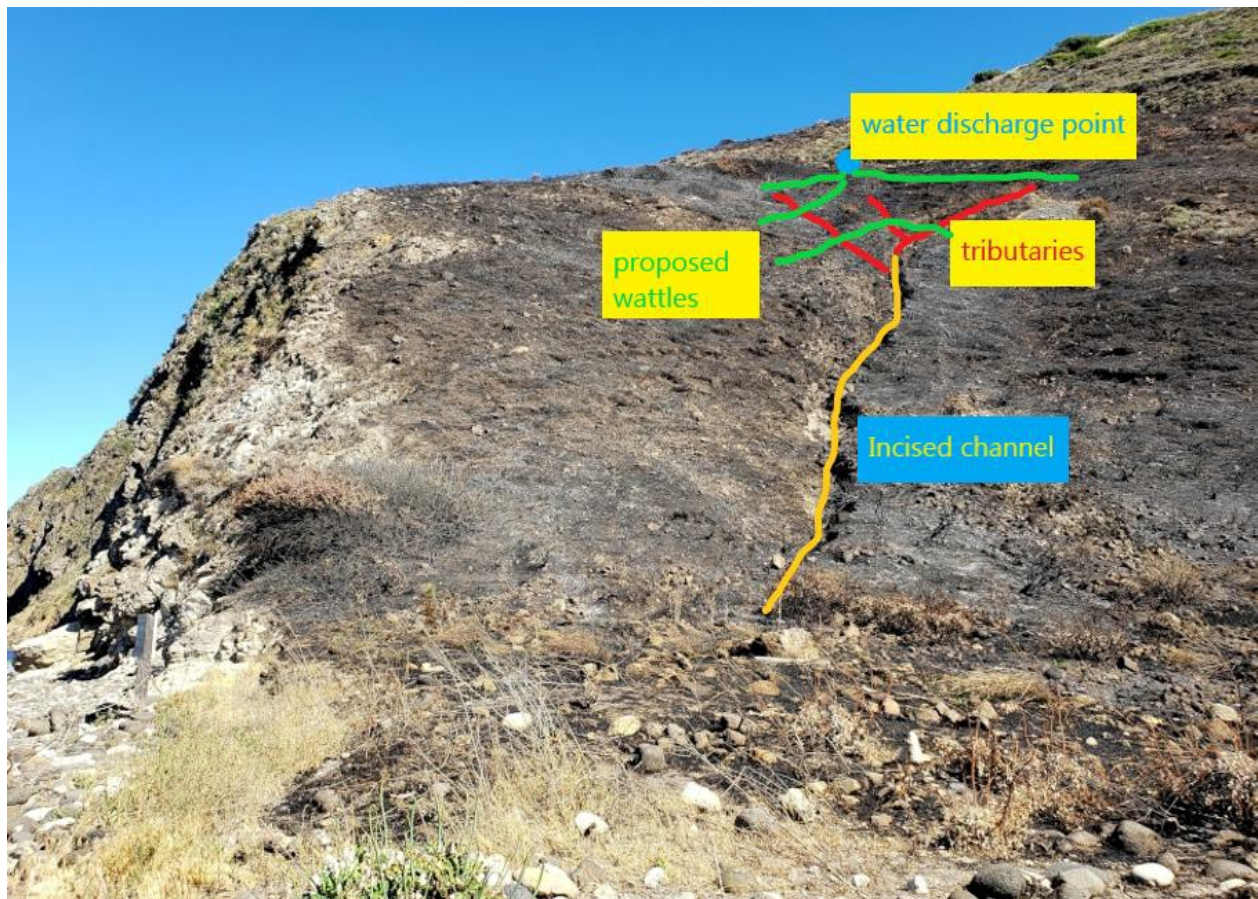
| FISCAL YEAR | PLANNED INITIATION DATE (M/D/YYYY) | PLANNED COMPLETION DATE (M/D/YYYY) | WORK AGENT | UNITS | UNIT COST | PLANNED ACCOMPLISHMENTS | PLANNED COST |
|-------------|------------------------------------|------------------------------------|------------|-------|-----------|-------------------------|--------------|
| 2020        | 06/26/20                           | 09/30/20                           | F          | Site  | \$2,824   | 2                       | \$ 5,647     |
|             |                                    |                                    |            |       |           |                         |              |
|             |                                    |                                    |            |       |           |                         |              |
|             |                                    |                                    |            |       |           |                         |              |
| TOTAL       |                                    |                                    |            |       |           |                         | \$ 5,647     |

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

**SOURCE OF COST ESTIMATE**

|                                                                                          |      |
|------------------------------------------------------------------------------------------|------|
| 1. Estimate obtained from 2-3 independent contractual sources.                           |      |
| 2. Documented cost figures from similar project work obtained from local agency sources. |      |
| 3. Estimate supported by cost guides from independent sources or other federal agencies. |      |
| 4. Estimates based upon government wage rates and material cost.                         | P, M |
| 5. No cost estimate required - cost charged to Fire Suppression Account.                 |      |

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression



Proposed wattle placement on burned slope, Scorpion Anchorage.



Proposed wattle placement at base of slope, Scorpion Anchorage.



Proposed wattle placement and handline on burned slope, Smugglers Cove.

## INDIVIDUAL SPECIFICATION

|                              |                                         |                                  |       |
|------------------------------|-----------------------------------------|----------------------------------|-------|
| TREATMENT/ACTIVITY NAME      | Develop Invasive Species Treatment Plan | PART E SPECIFICATION #           | VEG-1 |
| NFPORS TREATMENT CATEGORY*   | Planning                                | FISCAL YEAR(S) (list each year): | 2020  |
| NFPORS TREATMENT TYPE *      | Prescription and Design                 | WUI? Y / N                       | N     |
| IMPACTED COMMUNITIES AT RISK | N/A                                     | IMPACTED T&E SPECIES             | N/A   |

\* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries

**WORK TO BE DONE** (describe or attach exact specifications of work to be done):

| Number and Describe Each Task:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A. General Description: In FY20, convene a technical advisory group of NPS, TNC and consulting natural resource managers to develop a long-term invasives treatment plan for the Scorpion Fire.                                                                                                                                                                                                                                                                                                                                                       |
| B. Location/(Suitable Sites): Scorpion Fire, Channel Islands National Park, California.                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| C. Design/Construction Specifications: Tasks will include identifying priority species, treatment areas, control methods and long-term restoration objectives. The plan will be developed from existing data and new information obtained as part of specification VEG-2, and serve as the basis for formulating the FY21 BAR request. This specification will include one site visit to the Scorpion Fire.                                                                                                                                           |
| D. Purpose of Treatment Specifications: The Scorpion Fire has created the potential to increase the abundance of target weed species and render native vegetation communities vulnerable to invasion. Additionally, postfire conditions provide an extraordinary opportunity to control target invasive species while they are particularly vulnerable to treatment. Formulating a detailed plan using existing and newly acquired data and expertise of highly skilled practitioners will lead to a more effective and efficient treatment protocol. |
| E. Treatment Effectiveness Monitoring Proposed: N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

**LABOR, MATERIALS AND OTHER COST:**

|                                                                                                                                                                                                                     |                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| <b>PERSONNEL SERVICES: (Grade @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item):</b><br>Do not include contract personnel costs here (see contractor services below).                                             | <b>COST / ITEM</b> |
| FY20: GS-12 @ 77/Hour X 40 hrs (Site visit with advisors, writing plan)                                                                                                                                             | \$ 3,080           |
| FY20: NR GS-7 @ \$40/hour X 40 hours (Site visit with advisors, writing plan)                                                                                                                                       | \$ 1,600           |
| FY20: NR GS-11 @ \$56/hour X 40 hours (Site visit, advising)                                                                                                                                                        | \$ 2,240           |
| <b>TOTAL PERSONNEL SERVICE COST</b>                                                                                                                                                                                 | <b>\$ 6,920</b>    |
| <b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item):</b><br>Note: Purchases require written justification that demonstrates cost benefits over leasing or renting. | <b>COST / ITEM</b> |
| NA                                                                                                                                                                                                                  | \$ -               |
| <b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>                                                                                                                                                               | <b>\$ -</b>        |
| <b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>                                                                                                                            | <b>COST / ITEM</b> |
| NA                                                                                                                                                                                                                  | \$ -               |
| <b>TOTAL MATERIALS AND SUPPLY COST</b>                                                                                                                                                                              | <b>\$ -</b>        |
| <b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>                                                                                                                       | <b>COST / ITEM</b> |
| FY20: Advisory Group Site Visit (5 Personnel @ \$162 x 5 RT)                                                                                                                                                        | \$ 810             |
| <b>TOTAL TRAVEL COST</b>                                                                                                                                                                                            | <b>\$ 810</b>      |
| <b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>                                                                                                                         | <b>COST / ITEM</b> |
| NA                                                                                                                                                                                                                  | \$ -               |
| <b>TOTAL CONTRACT COST</b>                                                                                                                                                                                          | <b>\$ -</b>        |
| <b>TOTAL ALL COSTS</b>                                                                                                                                                                                              | <b>\$ 7,730</b>    |

### SPECIFICATION COST SUMMARY

| FISCAL YEAR | PLANNED INITIATION DATE (M/D/YYYY) | PLANNED COMPLETION DATE (M/D/YYYY) | WORK AGENT | UNITS | UNIT COST | PLANNED ACCOMPLISHMENTS | PLANNED COST |
|-------------|------------------------------------|------------------------------------|------------|-------|-----------|-------------------------|--------------|
| FY20        | 07/01/20                           | 09/01/20                           | F          | N/A   | N/A       | N/A                     | \$ 7,730     |
|             |                                    |                                    |            |       |           |                         |              |
|             |                                    |                                    |            |       |           |                         |              |
|             |                                    |                                    |            |       |           |                         |              |
|             |                                    |                                    |            | TOTAL |           |                         | \$ 7,730     |

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

### SOURCE OF COST ESTIMATE

|                                                                                          |   |
|------------------------------------------------------------------------------------------|---|
| 1. Estimate obtained from 2-3 independent contractual sources.                           |   |
| 2. Documented cost figures from similar project work obtained from local agency sources. | T |
| 3. Estimate supported by cost guides from independent sources or other federal agencies. |   |
| 4. Estimates based upon government wage rates and material cost.                         | P |
| 5. No cost estimate required - cost charged to Fire Suppression Account.                 |   |

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

## INDIVIDUAL SPECIFICATION

|                              |                                                 |                                  |            |
|------------------------------|-------------------------------------------------|----------------------------------|------------|
| TREATMENT/ACTIVITY NAME      | Early Detection and Control of Invasive Species | PART E SPECIFICATION #           | VEG-2      |
| NFPORS TREATMENT CATEGORY*   | Natural Resources                               | FISCAL YEAR(S) (list each year): | 2020, 2021 |
| NFPORS TREATMENT TYPE *      | Noxious Weed Detection                          | WUI? Y / N                       | N          |
| IMPACTED COMMUNITIES AT RISK | N/A                                             | IMPACTED T&E SPECIES             | N/A        |

\* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

### WORK TO BE DONE (describe or attach exact specifications of work to be done):

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Number and Describe Each Task:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <p><b>A. General Description:</b> In FY20, perform inventory and opportunistic invasive control in the Scorpion Fire and locations impacted by suppression activities. The data collected in association with this treatment will be critical for formulating the development of the Scorpion Fire invasive species plan (Specification VEG-1). If BAR funds are not forthcoming in FY21, BAER funds will be requested to continue detection and treatment activities, particularly as the burned and suppression-impacted areas begin to green-up following the onset of winter rains.</p> <p><b>B. Location/(Suitable Sites):</b> Scorpion Fire, Channel Islands National Park, California</p> <p><b>C. Design/Construction Specifications:</b> This treatment includes two components:<br/>           (1) Systematically survey high-priority areas in the Scorpion Fire and locations impacted by suppression activities for the presence of invasive species, native species of special management concern, and intact native vegetation communities. Estimated survey coverage will be 500 acres.<br/>           (2) Opportunistically treat encountered high-priority invasive species when/if biologically appropriate using accepted control methods.</p> <p><b>D. Purpose of Treatment Specifications:</b> The Scorpion Fire has created the potential to increase the abundance of fennel, a target species for ongoing invasive plant management by TNC and NPS, and to expand the distribution and abundance of a whole suite of additional target weed species. In the absence of immediate, emergency treatment, these species will become well established and expand their distributions. Even areas of native vegetation are vulnerable to increased cover of non-native herbaceous species that will slow or inhibit recovery of natives that are dependent on recruitment from the seed bank. Native recovery in predominantly non-native vegetation types is unlikely to occur naturally postfire in the absence of active control measures to reduce competition. Conversely, postfire conditions provide an extraordinary opportunity to control target invasive species while they are particularly vulnerable to treatment.</p> <p><b>E. Treatment Effectiveness Monitoring Proposed:</b> High priority and treated areas will be revisited as necessary.</p> |

### LABOR, MATERIALS AND OTHER COST:

|                                                                                                                                                                                                                     |                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| <b>PERSONNEL SERVICES:</b> (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):<br>Do not include contract personnel costs here (see contractor services below).                                            | <b>COST / ITEM</b> |
| FY20: NR GS-7 @ \$40/hour X 54 hours X 1 FY (Mapping high priority areas; opportunistic treatment over 6 days)                                                                                                      | \$ 2,160           |
| FY21: TBD                                                                                                                                                                                                           |                    |
| <b>TOTAL PERSONNEL SERVICE COST</b>                                                                                                                                                                                 | \$ 2,160           |
| <b>EQUIPMENT PURCHASE, LEASE AND/OR RENT</b> (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item):<br>Note: Purchases require written justification that demonstrates cost benefits over leasing or renting. | <b>COST / ITEM</b> |
| NA                                                                                                                                                                                                                  | \$ -               |
| <b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>                                                                                                                                                               | \$ -               |
| <b>MATERIALS AND SUPPLIES</b> (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):                                                                                                                            | <b>COST / ITEM</b> |
| NA                                                                                                                                                                                                                  | \$ -               |
| <b>TOTAL MATERIALS AND SUPPLY COST</b>                                                                                                                                                                              | \$ -               |
| <b>TRAVEL COST</b> (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):                                                                                                                       | <b>COST / ITEM</b> |
| NA                                                                                                                                                                                                                  | \$ -               |
| <b>TOTAL TRAVEL COST</b>                                                                                                                                                                                            | \$ -               |
| <b>CONTRACT COST</b> (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):                                                                                                                         | <b>COST / ITEM</b> |
| NA                                                                                                                                                                                                                  | \$ -               |
| <b>TOTAL CONTRACT COST</b>                                                                                                                                                                                          | \$ -               |
| <b>TOTAL ALL COSTS \$</b>                                                                                                                                                                                           | <b>2,160</b>       |

### SPECIFICATION COST SUMMARY

| FISCAL YEAR | PLANNED INITIATION DATE (M/D/YYYY) | PLANNED COMPLETION DATE (M/D/YYYY) | WORK AGENT | UNITS        | UNIT COST | PLANNED ACCOMPLISHMENTS | PLANNED COST    |
|-------------|------------------------------------|------------------------------------|------------|--------------|-----------|-------------------------|-----------------|
| FY 20       | 07/01/20                           | 09/30/20                           | F          | Acres        | \$ 4      | 500                     | \$ 2,160        |
|             |                                    |                                    |            |              |           |                         |                 |
|             |                                    |                                    |            |              |           |                         |                 |
|             |                                    |                                    |            | <b>TOTAL</b> |           |                         | <b>\$ 2,160</b> |

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

### SOURCE OF COST ESTIMATE

|                                                                                          |   |
|------------------------------------------------------------------------------------------|---|
| 1. Estimate obtained from 2-3 independent contractual sources.                           |   |
| 2. Documented cost figures from similar project work obtained from local agency sources. |   |
| 3. Estimate supported by cost guides from independent sources or other federal agencies. |   |
| 4. Estimates based upon government wage rates and material cost.                         | P |
| 5. No cost estimate required - cost charged to Fire Suppression Account.                 |   |

## INDIVIDUAL SPECIFICATION

|                              |                       |                                  |            |
|------------------------------|-----------------------|----------------------------------|------------|
| TREATMENT/ACTIVITY NAME      | Implementation Leader | PART E SPECIFICATION #           | ADM-1      |
| NFPORS TREATMENT CATEGORY*   | Administration        | FISCAL YEAR(S) (list each year): | 2020, 2021 |
| NFPORS TREATMENT TYPE *      | Administration        | WUI? Y / N                       | N          |
| IMPACTED COMMUNITIES AT RISK | N/A                   | IMPACTED T&E SPECIES             | N/A        |

\* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

### WORK TO BE DONE (describe or attach exact specifications of work to be done):

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Number and Describe Each Task:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| A. General Description: This specification will fund salary, travel and miscellaneous expenses for personnel responsible for overseeing implementation of proposed BAER treatments and activities associated with the Scorpion Fire in FY20 and FY21 (and perhaps FY22 and FY23 as applicable). Funding is also requested for administrative support.                                                                                                                   |
| B. Location/(Suitable Sites): Scorpion Fire, Channel Islands National Park, California                                                                                                                                                                                                                                                                                                                                                                                  |
| C. Design/Construction Specifications: Among the tasks to be performed under this specification include (as applicable):<br>(1) Develop and amend specifications<br>(2) Develop scopes of work<br>(3) COTR<br>(4) Interagency coordination<br>(5) Implementation monitoring<br>(6) Budget tracking<br>(7) Communication and education<br>(8) Accomplishment reporting                                                                                                   |
| D. Purpose of Treatment Specifications: The Scorpion Fire created a variety of emergency post-fire issues on NPS lands. Multiple specifications are proposed to address these issues, most of which require specialized expertise provided by other CHIS staff or contractors. Dedicated overhead implementation staff time is required to ensure specifications are completed correctly and in a timely manner, budgets are tracked, and accomplishments are reported. |
| E. Treatment Effectiveness Monitoring Proposed: N/A                                                                                                                                                                                                                                                                                                                                                                                                                     |

### LABOR, MATERIALS AND OTHER COST:

|                                                                                                                                                                                                                     |                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| <b>PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item):</b><br>Do not include contract personnel costs here (see contractor services below).                                            | <b>COST / ITEM</b> |
| FY20: Little (GS-12, \$77/hr. X 8 hrs./PP X 6 PP)                                                                                                                                                                   | \$ 3,696           |
| FY20: Cowan (GS-7, \$40/hr. X 8 hrs./PP X 6 PP)                                                                                                                                                                     | \$ 1,920           |
| FY20: Kulaga (GS-7, \$36/hr. x 10 hrs./PP x 6 PP)                                                                                                                                                                   | \$ 2,160           |
| FY20: Rudolph GS-7, \$53/hr. X 15 hrs.                                                                                                                                                                              | \$ 795             |
| FY21: Little TBD                                                                                                                                                                                                    |                    |
| FY21: Cowan TBD                                                                                                                                                                                                     |                    |
| FY21: Other TBD                                                                                                                                                                                                     |                    |
| <b>TOTAL PERSONNEL SERVICE COST</b>                                                                                                                                                                                 | <b>\$ 8,571</b>    |
| <b>EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item):</b><br>Note: Purchases require written justification that demonstrates cost benefits over leasing or renting. | <b>COST / ITEM</b> |
| NA                                                                                                                                                                                                                  | \$ -               |
|                                                                                                                                                                                                                     |                    |
| <b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>                                                                                                                                                               | <b>\$ -</b>        |
| <b>MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</b>                                                                                                                            | <b>COST / ITEM</b> |
| FY20: Miscellaneous supplies                                                                                                                                                                                        | \$ 100             |
| FY21: Miscellaneous supplies- TBD                                                                                                                                                                                   |                    |
|                                                                                                                                                                                                                     |                    |
| <b>TOTAL MATERIALS AND SUPPLY COST</b>                                                                                                                                                                              | <b>\$ 100</b>      |
| <b>TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</b>                                                                                                                       | <b>COST / ITEM</b> |
| FY20: IPCO (\$162/RT X 2 RT)                                                                                                                                                                                        | \$ 364             |
| FY21: TBD                                                                                                                                                                                                           |                    |
|                                                                                                                                                                                                                     |                    |
| <b>TOTAL TRAVEL COST</b>                                                                                                                                                                                            | <b>\$ 364</b>      |
| <b>CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</b>                                                                                                                         | <b>COST / ITEM</b> |
| NA                                                                                                                                                                                                                  | \$ -               |
|                                                                                                                                                                                                                     |                    |
| <b>TOTAL CONTRACT COST</b>                                                                                                                                                                                          | <b>\$ -</b>        |

TOTAL ALL COSTS \$ 9,035

**SPECIFICATION COST SUMMARY**

| FISCAL YEAR | PLANNED INITIATION DATE (M/D/YYYY) | PLANNED COMPLETION DATE (M/D/YYYY) | WORK AGENT | UNITS | UNIT COST | PLANNED ACCOMPLISHMENTS | PLANNED COST |
|-------------|------------------------------------|------------------------------------|------------|-------|-----------|-------------------------|--------------|
| 2020        | 06/26/20                           | 09/30/20                           | F          | N/A   | N/A       | N/A                     | \$ 9,035     |
| 2021        | 10/01/20                           | 09/30/21                           | F          | N/A   | N/A       | N/A                     |              |
|             |                                    |                                    |            |       |           |                         |              |
| TOTAL       |                                    |                                    |            |       |           |                         | \$ 9,035     |

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

**SOURCE OF COST ESTIMATE**

|                                                                                          |   |
|------------------------------------------------------------------------------------------|---|
| 1. Estimate obtained from 2-3 independent contractual sources.                           |   |
| 2. Documented cost figures from similar project work obtained from local agency sources. | T |
| 3. Estimate supported by cost guides from independent sources or other federal agencies. |   |
| 4. Estimates based upon government wage rates and material cost.                         | P |
| 5. No cost estimate required - cost charged to Fire Suppression Account.                 |   |

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

## INDIVIDUAL SPECIFICATION

|                              |                       |                                  |       |
|------------------------------|-----------------------|----------------------------------|-------|
| TREATMENT/ACTIVITY NAME      | BAER Plan Preparation | PART E SPECIFICATION #           | ADM-2 |
| NFPORS TREATMENT CATEGORY*   | Planning              | FISCAL YEAR(S) (list each year): | 2020  |
| NFPORS TREATMENT TYPE *      | ES/BAER/BAR Plan      | WUI? Y / N                       | N     |
| IMPACTED COMMUNITIES AT RISK | N/A                   | IMPACTED T&E SPECIES             | N/A   |

\* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

### WORK TO BE DONE (describe or attach exact specifications of work to be done):

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Number and Describe Each Task:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>A. General Description:</b> This specification finances personnel, travel and other costs associated with developing the Scorpion Fire Burned Area Emergency Response Plan, including field assessments, coordination and administration, writing, map preparation and data management.                                                                                                                                                                                                                                                                            |
| <b>B. Location/(Suitable Sites):</b> Scorpion Fire, Channel Islands National Park, California.                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>C. Design/Construction Specifications:</b> The plan was prepared in accordance with DOI, NPS, and interagency Burned Area Emergency Response policy and guidance, including:<br>(1) Office of Wildland Fire (OWF) Policy Memorandum 2016-01 (Post-Wildfire Recovery Program and Policy Changes)<br>(2) Interagency Standards for Fire and Fire Aviation Operations, 2020<br>(3) NPS Reference Manual 18 (Chapter 18)<br>(4) NPS Wildland Fire & Aviation Management Business Rules, FY20<br>(5) Interagency Burned Area Emergency Response Guidebook (Version 4.0) |
| <b>D. Purpose of Treatment Specifications:</b> The plan was prepared to meet DOI and NPS policy requirements.                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>E. Treatment Effectiveness Monitoring Proposed:</b> N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

### LABOR, MATERIALS AND OTHER COST:

|                                                                                                                                                                                                                     |                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| <b>PERSONNEL SERVICES:</b> (Grade @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item):<br>Do not include contract personnel costs here (see contractor services below).                                             | <b>COST / ITEM</b> |
| FY20: Little GS-12, \$77/hr. X 75 hrs.                                                                                                                                                                              | \$ 5,775           |
| FY20: Cowan GS-7, \$40/hr. X 108 hrs.                                                                                                                                                                               | \$ 4,320           |
| FY20: Rudolph GS-11, \$53/hr. X 16 hrs.                                                                                                                                                                             | \$ 848             |
| FY20: Hoppa                                                                                                                                                                                                         | \$ 3,352           |
| FY20: Kim                                                                                                                                                                                                           | \$ 495             |
| FY20: Stratte                                                                                                                                                                                                       | \$ 1,622           |
| FY20: Tumamait                                                                                                                                                                                                      | \$ 441             |
| FY20: Perry                                                                                                                                                                                                         | \$ 1,428           |
|                                                                                                                                                                                                                     |                    |
| <b>TOTAL PERSONNEL SERVICE COST</b>                                                                                                                                                                                 | <b>\$ 18,281</b>   |
| <b>EQUIPMENT PURCHASE, LEASE AND/OR RENT</b> (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item):<br>Note: Purchases require written justification that demonstrates cost benefits over leasing or renting. | <b>COST / ITEM</b> |
| NA                                                                                                                                                                                                                  | \$ -               |
|                                                                                                                                                                                                                     |                    |
| <b>TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST</b>                                                                                                                                                               | <b>\$ -</b>        |
| <b>MATERIALS AND SUPPLIES</b> (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):                                                                                                                            | <b>COST / ITEM</b> |
| NA                                                                                                                                                                                                                  |                    |
|                                                                                                                                                                                                                     |                    |
| <b>TOTAL MATERIALS AND SUPPLY COST</b>                                                                                                                                                                              | <b>\$ -</b>        |
|                                                                                                                                                                                                                     | <b>COST / ITEM</b> |
| FY20: CR (Hoppa and Tumamait) 6/4-6/5                                                                                                                                                                               | \$ 143             |
| FY20: CR Dedicated Boat 6/15                                                                                                                                                                                        | \$ 2,500           |
| FY20: CR (Hoppa, Stratte, Perry) 6/20-23                                                                                                                                                                            | \$ 474             |
| <b>TOTAL TRAVEL COST</b>                                                                                                                                                                                            | <b>\$ 3,117</b>    |
| <b>CONTRACT COST</b> (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):                                                                                                                         | <b>COST / ITEM</b> |
| FY20: SYB Tribal Archaeologist (Holguin)                                                                                                                                                                            | \$ 4,353           |
|                                                                                                                                                                                                                     |                    |
| <b>TOTAL CONTRACT COST</b>                                                                                                                                                                                          | <b>\$ 4,353</b>    |
| <b>TOTAL ALL COSTS</b>                                                                                                                                                                                              | <b>\$ 25,751</b>   |

**SPECIFICATION COST SUMMARY**

| FISCAL YEAR | PLANNED INITIATION DATE (M/D/YYYY) | PLANNED COMPLETION DATE (M/D/YYYY) | WORK AGENT | UNITS | UNIT COST | PLANNED ACCOMPLISHMENTS | PLANNED COST |
|-------------|------------------------------------|------------------------------------|------------|-------|-----------|-------------------------|--------------|
| 2020        | 06/11/20                           | 06/25/20                           | F, S       | N/A   | N/A       | N/A                     | \$ 25,751    |
|             |                                    |                                    |            |       |           |                         |              |
|             |                                    |                                    |            |       |           |                         |              |
|             |                                    |                                    |            |       |           |                         |              |
| TOTAL       |                                    |                                    |            |       |           |                         | \$ 25,751    |

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

**SOURCE OF COST ESTIMATE**

|                                                                                          |      |
|------------------------------------------------------------------------------------------|------|
| 1. Estimate obtained from 2-3 independent contractual sources.                           |      |
| 2. Documented cost figures from similar project work obtained from local agency sources. | S, T |
| 3. Estimate supported by cost guides from independent sources or other federal agencies. |      |
| 4. Estimates based upon government wage rates and material cost.                         | P    |
| 5. No cost estimate required - cost charged to Fire Suppression Account.                 |      |

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

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**Scorpion Fire  
Emergency Stabilization Plan**

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# Appendices



# APPENDIX A

## Environmental Compliance

All projects proposed in the Scorpion Fire Plan, which includes recommendations for Burned Area Emergency Response (BAER) mitigation actions, that are prescribed, funded, or implemented on park lands are subject to compliance with the National Environmental Policy Act (NEPA) in accordance with the guidelines provided by the Council on Environmental Quality (CEQ) Regulations (40 CFR 1500-1508).

Most actions in the BAER/BAR plan fall within the National Park Service's Categorical Exclusion (CE) for post-fire rehabilitation, referenced as DO-12 3.3 G(1) "Actions Related to Hazardous Fuels Reduction and Post-fire Rehabilitation". The park also has several Programmatic CEs for routine activities, including for road maintenance, trail maintenance, and sign installation that apply directly to proposed BAER/BAR actions. DO-12 3.3 E(2) "Restoration of noncontroversial native species and elimination of exotic species" is appropriate for other restoration activities proposed in this plan.

Most actions in the BAER plan are activities that are eligible for streamlined review under the National Park Service's 2008 Programmatic Agreement (Stipulation III.C.). This BAER plan accounts for completing inventory of unsurveyed area prior to treatments outlined in these specifications. NPS will continue consultation with SHPO and tribal partners as necessary to ensure complete communications, and specifically address any activities not eligible for streamlined review.

**State Historic Preservation Officer (SHPO) and tribal consultation:** NPS staff notified the California State Historic Preservation Office (SHPO), the Santa Ynez Band of Chumash Mission Indians of the Santa Ynez Reservation (SYB), and the Barbareño/Ventureño Band of Mission Indians (BVI) of the Scorpion Fire on May 31, 2020. NPS initiated consultation with these parties on June 1, 2020 and met with SYB and BVI on June 2, 2020. Representatives from both SYB and BVI participated in site visits and provided comments that were incorporated into this BAER plan.

**Endangered Species consultation:** Park staff contacted Robert McMorran, Ken Niessen, and Cat Darst (U.S. Fish and Wildlife Service) on June 3, 2020, to provide an update on the status of the response efforts to the fire. No listed plant species are known for the area; however, additional rare plant surveys will be conducted in Spring 2021. Should any federally listed species be detected, NPS will consult with the U.S. Fish and Wildlife Service.

NPS will also informally consult with the National Oceanic and Atmospheric Administration regarding potential adverse effects to black abalone from increased sedimentation due to the fire.

**California Coastal Commission consultation:** NPS initiated consultation July 1, 2020, with the manager of the Federal Consistency Unit. Consultation will address potential impacts to view sheds (e.g., signage, erosion control) and any potential impacts to recreational activities within the Coastal Zone.

The table below summarizes the proposed projects in the Scorpion BAER Plan and proposed compliance coverage for each. Ultimately, park staff will decide on, complete, and document all necessary compliance prior to initiating actions.

**Compliance Summary:**

| <b>Treatment</b>                                | <b>BAER Spec #</b> | <b>Applicable Compliance</b> |
|-------------------------------------------------|--------------------|------------------------------|
| Install Warning and Closure Signs               | HS-1               | 1                            |
| Increased Agency Presence                       | HS-2               | 2                            |
| Mitigate Tree Hazards                           | HS-3               | 1                            |
| Section 106 Compliance Planning                 | CR-1               | N/A: personnel action        |
| Hillslope Stabilization                         | WS-1               | 1                            |
| Develop Invasive Species Treatment Plan         | VEG-1              | N/A: personnel action        |
| Early Detection and Control of Invasive Species | VEG-2              | 3                            |
| Implementation Leader                           | ADM-1              | N/A: personnel action        |
| BAER Plan Preparation                           | ADM-2              | 4                            |

1 - DO-12 3.3 G(1): Actions Related to Hazardous Fuels Reduction and Post-fire Rehabilitation.

2 - CE 3.2 E: Routine and continuing government business, including such things as supervision, administration, operations, maintenance, renovations, and replacement activities having limited context and intensity (e.g., limited size and magnitude or short-term effects).

3 - CE E.2: Restoration of noncontroversial native species into suitable habitats within their historic range and elimination of exotic species.

4 – CE 3.2V: Preparation of internal reports, plans, studies, and other documents containing recommendations for action which NPS develops preliminary to the process of preparing a specific Service proposal or set of alternatives for decision.

# APPENDIX B

## Federally Listed Plants on Santa Cruz Island

| Taxon                                             | Life history | Status | # Pops | Islands                                                  |
|---------------------------------------------------|--------------|--------|--------|----------------------------------------------------------|
| <i>Boechera (Arabis) hoffmannii</i>               | Perennial    | E      | 5      | SCI, SRI, AI (presumed extirpated)                       |
| <i>Berberis pinnata ssp. insularis</i>            | Shrub        | E      | 5      | SCI, AI (presumed extirpated), SRI (presumed extirpated) |
| <i>Dudleya nesiotica</i>                          | Perennial    | T      | 1      | SCI                                                      |
| <i>Galium buxifolium</i>                          | Sub shrub    | E      | 8      | SCI, SMI, SRI (presumed extirpated)                      |
| <i>Crocanthemum (Helianthemum) greenei</i>        | Perennial    | T      | 36     | SCI, SRI, SCT                                            |
| <i>Malacothamnus fasciculatus var. nesioticus</i> | Shrub        | E      | 4      | SCI                                                      |
| <i>Malacothrix indecora</i>                       | Annual       | E      | 6      | SCI, SRI                                                 |
| <i>Malacothrix squalida</i>                       | Annual       | E      | 1      | SCI                                                      |
| <i>Thysanocarpus conchuliferus</i>                | Annual       | E      | 8      | SCI                                                      |

AI = Anacapa Island; SBI = Santa Barbara Island; SCI = Santa Cruz Island; SCT = Santa Catalina Island, SMI = San Miguel Island; SRI = Santa Rosa Island. Source: Adapted from NRCA 2019, Table 2.2.9.