Michelle dela Cruz

EE275 Wildlife Ecology

Midterm Assignment:
California Gnatcatcher (*Polioptila californica*)

Background

The California gnatcatcher (CAGN) is threatened by habitat loss due to fragmentation, urbanization, and wildfire. In July 2020, the Irvine Ranch Conservancy (IRC) signed off on its 10-year restoration project at Bee Flat Canyon—a 293-acre subwatershed that contains approximately 160 acres of existing coastal sage scrub (CSS) and 27 acres of restored CSS habitat required for gnatcatchers (IRC 2011). However, much of the restored areas were burned soon afterward by the Silverado Fire in October and November later that same year. This is a proposal to survey CAGNs within the 27 acres of restored CSS post-fire at Bee Flat Canyon in Irvine, California.

Natural History

The gnatcatcher is a small non-migratory songbird about four inches long with blue-grey feathers on its back, white feathers with a brown wash on its underside, and a black undertail. Its range covers the coast of California from Ventura County and southward into Baja Mexico to El Rosario. Gnatcatchers are found only in CSS habitat, generally below 1500 to 2000 feet in elevation. They prefer low growing shrubs with an average height of one meter (Atwood 1990, United States Fish & Wildlife Service (USFWS) 2021).

Breeding

Gnatcatchers require CSS because they select nest sites in CSS shrub species, avoiding steep slopes. A vegetation analysis on breeding habitat requirements showed a shrub cover composition of approximately 50% *Artemisia californica* (California sagebrush), 37% *Eriogonum fasciculatum* (California buckwheat), and a remaining mix of *Mimulus aurantiacus*, *Salvia apiana*, a large woody shrubs such as *Sambucus mexicana* (Mexican elderberry), *Rhus integrifolia* (lemonadeberry) (Bontrager 1991). In contrast to Bontrager's (1991) observations, Sockman (2000) noted that while not dominant, *Salvia mellifera* (black sage) was a more typical plant species for CAGN nesting in upland CSS habitats, while Beyers and Peña (1995) showed *A. californica* to play a less dominant role in inland sage scrub.

The gnatcatcher breeding season lasts between February and August. Breeding pairs are monogamous and have a territorial range of 2-12 acres per pair. Nest building occurs between late February and March by both parents, though primarily the male. Nests are located nearly 1 m above ground on the outer edges of shrubs and measure around 6 cm wide and deep. A solid base is formed with dried vegetation and spiderweb. The nesting period is approximately two weeks followed by a two-week incubation period with both parents. Average clutch size is about 4 eggs (Bontrager 1991, Cornell Lab 2020, B. Nerhus, personal communication, February 10, 2022).

Foraging

Although gnatcatchers nest near exclusively in CSS, they also use other plant communities for dispersal and foraging if located within or adjacent to CSS such as grassland, chaparral, and riparian (USFWS 1997). Gnatcatchers forage in pairs and glean arthropods off shrub foliage with a tendency toward more sessile insects. Their diet consists mostly of true bugs such as leafhoppers, aphids, and scale insects, as well as spiders, and sometimes seeds (Atwood 1988, Burger et al. 1999, Kucera 1997).

Endangered Species Act and Recovery Plan

The gnatcatcher was once a commonly occurring species in southern California, but the population significantly declined by the 1960s due to the degradation and fragmentation of its CSS habitat, particularly since European settlement (USFWS 2000, Vandergast et al. 2019). The California gnatcatcher was listed as federally threatened on March 25, 1993, under the Endangered Species Act (ESA) of 1973. It is also a Species of Special Concern in California. At the time of its federal listing, the California population was estimated to be around 2,500 pairs. According to the U.S. Fish & Wildlife Services Environmental Conservation Online System (ECOS), no recovery plans are available for the CAGN (USFW n.d.). However, gnatcatchers are protected by many regional habitat conservation plans (HCPs) throughout southern California with a recent population estimate of between 1000 to 2000 pairs. (USFWS 2016, Vandergast et al. 2019). The Pacific Legal Foundation and developers have petitioned to delist the CAGN twice since 2011. Both lawsuits have been dismissed by the USFWS, and CAGN remains currently protected under the ESA (Ogden 2016, Earthjustice 2019).

Site Location

The Bee Flat Canyon Project Site (site) is in Limestone Canyon of the Santa Ana Mountain foothills in Irvine, California and part of the northern unit of the historic Irvine Ranch. The 293-acre subwatershed travels 1.5 miles through Limestone Creek in the Santa Ana watershed and drains into the Santiago Reservoir (Irvine Lake). The soil is predominately clay and ranges from heavy clay in the uplands to sandy loam in the lowlands. The site is dominated by CSS mainly in the uplands. CSS covers over half the surface area of the canyon with pockets of grassland in areas with drier soil and gradually transitions to chaparral and oak woodland towards the mesic drainage areas (IRC 2012). The elevation at Bee Flat Canyon ranges from approximately 1000 to 1600 feet above sea level. This is within the higher elevation range of the CAGN, however the site is also located further inland in Orange County where the upper elevation limit may reach closer to 2000 feet.

Ownership

Ownership of the site was transferred from the Irvine Company to the County of Orange in 2010 as a donation of land for preservation and guided recreation. The site is permanently protected and currently under the conservation management of the Irvine Ranch Conservancy, contracted by the County of Orange, and supervised by Orange County Parks. Though publicly owned, it is not freely accessible to the public. Bee Flat Canyon is located within the Orange County Central Coast Natural Community Conservation Plan (NCCP)/Habitat Conservation Plan (HCP). The IRC initiated its long-term

restoration of the site in 2010 and successfully completed it 2020. Shortly after completion, the 2020 Silverado fire burned through areas of the site (IRC 2011, Orange County n.d.).

The site is not located in the CAGN critical habitat areas designated by the USFWS but contains suitable CSS habitat for the CAGN (Figure 1). Therefore, we propose a preliminary protocol breeding season survey to verify habitat support and presence of the CAGN. The survey will serve as a baseline study to assess CSS and CAGN recovery two years post-fire. Proposed survey routes will include 35 polygons restored CSS habitat within the site over a total of approximately 27 acres.

Site Location Maps

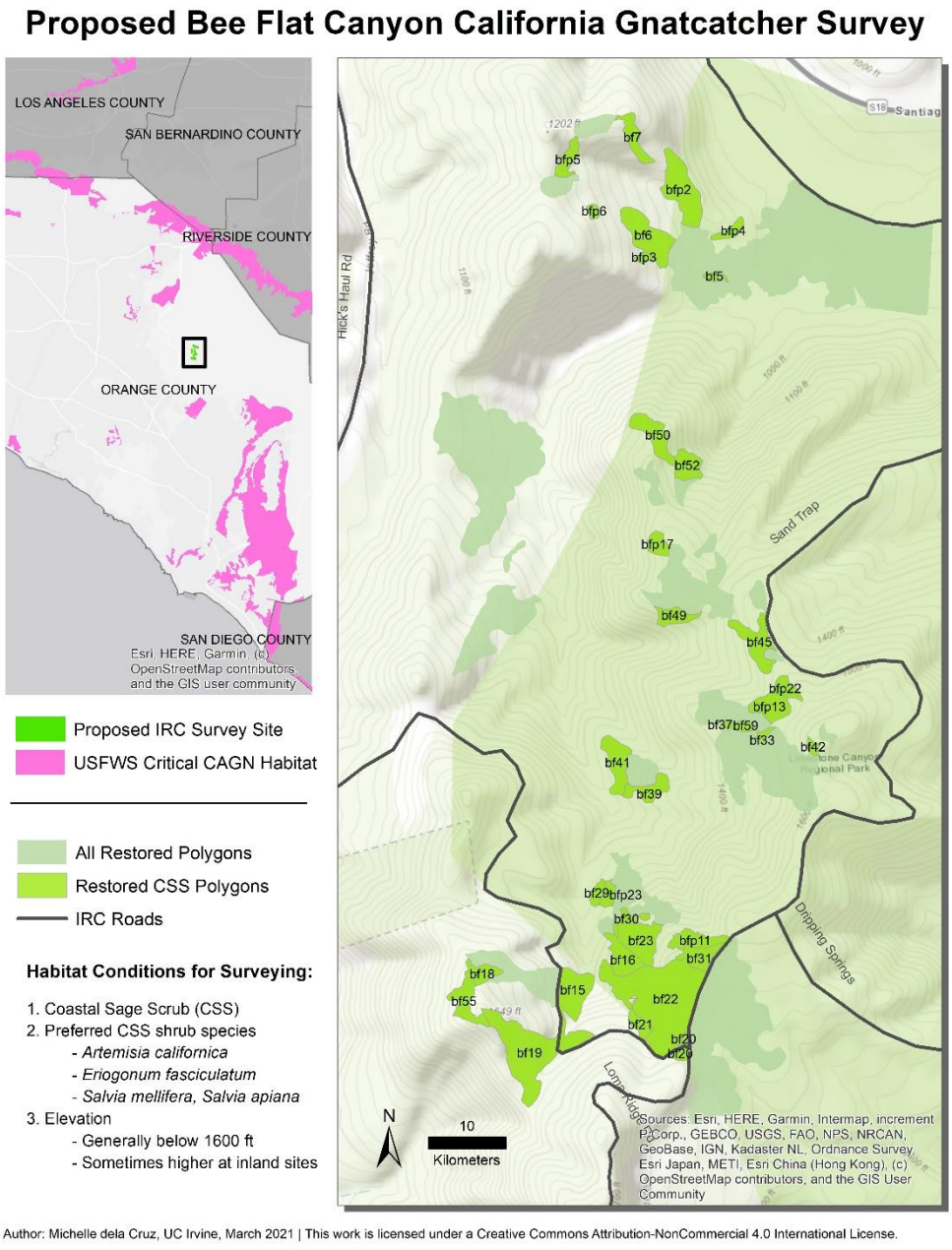

FIGURE 1. MAP OF PROPOSED CALIFORNIA GNATCATCHER SURVEY AREA AT BEE FLAT CANYON IN IRVINE, CALIFORNIA.

For detailed maps, see attachments to the 15-day Pre-Survey Notification Letter.

Sampling Methods

Gnatcatcher surveys will follow the USFWS Gnatcatcher Presence/Absence Survey Guidelines. Since the site is within an active NCCP area, presence/absence surveys will be conducted every other week from February 15 to August 30, at least one week apart, which meets the minimum requirement of three

surveys for a total of 14 surveys. Surveys will be conducted on 35 polygons over approximately 27 acres of restored CSS habitat within a 293-acre site. Five polygons will be surveyed every other week. Except for periods of inclement weather, each survey will be conducted on less than 100 acres per biologist between 6:00 a.m. and 12:00 p.m. Environmental conditions must be between 55-90 degrees Fahrenheit, below 15 mph winds (calm to moderate breeze), and low precipitation and fog to ensure clear visibility and minimal noise disruption (USFWS 1997; B. Nerhus, personal communication, February 10, 2022).

Survey Protocol

For each survey, basic location data will be recorded including the date, start time, location and polygon number, weather description, temperature, wind speed, and humidity. The survey route and observed CAGN pairs will be recorded using a GIS device to be later mapped at a 1:200 scale for the final technical report. Observed vegetative communities on and adjacent to the survey route will be recorded. Upon shrub species suitable for CAGN habitat, there will be pause for visual and auditory observation. If an individual is located, taped CAGN vocalizations and calls may then be used. The time and number of CAGN observation will be noted, as well as age, sex, and color band information, if possible. Observed gnatcatchers will not be closely approached or examined. While walking the route, all vertebrate species and rare plants observed will be noted in a species compendium list using standard species code (USFWS 1997, B. Nerhus, personal communication, February 10, 2022).

References

Atwood, J. L. (1988). Speciation and geographic variation in Black-tailed Gnatcatchers. *Ornithological Monographs*, (42), iii-74.

Atwood, J. L. (1990). Status review of the California gnatcatcher (Polioptila californica). *Manomet Bird Observatory, Manomet, MA, USA*.

Beyers, J. L., & Pena, G. C. (1995). Characteristics of coastal sage scrub in relation to fire history and use by California gnatcatchers. Characteristics of Coastal Sage Scrub in Relation to Fire History and Use by California Gnatcatchers. USDA Forest Service Gen. Tech. Rep. PSW-GTR-158, 158, 153-154.

Bontrager, D. R. (1991). Habitat requirements, home range and breeding biology of the California gnatcatcher (Polioptila californica) in south Orange County, California. Unpublished technical report prepared for the Santa Margarita Company, Rancho Santa Margarita, CA, USA.

Burger, J. C., Patten, M. A., Rotenberry, J. T., & Redak, R. A. (1999). Foraging ecology of the California gnatcatcher deduced from fecal samples. Oecologia, 120(2), 304-310.

Cornell Lab. (2019). California Gnatcatcher Life History. All About Birds. Cornell University. Accessed February 8, 2022: https://www.allaboutbirds.org/guide/California_Gnatcatcher/lifehistory

Earthjustict. (2019). Court Upholds Protections for Rare California Gnatcatcher. Earthjustice. Accessed February 11, 2022: https://earthjustice.org/news/press/2019/court-upholds-protections-for-rare-california-gnatcatcher

Irvine Ranch Conservancy. (2011). Restoration Plan Framework for Bee Flat Canyon. Irvine Ranch Conservancy.

Irvine Ranch Conservancy. (2012). Restoration Implementation Plan: Bee Flat Canyon. Irvine Ranch Conservancy.

Kucera, T. (1997). California Wildlife Habitat Relationships System – California Gnatcatcher. California's Wildlife. Vol. I-III. California Department of Fish and Wildlife.

Ogden, D. (2016). Coastal California Gnatcatcher saved from endangered species delisting attempt. Audubon California. Accessed February 11, 2022: https://ca.audubon.org/press-release/coastal-california-gnatcatcher-saved-endangered-species-delisting-attempt

Orange County. (n.d.). Irvine Ranch Open Space – History. Orange County Parks. Accessed February 11, 2022: https://www.ocparks.com/parks-trails/irvine-ranch-open-space

Sockman, K. W. (2000). Seasonal variation in nest placement by the California gnatcatcher. The Wilson Bulletin, 112(4), 498-504.

U.S. Fish & Wildlife Service. (1997). Coastal California Gnatcatcher (Polioptila californica californica) Presence/Absence Survey Guidelines. U.S. Fish & Wildlife Service Carlsbad Office.

U.S. Fish & Wildlife Service. (2000). Frequently asked questions about Critical Habitat & the Coastal California Gnatcatcher. U.S. Fish & Wildlife Service Carlsbad Office. Accessed February 11, 2022: https://www.fws.gov/pacific/news/gnatcatcher/faqtext.htm

U.S. Fish & Wildlife Service. (2016). Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition to Delist the Coastal California Gnatcatcher [Docket No. FWS–R8–ES–2014–0058; FXES11130900000C2–167–FF09E42000]. *Federal Register 81,* 59952–59975.

U.S. Fish & Wildlife Service. (2021). Coastal California Gnatcatcher. San Diego National Wildlife Refuge. Accessed February 8, 2022: https://www.fws.gov/refuge/san_diego/wildlife_and_habitat/threatened_and_endangered_species/coastal_california_gnatcatcher.html

U.S. Fish & Wildlife Service. (n.d.). Environmental Conservation Online System – Coastal California gnatcatcher (Polioptila californica californica). U.S. Fish & Wildlife. Accessed February 11, 2022: https://ecos.fws.gov/ecp/species/8178

Vandergast, A. G., Kus, B. E., Preston, K. L., & Barr, K. R. (2019). Distinguishing recent dispersal from historical genetic connectivity in the coastal California gnatcatcher. *Scientific reports*, *9*(1), 1-12.

CRUZBIO CONSULTING

February 11, 2022

U.S. Fish & Wildlife Service
Attn: Stacey Love
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, CA 92008

Pre-Survey 15-day Notification for Protocol California Gnatcatcher Surveys for a Post-Fire Habitat and Gnatcatcher Assessment at Bee Flat Canyon, Irvine, California, and Project Maps

Greetings Ms. Love,

This letter is the 15-day pre-survey notification for the California gnatcatcher (*Polioptila californica*) post-fire survey at Bee Flat Canyon in Irvine, California. This project is located in the Orange County Central Coast Natural Communities Conservation Plant (NCCP)/Habitat Conservation Plan (HCP) on publicly owned land, within the following U.S. Geological Survey (USGS) 7.5-minute series quadrangle maps:

- Black Star Canyon
- El Toro/Lake Forest

Fourteen presence/absence surveys will be conducted between February 28 and August 30, 2022, following the breeding survey protocol. Surveys will be conducted on 35 polygons over approximately 27 acres of restored coastal sage scrub habitat within a 293-acre site. Five polygons will be surveyed every other week so that each polygon will be surveyed twice by the end of the breeding survey period. Michelle dela Cruz (TE-XXXXXX-XX), Barry Nerhus (TE-XXXXXX-X), Julie Coffey (TE-XXXXXX-X), and Lee Ripma (TE-XXXXXX-XX) will conduct surveys. Following survey completion, a 45-day report on the survey results will be submitted to the Carlsbad Fish and Wildlife Office according to the survey guidelines protocol.

Please contact me at mldelac1@uci.edu or (831) 578-1330 if you have any questions, comments, or concerns.

Best,

Michelle dela Cruz
TE-XXXXXX-XX
Principle Investigator

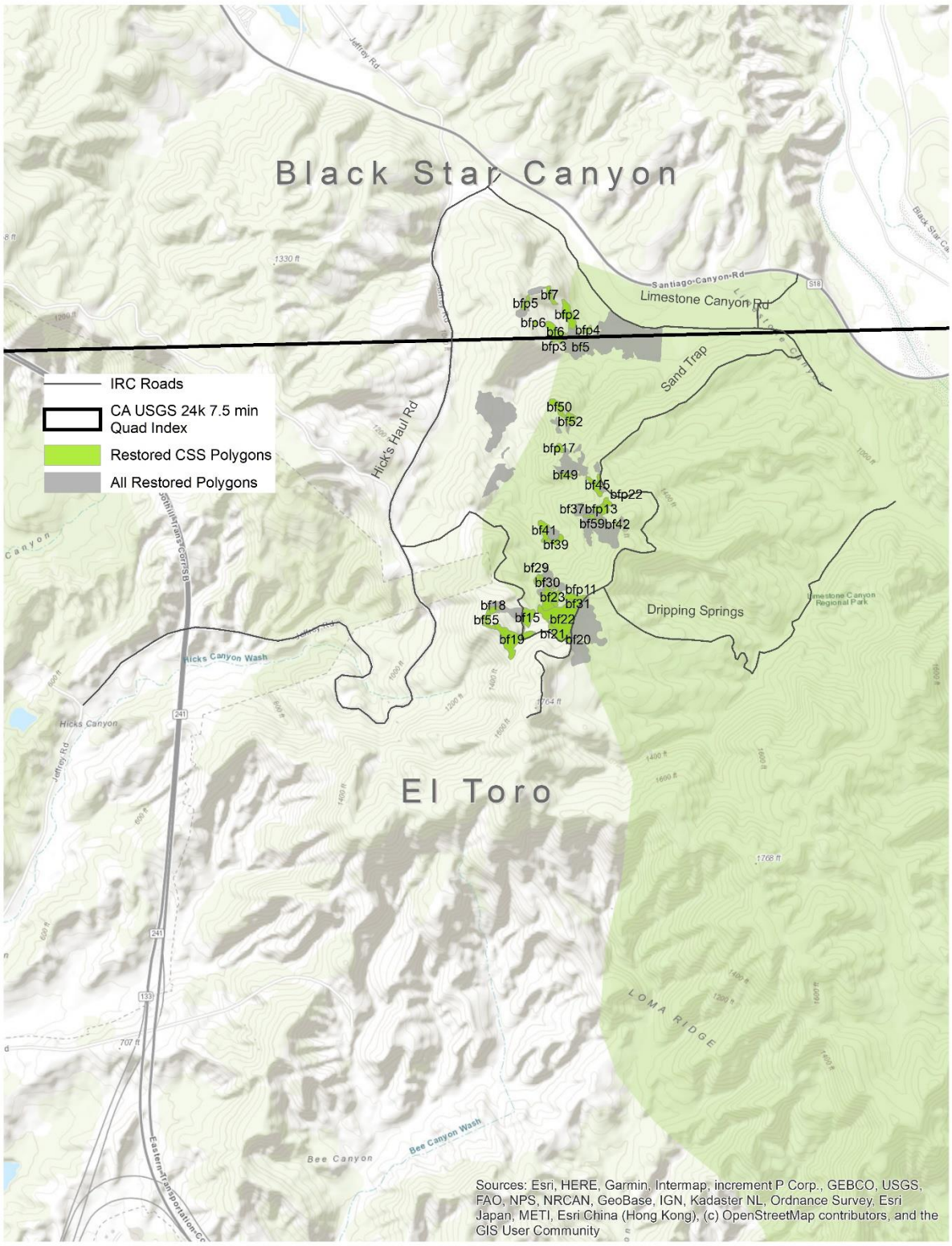

Figure 2. Map of survey area at 1:24000 scale showing USGS 7.5 min Quad Indices. Surveys will be conducted on Restored CSS Polygons.

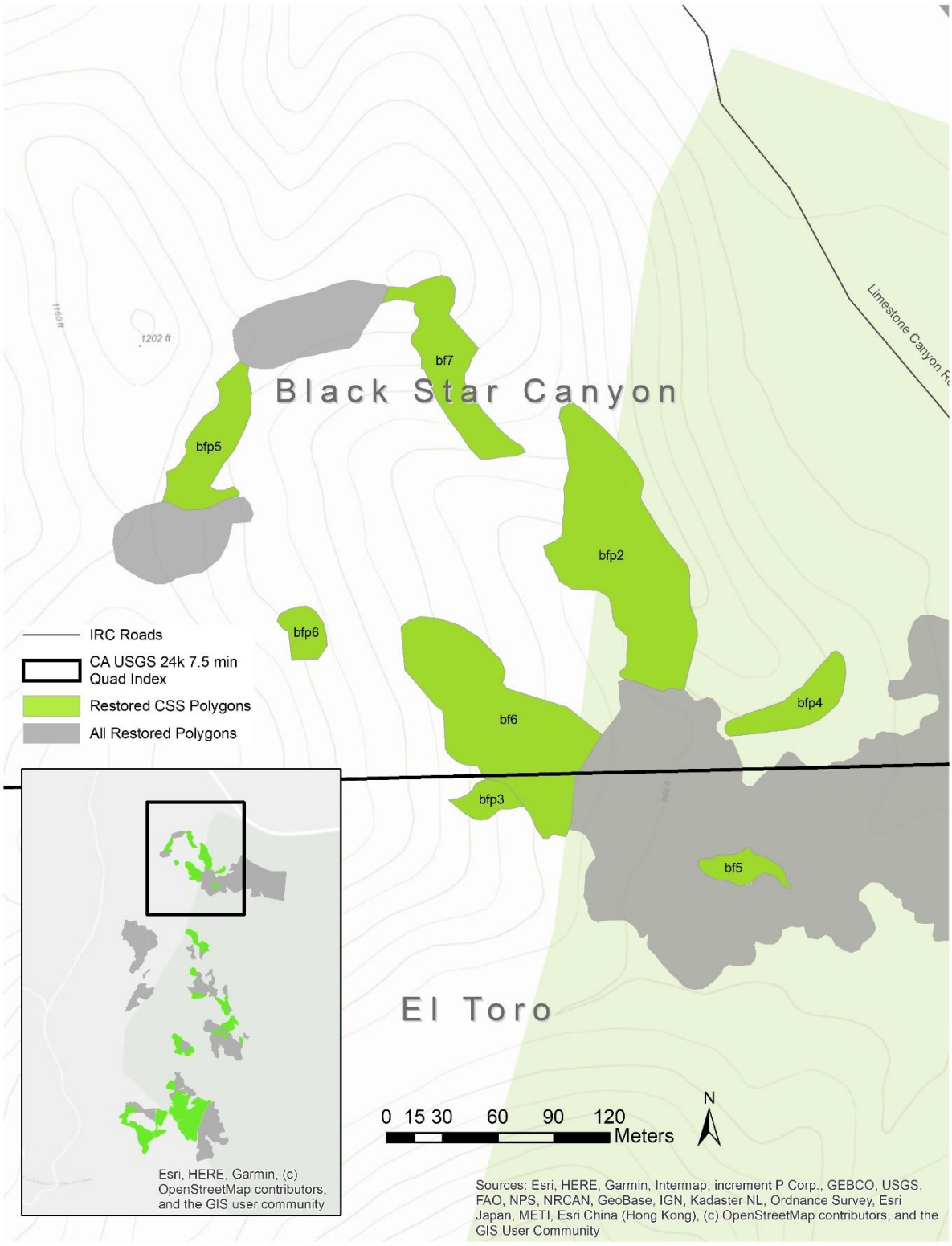

Figure 3. Detailed map of northern restored CSS polygons at 1:2500 scale showing USGS 7.5 min Quad Indices.

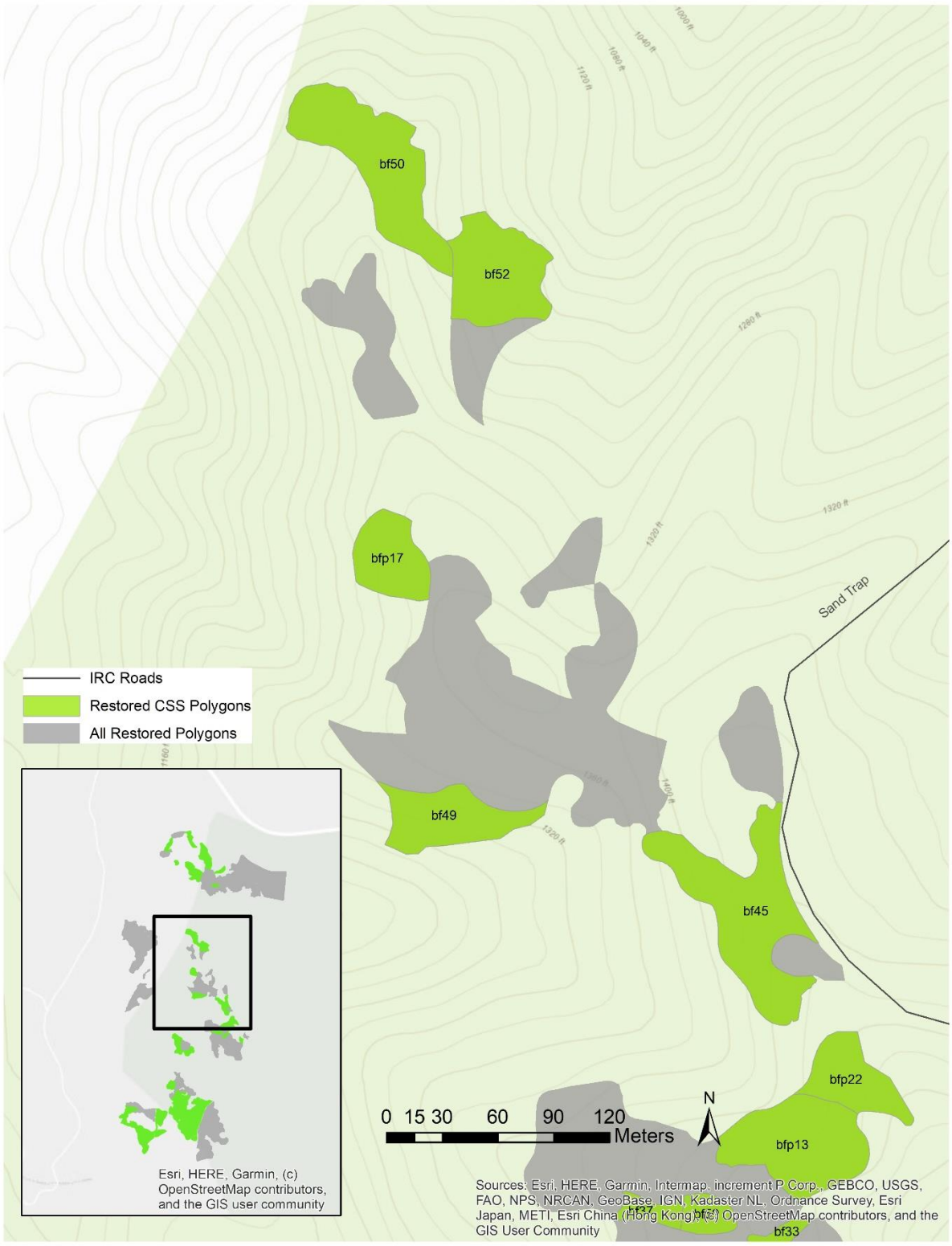

Figure 4. Detailed map of northern central restored CSS polygons at 1:2500 scale. This region is located in the El Toro USGS 7.5 min Quad.

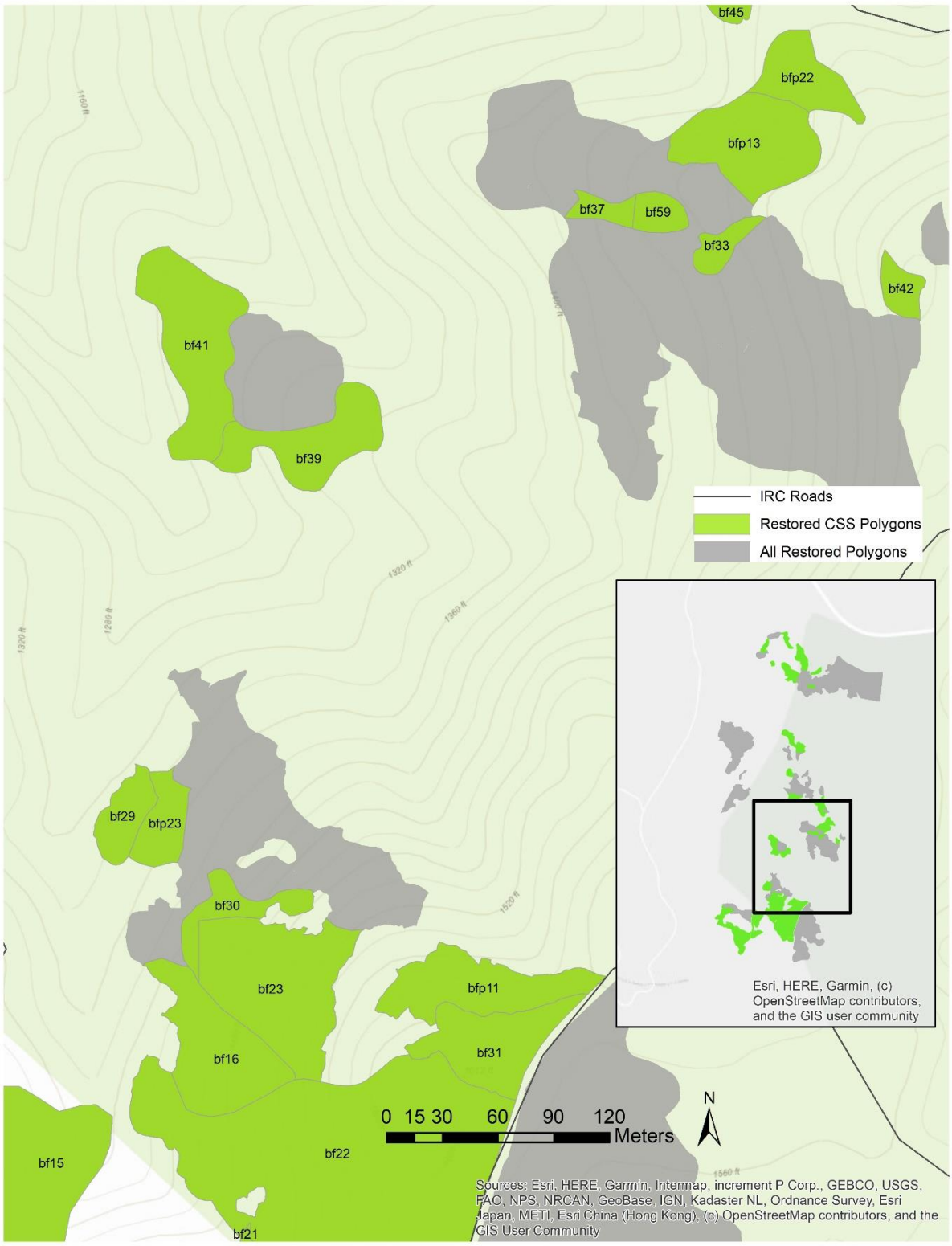

Figure 5. Detailed map of southern central restored CSS polygons at 1:2500 scale. This region is located in the El Toro USGS 7.5 min Quad.

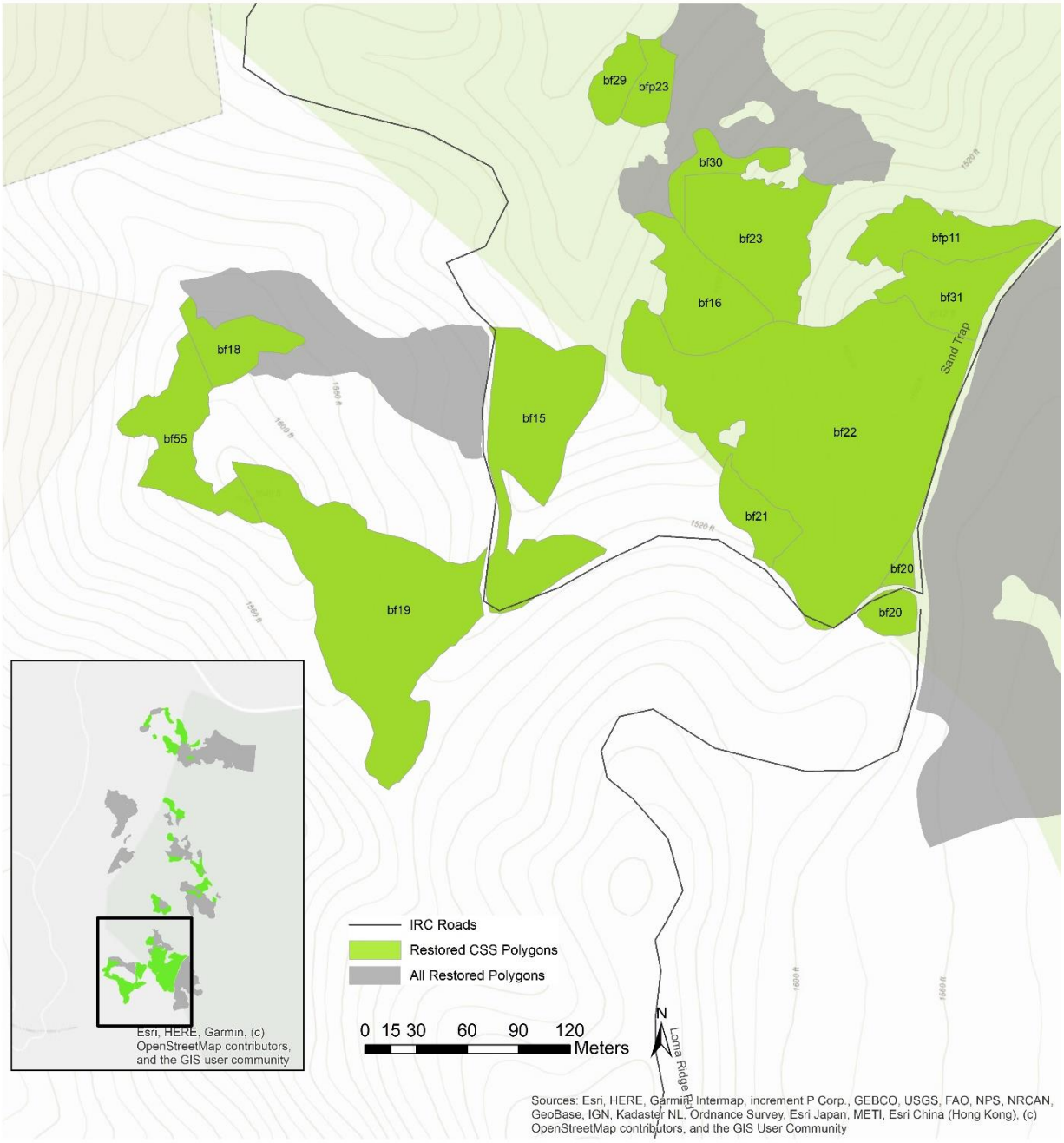

Figure 6. Detailed map of southern restored CSS polygons at 1:2500 scale. This region is located in the El Toro USGS 7.5 min Quad.

MICHELLE DELA CRUZ

140 W Wilson St | Costa Mesa, CA 92627 | (831) 578-1330 | mldelac1@uci.edu

EXPERIENCE

Independent Consulting Biologist
CruzBio – Costa Mesa, CA
2016 to Present • 5 yrs
Research on habitat restoration for federally and state protected plant and bird species in Southern California, specializing in coastal sage scrub habitat.

Adjunct Faculty, Biology and Environmental Studies
Orange Coast College – Costa Mesa, CA
2014 to Present • 8 yrs
Teach classes on habitat restoration, plant communities, Statistical Analysis in R, and Geographic Information Systems (GIS).

Conservation Committee Chairperson
Sea & Sage Audubon Society – Irvine, CA
2019 – Present • 2 yrs
Work with staff, research, and inform board members on conservation proceedings and programs development.

Monitoring Program Director
Crystal Cove Conservancy – Laguna Beach, CA
2018 – Present • 4 yrs
Developed sampling protocols and conducted biodiversity studies for coastal sage scrub plant communities; Established monitoring studies of sensitive bird and insect species throughout Crystal Cove State Park.

Restoration Project Manager
Irvine Ranch Conservancy – Irvine, CA
2010 – 2018 • 8 yrs
Developed and implemented target restoration goals; Managed the scheduling and budget of native perennial grassland restoration in Limestone Canyon.

OBJECTIVE

Providing ecological consulting services for wildlife conservation and habitat restoration projects in Southern California.

CERTIFICATIONS

Ecological Restoration Practitioner
Society for Ecological Restoration
June 2016

Consulting Botanist
California Native Plant Society
May 2018

PERMITS

Endangered Species Recovery Permit
U.S. Fish and Wildlife Service
May 2021

Scientific Research and Collection Permit
California Department of Parks and Recreation
July 2019

EDUCATION

MS in Conservation and Restoration
University of California, Irvine
2012 to 2014

BA in Environmental Studies
California State University, Monterey Bay
2008 to 2012

REFERENCES

Barry Nerhus
President, Endemic Environmental Services
(714) 393-6249

Jonathan Atwood
Bird Conservation Fellow, Mass Audubon
(781) 259-9500