Crestridge Ecological Reserve
2015 Annual Management Report


Photo: J. Vinje, CBI

Prepared for
California Department of Fish and Wildlife

December 2015

THE EARTH DISCOVERY INSTITUTE

EHC

CONSERVATION BIOLOGY INSTITUTE

Table of Contents

Tables

Figures

Introduction

In early 2015, the California Wildlife Foundation, at the request of the California Department of Fish and Wildlife (CDFW), provided funding to the Endangered Habitats Conservancy (EHC) to implement priority management activities on the Crestridge Ecological Reserve (CER). These activities have continued throughout calendar year 2015 working in collaboration with the Earth Discovery Institute (EDI), the Conservation Biology Institute (CBI), and a number of consultants, contractors, and volunteers. This progress report summarizes the major tasks performed and accomplishments attained at CER during 2015. The report is organized around the major areas of management activity identified in prior years:

- Biological Management and Monitoring
- Property Management
- Community Outreach and Education

Biological Management and Monitoring

Covered Species Monitoring and Management

In 2015, biologists from the Conservation Biology Institute (CBI), with assistance from EHC staff and volunteers with the Earth Discovery Institute (EDI), conducted the following biological management and monitoring activities on CER:

- MSP[1] rare plant monitoring and management
- *Brachypodium* management and monitoring
- Lakeside ceanothus photomonitoring

Each task is summarized below and discussed in detail in the CBI letter report (CBI 2015).

MSP Rare Plant Monitoring

In 2015, rare plant monitoring focused on two plant species identified as priorities by the San Diego Management and Monitoring Program (SDMMP 2013): San Diego thornmint (*Acanthomintha ilicifolia*) and San Diego goldenstar (*Bloomeria clevelandii*). Both species are MSCP covered species and have been monitored previously on CER.

We used the SDMMP rare plant monitoring protocol (SDMMP 2014), which was developed to ensure data collection consistency in support of regional monitoring per the SDMMP's

[1] MSP = Management Strategic Plan. The MSP for western San Diego County was developed by the San Diego Management and Monitoring Program (SDMMP 2013) and identifies regional priorities for monitoring and management.

Management Strategic Plan (MSP) (SDMMP 2013). Per MSP monitoring protocols, monitoring forms were completed for both species and have been submitted to SDMMP.

Table 1 summarizes survey results, identifies threats, and provides management recommendations. Neither species was detected in 2015. Lack of detection may be due to extended drought conditions and invasive species. Refer to Table 2 for invasive and competitive native plants identified as potential threats to these species. Invasives control should focus on species that may result in detrimental impacts to MSP species or habitats (e.g., altered resource allocation, vegetation structure, recruitment, or competitive exclusion) (CBI et al. 2012).

MSP Rare Plant Management

CBI conducted targeted invasive plant management (clipping invasive species per Best Management Practices, CBI 2014) at the occupied San Diego thornmint location on CER. This task required knowledge of all species within the treatment area to ensure that only invasive species were removed. Figure 1 shows the site after clipping.

Although San Diego thornmint was not detected at this location in 2015, we recommend continued management to control invasive species and enhance thornmint habitat. Long-term monitoring that encompasses a range of climatic conditions will determine whether or not San Diego thornmint persists at this location. The species was detected here in 2000 and 2010-2012.

Brachypodium Management and Monitoring

CBI continued to manage the invasive grass *Brachypodium distachyon* (*Brachypodium*) in experimental treatment areas to restore habitat for San Diego thornmint (observed in this location in 2000 and 2003) and maintain progress made over the last several years. An estimated 10 acres of previously-treated *Brachypodium*-infested habitat were treated in 2015. Treatments were conducted primarily by Recon Environmental, Inc., although EHC staff line-trimmed *Brachypodium* in selected locations. Refer to Table 3 for treatment applications and schedule. Differences in *Brachypodium* cover between years are depicted in Figures 2 and 3.

CBI biologists collected cover and species richness data in *Brachypodium* treatment plots established under a SANDAG Environmental Mitigation Program grant. Data collected in 2015 have been submitted to the SDMMP for analysis; data analysis will likely occur in 2016.

Lakeside Ceanothus Photomonitoring

CBI and EDI continued long-term photomonitoring of Lakeside ceanothus (*Ceanothus cyaneus*), which is a MSCP covered species. Photomonitoring was conducted by EDI volunteers according to protocols established by CBI and used in 2010-2014. CBI labeled, organized, and formatted EDI photographs, reviewed and analyzed 2015 photodocumentation, and assessed changes between years. This effort is summarized below and detailed in the CBI 2015 letter report (CBI 2015).

Table 1

MSP Plant Species: 2015 Results, Threats, and Management Recommendations

Species	Population Size by Year	Occupied Habitat (acres)[1]	Threats	Management Recommendations
San Diego thornmint (*Acanthomintha ilicifolia*)	2015 – 0 2014 – 0 2012 – 6 2011 – 1 2010 – 17 2000 - 55	0.001[2]	- Invasive Plants - Competitive Native Plants - Thatch - Small Population	Weed control. Hand weed annually unless monitoring indicates less frequent weeding is appropriate.[3] Monitoring. Monitor annually to assess population status and treatment success. Implement additional management, as needed (e.g., dethatching, seed augmentation).
San Diego goldenstar (*Bloomeria crocea*)	2015 – 0 2010 – 2,000[4]	NA[5]	- Invasive Plants - OHVs - Trails (unauthorized)	Weed control. Weed veldt grass and monitor for germinating individuals and treatment success. Access control. Install fencing and/or signage to prevent trespass from adjacent homeowner, OHVs, horses, and hikers. Monitoring. Monitor annually to assess population status and threats. Refine treatment frequency and method, and implement additional management, as needed (e.g., repair fencing, replace signage). Map occupied acreage using a hand-held global position system when the plants are detectable.

[1] Refers to habitat occupied in 2015 (acres) or, if species was not present in 2015, habitat occupied during the last survey period.
[2] Occupied acreage refers only to 'small' location on west-facing slope just east of Rios Canyon Road.
[3] See CBI 2014 for Best Management Practices for hand weeding within *Acanthomintha ilicifolia* populations.
[4] Although 2010 onsite population was approximately 2,000 plants, an additional 7,000-8,000 plants were observed just offsite.
[5] NA = not applicable. No plants were detected in 2015, and previous data include point data only, so previous occupied acreage cannot be calculated.

Table 2

Invasive Plants and Competitive Native Plants

MSP Priority Plants	Invasive Plants	Competitive Native Plants
San Diego thornmint (*Acanthomintha ilicifolia*)	*Anagallis arvensis* *Bromus madritensis* *Bromus hordeaceus* *Brassica nigra* *Centaurea melitensis* *Erodium cicutarium* *Hirschfeldia incana* *Sonchus asper*	*Deinandra fasciculata*
San Diego goldenstar (*Bloomeria clevelandii*)	*Anagallis arvensis* *Bromus hordeaceus* *Bromus diandrus* *Bromus madritensis* *Centaurea melitensis* *Ehrharta longiflora* *Erodium botrys* *Festuca myuros* *Hirschfeldia incana* *Hypochaeris glabra* *Logfia gallica* *Sonchus oleraceus.*	None

Figure 1. San Diego thornmint treatment plot after clipping (note bare ground).

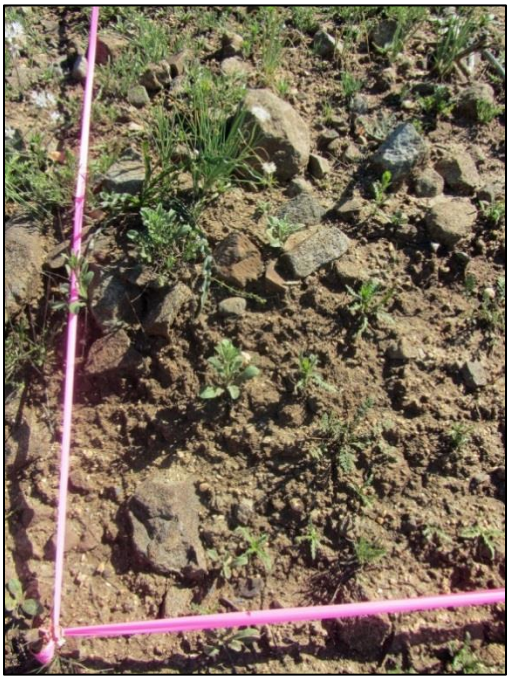


Table 3

Invasive Plant Treatments

Treatment Area	Treatment Date	Treatment Type	Applicator[1]	Target Species
Polygon 3[2] Polygon 5	2/27/15	Fusilade II	Recon	*Brachypodium distachyon*
Polygon 3[3]	3/23/15	Fusilade II	Recon	*Brachypodium distachyon*
All treatment plots Polygon 1	3/24/15	Glyphosate	Recon	Nonnative forbs
Polygon 1	3/24/15	Hand-pulling	Recon	Brassica sp., nonnative grass seed heads
Polygon 1 (treatment plots)	3/31/15	Line-trimming	EHC	*Brachypodium distachyon*

[1] Recon = Recon Environmental, Inc.; EHC = Endangered Habitats Conservancy (Jonathan Appelbaum).
[2] Incomplete coverage.
[3] Treated most, but not all, of Polygon 3.

Photomonitoring was conducted on April 1, 2015 for photopoints CECY-1-3 and on April 8, 2015 for CECY-4-7. These dates were over a month earlier than previous photomonitoring periods due to reports of early flowering.

Table 4 summarizes conditions at each Lakeside ceanothus stand. The major observations from 2015 were minimal flowering throughout the population and continued die-back of Lakeside ceanothus in some areas (Figures 4 and 5), which continued trends observed in 2014. Because of the change in timing of 2015 monitoring, we were not able to discern whether sparse flowering was due to climatic conditions or monitoring period. For this reason, we recommend monitoring at the same time each year (±7-10 days). Recommended baseline monitoring periods are May 1-10 for CECY-1-3, and May 24-June 2 for CECY 4-7. If monitoring in multiple years of average or above-average rainfall indicates low or no flowering during the baseline monitoring period, then *additional* photomonitoring earlier in the year may be warranted to determine if these changes are due to shifts in phenology. Note that we are not recommending additional monitoring at this time.

Figure 2. *Brachypodium* treatment plot, polygon 1 (2013). Note relatively high cover of *Brachypodium*, lack of bare ground, and lack of native species.

Figure 3. *Brachypodium* treatment plot, polygon 1 (2015). Note lack of *Brachypodium*, increase in bare ground, and presence of native annual species, fascicled tarplant (*Deinandra fasciculata*).

Table 4

Comparison of Lakeside Ceanothus Stands in 2014 and 2015

Ceanothus (CECY) Stand Number	Minimal flowering		Die-back or Sparse Foliage		Soil Disturbance/Trail Use		Increase in Nonnative weeds	
	2014	2015	2014	2015	2014	2015	2014	2015
CECY-1	X	X	X	X				
CECY-2	X	X	X	X	X			X
CECY-3	X	X	X	X	X			
CECY-4	X	X	X	X				
CECY-5	X	X	X	X			X	X
CECY-6	X	X	X	X				
CECY-7	X	X	X	X				

Because of the level of shrub die-off observed in 2015, we recommend continued photomonitoring in 2016. Current climate predictions suggest increased rainfall (El Niño conditions) during the winter months of 2015-2016. Under this scenario, photomonitoring in 2016 would provide insights on shrub recovery (if any) from drought over the short-term.

Soil disturbance associated with trail use was reduced in 2015 (Table 4). Nonnative, invasive species (particularly, nonnative grasses) were documented at a number of Lakeside ceanothus stands, although increasing weed populations were noted at only one stand in 2014 and two stands in 2015 (Table 4; Figure 6). Stands where selective weed control should be implemented during normal (or above-normal) rainfall years to ensure that invasive species do not increase in extent include CECY-2 and 5, and possibly, CECY-3 and 6. Invasives control may include hand-clearing (CECY-2) or herbicide control (nonnative grasses and forbs). In all cases, care should be taken to avoid native species.

In reviewing the 5-year time series, it is also apparent that it would be helpful to standardize photomonitoring protocols with respect to height, angle, and focal depth of photos. Refer to the CBI 2015 letter report (CBI 2015) for revised photomonitoring protocols for future photomonitoring.

Figure 4. Vegetation and flowering differences between years (CECY-2). White arrow indicates band of herbaceous vegetation. Note flowering CECY in foreground in 2012 and lack of flowering CECY in same area in 2015.

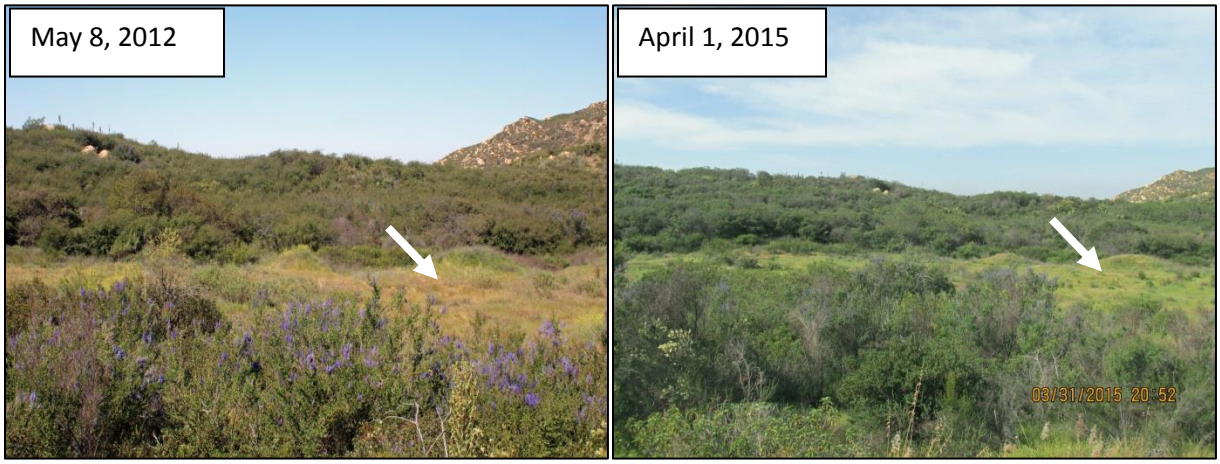


Figure 5. Lakeside ceanothus flowering (2010-2011) and die-back (2014-2015) across years (CECY-6). White arrows indicate Lakeside ceanothus shrubs.

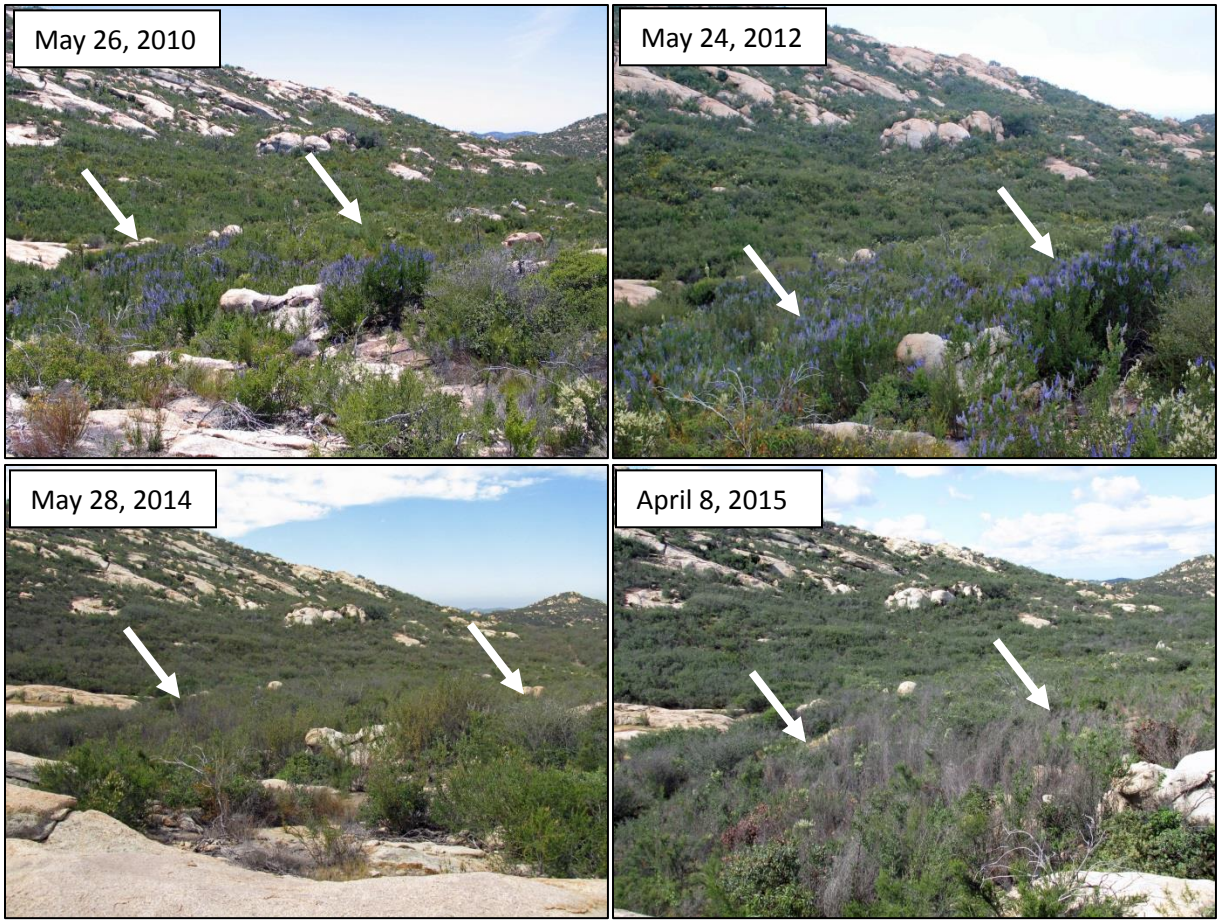
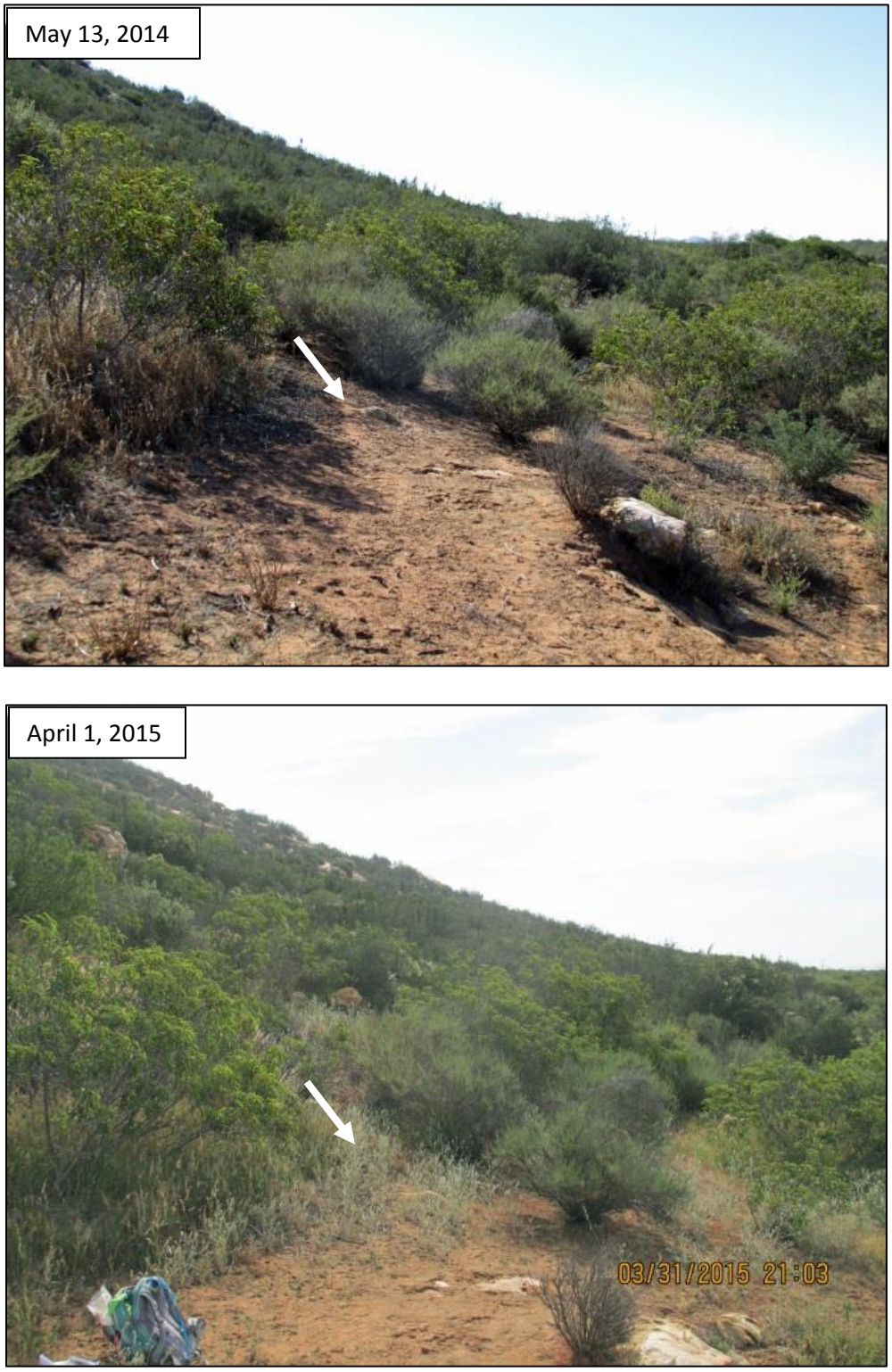


Figure 6. Differences in nonnative weedy species between years (CECY-2.7). Note the presence of nonnative annuals in open areas in 2015 and absence of nonnative annuals in 2014 (white arrows).



Invasive Plant Control

EHC land managers (Jonathan Appelbaum, Jonathan Piazza), subcontractors (Anthony Santare and crew), and volunteers under the direction of Cathy Chadwick at EDI implemented invasive plant control actions reported in this section. Target invasive species were identified as part of the overall invasives control plan for CER (CBI 2011) or are associated with grassland restoration near the Horsemill Road entrance to CER. Control activities are summarized below and in Table 5.

- EHC staff and subcontractors applied herbicide at the following locations:
  - Horsemill Road entrance, including trails, shade house, mulch pile, grassland restoration areas, and existing house (target species: nonnative grasses and forbs)
  - Horsemill Road oak grove (target species: the nonnative grass, long-flowered veldt grass [*Ehrharta longiflora*])
  - Rattlesnake Point, Rios Canyon Trail (target species: nonnative forbs)
  - Vista de Montemar Road (target species: nonnative forbs)
- EHC staff and subcontractors conducted mechanical control (line-trimming) in the *Brachypodium* restoration area (i.e., the EHC land manager line-trimmed *Brachypodium* in experimental plots), near the mulch pile near the Horsemill Road entrance, and along Vista de Montemar Road
- EHC staff, subcontractors, and volunteers conducted hand-weeding at all invasive plant control locations, including (but not limited to) the Horsemill Road riparian area, grassland restoration area, and oak grove
- Invasive control subcontractors inspected for weed germination after rain events (July)
- Invasive control subcontractors monitored for weed germination (all locations)

Habitat Enhancement and Restoration

Habitat restoration efforts reported in this section refer to volunteer efforts in the grassland restoration area and oak grove, and oak plantings and maintenance of irrigation by EHC staff. Refer to the prior section for invasives control related to *Brachypodium* management.

- The EDI weekly volunteers continued to maintain the grassland restoration area (Figure 7a). Activities included preparing areas for student plantings (marking planting areas, digging holes), maintaining plant protectors, irrigating plants, weeding, and removing plant protectors from mature plants. Volunteers installed signage around riparian areas (Figure 7b).
- EDI volunteers contributed to oak grove restoration by preparing areas for student plantings (marking planting areas, digging holes), assisting with installation and

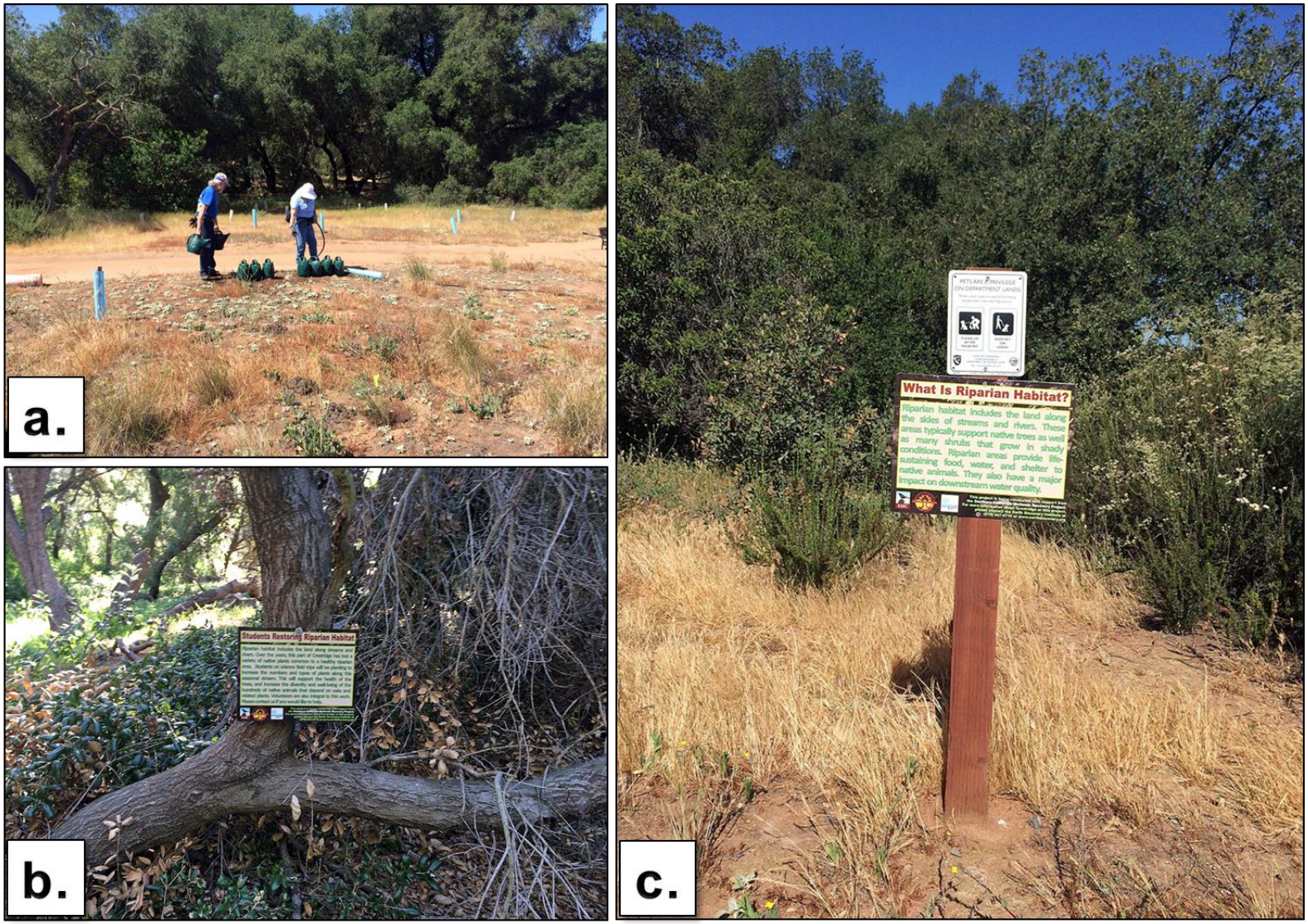
Table 5

2015 Invasive Plant Control Activities on CER[1]

Month	Activity	Area[2,3]	Hours	Active Ingredients[4]	Concentration (%)	Quantity (gallons)
January	Herbicide application	HM: entrance, trails, house, mulch pile, shade house, GL	30	Glyphosate	2.00	90
February	Herbicide application	HM: GL, house	24	Glyphosate	2.00	72
March	Herbicide application	HM: entrance, trails, house, mulch pile, shade house, GL	24	Glyphosate; Fusilade II	2.00 0.58	86 8
April	Herbicide application	HM: GL	10	Glyphosate	2.00	36
May	Herbicide application	HM: GL	5	Glyphosate	2.00	20
June	Herbicide application	HM: GL, loop trails, oak grove, Rattlesnake Point, trail to Rios Cyn.	10	Glyphosate	2.00	102
July	Post-rain inspections Hand-pulling of weeds	HM and other entrances	10	Glyphosate	NA	NA
August	Herbicide application Mechanical removal	HM: GL, mulch pile area	39	Glyphosate	2.00	2.5
September	Herbicide application Mechanical removal	HM: GL, mulch pile area; VM: roadsides	43	Glyphosate (HM) Glyphosate (VM)	2.00 (HM) 2.00 (VM)	7.5 (HM) 2 (VM)
October	Herbicide application	HM: GL, entrance area, oak grove	32	Glyphosate Fusilade II	2.00 0.58	40 24
November[5]	Herbicide application	HM: GL, entrance, oak grove	---	---	---	---
December[5]	Monitor; herbicide application	HM: all areas VM: roadsides	---	---	---	---

[1] Excludes *Brachypodium* control activities conducted as part of SANDAG Transnet Environmental Mitigation Program grant.
[2] Areas: HM = Horsemill Road entrance; listed activities are in vicinity of this entrance. VM = Vista de Montemar entrance; listed activities are in vicinity of this entrance.
[3] GL = Grassland restoration area near Horsemill Road entrance
[4] Fusilade II is trade name; active ingredient = Fluazifop-butyl.
[5] Planned activities are listed for November and December, and are in the process of being implemented.

Figure 7. Volunteer activities: a. watering grassland restoration area; b-c. sign installation.



- maintenance of the irrigation system, maintaining plant protectors, irrigating plants, and removing plant protectors from mature plants. EDI volunteers also collected acorns in Fall 2015 for additional oak plantings over the 2015-16 winter in the grove and nearby oak woodland areas.
- EHC staff planted two oaks near oak grove at CER (Horsemill area), and constructed a trail area to prevent both damage to newly planted oaks and nonnative dispersal from foot traffic. In addition, EHC staff added drip irrigation and buried the line in PVC underneath the trail.
- EHC staff checked and repaired all brass quick coupling valves in the meadow and oak grove.
- EHC staff repaired the drip line from the gate west along the roadside.

Wildlife Tracking and Additional Surveys

- EHC and EDI staff and volunteers reported signs of wildlife use on CER and in surrounding landscape linkages. Significant reports included four sightings of a single male southern mule deer (*Odocoileus hemionus fuliginatus*) within the Horsemill Road oak grove and grassland area between late August and late September 2015, a doe and fawn in early summer, identification of mule deer sign (e.g., tracks) near the La Cresta Heights entrance to CER and near the warden's residence in early October 2015. Mule deer is a covered species under the San Diego MSCP.
- The San Diego Tracking Team reported ring-tailed cat (*Bassariscus astutus*) scat at four locations on CER on April 18, 2015. This constitutes the first report of this species on CER since a dead ringtail was found at the Horsemill entrance in 2005. The scat was not confirmed by Scott Tremor at the San Diego Natural History Museum, although he did confirm the 2005 observation. Mr. Tremor further indicates that while the recent sighting is not surprising, identification by scat alone may be problematic because of other species that resemble ring-tail and likely occur on CER (S. Tremor, pers. comm.). Ring-tailed cat is a fully protected animal per the CDFW.
- Jenna Stacy conducted lizard distribution surveys from the Horsemill entrance and associated trails to the warden's residence and through the oak grove.
- Argentine ant surveys were conducted in mid-October by USGS staff Tritia Matsuda.

Property Management

EHC staff, with assistance from EDI staff and volunteers, conducted property management activities in the following categories: access control, enforcement, trails, trash removal and general maintenance, and fire management, as described below.

Access Control

EHC staff conducted the following actions to improve access control on CER:

- Secured the gate on Valley View Truck Trail.
- Added a chain and sign at the Rios Canyon entrance to CER (north of Rios Elementary School).
- Gathered preliminary information on building/installing a second gate on Suncrest Boulevard/Orchard Avenue.
- Replaced gate and installed horse step-over at Valley View Truck Trail out of the oak grove.
- Met with CalFire to add an EHC lock on existing gate on Suncrest Boulevard.
- Coordinated with Padre Dam to install security cameras for the lower Rios Canyon gate. In process.

Enforcement

EHC and EDI staff coordinated with various agencies, including CDFW wardens, San Diego County Sheriff's Department, CalFire, and San Diego County Animal Services regarding enforcement issues on CER. As of November 2015, 49 incidents were reported by staff, volunteer patrol, recreational users, and neighbors (Table 6). Some reports included multiple issues, so the total number of incident types is larger than the number of reports. Of the 49 incidents, 36 were reported by reserve patrol members, 2 by neighbors or recreational users, and 11 by EHC or EDI staff.

One instance of criminal trespass was reported on CER in 2015, which involved a homeless person camping in the reserve with some evidence of using small cooking fires (July-September 2015). EDI patrol members shared information and locations on this individual with EDI/EHC who kept CDFW wardens apprised. The EHC land manager worked with law enforcement to locate this individual in early September in the hills east of Vista de Montemar Road. The individual was given a citation and 24 hours to vacate the reserve. A background check at that time revealed he was on probation and on an arson 'watch list' for a previous arson conviction. The person did not leave the area after being cited. Therefore, wardens returned and arrested him on September 20, 2015. The EHC land manager removed his belongings from habitat subsequent to his arrest.

Table 6

2015 Incident Reports

Incident Type	Number of Reports
Motorcycle use in preserve	20
Other motor vehicle use in preserve	3
Dog off-leash	10
Dog attack	2
Wildlife sighting[1]	5
Criminal trespass[2]	6
Illegal dumping	3

[1] All sightings related to southern mule deer; 4 of 5 sighting were in the Horsemill Road oak grove.
[2] Homeless person camped in preserve; all reports related to the same individual.

Trails

EHC and EDI staff and volunteers continued activities to improve the trail system on CER:

- EDI volunteers assisted EHC staff with trail maintenance and repairs throughout the Horsemill area.
- EDI staff and volunteers worked on an improved trail map for CER, which is expected to be completed in early 2016.

Trash Removal and General Maintenance

EHC staff conducted the following maintenance activities:

- Removed and recycled materials to the Waste Management facility in El Cajon.
- Recycled large, rusted metal trough that was sitting trailside to the east of house.
- Moved old gate materials away from trailside.
- Recycled clutter herbicide water jugs from cargo container and wooden shed.
- Replaced rusted galvanized water spigots near the house.
- Repaired portable generator, utility tractor, and chain saw.

Fire Management

EHC staff continued fire agency coordination and implemented fire management actions as follows:

- Coordinated with CalFire to monitor locks/gate access issues for fire safety and modify gate structure and locks as needed (see access control, above).
- Hired outside contractors to assist EHC staff in conducting fuel modification and debris removal behind Rios Canyon Mobile Home Park during July 2015 to establish a safe buffer between perennial native vegetation on CER and adjacent structures, including residences and an elementary school.
- Coordinated with CalFire crew on brush management and limited tree limb removal along Lakeview.
- Coordinated with and advised SDG&E utility pole clearing crews.

Community Outreach/Education

EDI continued to implement a diverse community outreach and education program on CER. Major accomplishments are listed below by category. Refer to Table 7 for a summary of volunteer hours.

Table 7

Summary of Volunteer Hours

Volunteer Activity	Volunteer Hours
Photomonitoring	21
Miscellaneous hand weeding	21
Grasslands restoration	41
Oak grove restoration	121
Plant sale	36
Interpretive event	36
Reserve Ranger patrol training	75
Student habitat restoration labor	498
Weekly volunteers	354
Total Hours	**1,183**

Outreach and Interpretive Events

- EDI held a native plant sale at CER (Figure 8). This event was attended by approximately 50 people. Sales included 234 plants in 42 transactions. Volunteer time included 12 hours of preparation time with 6 volunteers contributed an additional 24 hours of time on the day of the event. In addition, the EHC land manager assisted with the sale.

- EDI conducted one interpretive event on the Birds of CER (Figure 9a). This event was attended by 12 people for a total of 36 interpretive event hours.

- In support of covered species, EDI maintained a poster display regarding American badger (*Taxidea taxus*) at the Horsemill Road entrance information kiosk.

Reserve Ranger Program

The Crestridge Reserve Ranger Volunteer Patrol was established by EDI in 2011. In 2015, 28 participants attended 3 reserve ranger volunteer patrol trainings for a total of 75 patrol training hours (Figure 9b). Training topics included:

- Lizards of CER

- Birds of CER

- Raptors of San Diego County

Reserve rangers and concerned neighbors were responsible for reporting 36 of the 49 incident reports made to EDI/EHC staff in 2015 (see Table 6).

Education

EDI instructors led 16 guided school visits to CER, involving 995 students from 11 different elementary schools in 3 different school districts as part of EDI's service-learning environmental education program. Students participating in field trips were taught natural science curriculum and assisted with restoration activities (Figure 10). Student volunteers planted 225 riparian shrubs in the riparian corridor, including 25 San Diego sedge plants (*Carex spissa*) in support of the Harbison dun skipper (*Euphyes vestris harbisoni*). The remaining riparian plant palette included San Diego sagewort (*Artemisia palmeri*), mule fat (*Baccharis salicifolia*), California fuchsia (*Epilobium canum*), toyon (*Heteromeles arbutifolia*), southern honeysuckle (*Lonicera subspicata*), blue elderberry (*Sambucus nigra ssp. caerulea*) *(*formerly *S. mexicana)*, and California goldenrod (*Solidago californica*). In addition, 657 students planted 657 purple needlegrass (*Stipa pulchra*) plants. All together, these students performed 498 hours of volunteer habitat restoration labor at CER.

Figure 8. EDI plant sale: a-b, c. selecting plants, d. plant sale table.

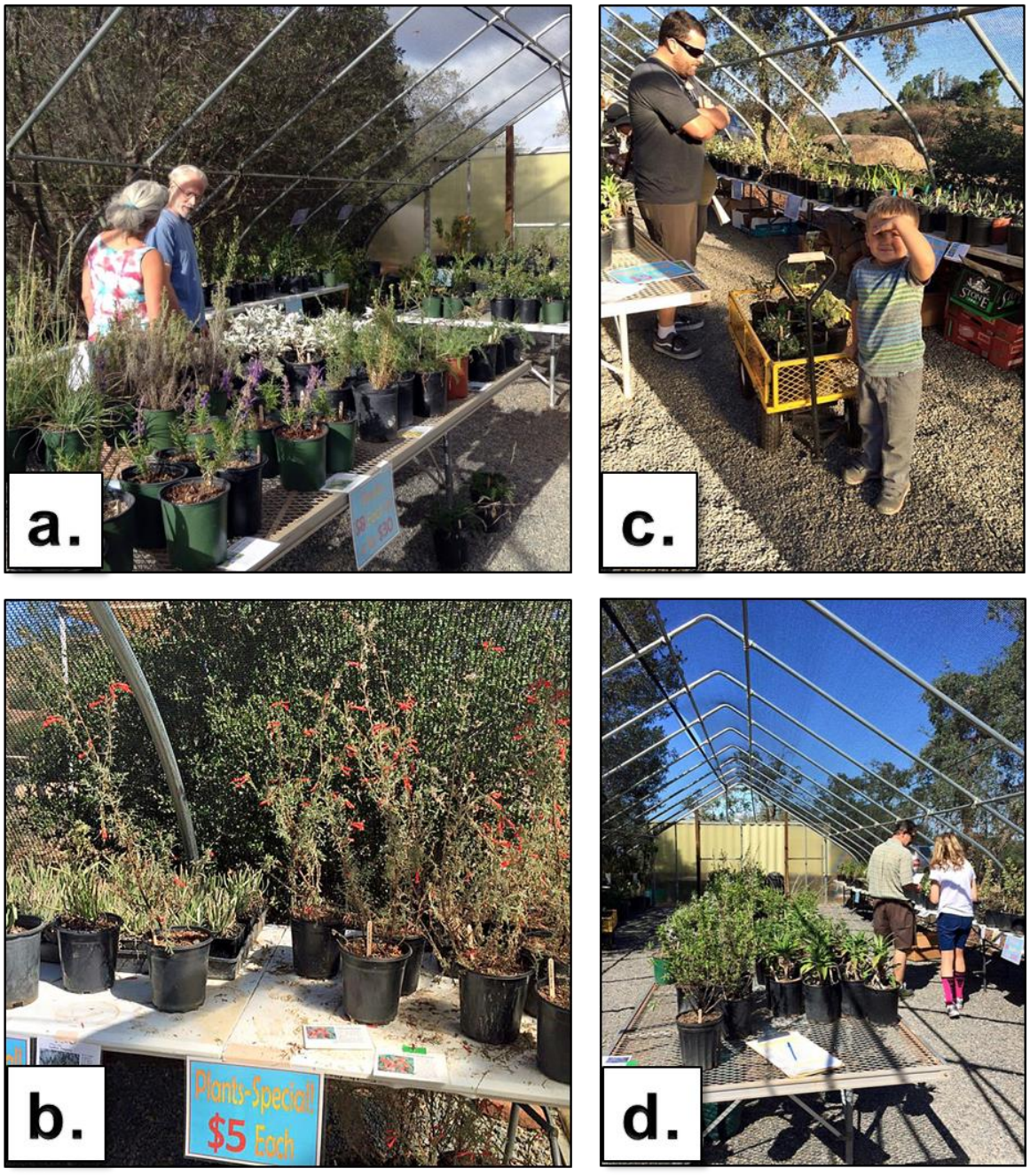


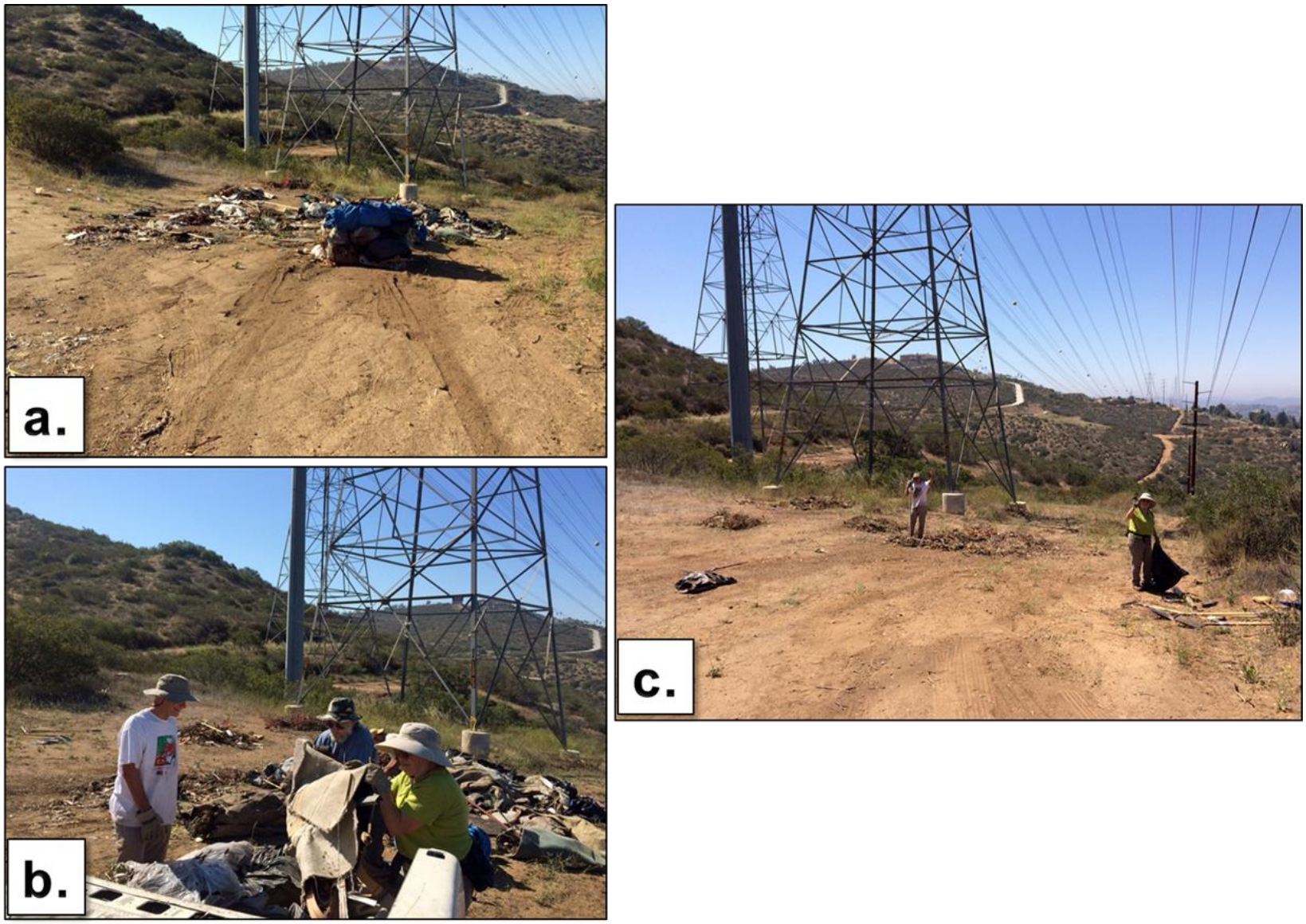
Figure 9. Outreach activities: a. bird watching field trip, b. volunteer patrol.

Figure 10. Education activities: a. students arriving, b-c. students planting native grasses; d. celebrating a job well-done!

Weekly Volunteers

In addition to the photomonitoring and restoration activities described in previous sections, weekly volunteers under the direction of EDI assisted with activities such as clean-up of dump sites (Figure 11) and maintenance of the native plant demonstration garden at CER. These volunteers contributed a total of 354 hours of time (a value of $8,560) to CER and EHC projects and properties in 2015.

Figure 11. Volunteer activities: a.-c. trash cleanup.



References

Conservation Biology Institute (CBI). 2011. Biological monitoring status report, Crestridge Ecological Reserve. Prepared for Endangered Habitats Conservancy. December. 20 pp.

Conservation Biology Institute (CBI). 2014. Adaptive management framework for the endangered San Diego thornmint, *Acanthomintha ilicifolia*, San Diego County, California. Prepared for California Department of Fish and Wildlife, local assistance grant P1182113. March. 27 pp. + appendices.

Conservation Biology Institute (CBI). 2015. Letter report, 2015 biological monitoring and management on the Crestridge Ecological Reserve. Prepared for Endangered Habitats Conservancy. 10 pp. + appendices. September.

Conservation Biology Institute (CBI), Dendra, Inc., and California Invasive Plant Council (Cal-IPC). 2012. Management priorities for invasive non-native plants: a strategy for regional implementation, San Diego County, California. Prepared for San Diego Association of Governments (SANDAG), contract no. 5001322. 83 pp.

San Diego Management and Monitoring Program (SDMMP). 2013. Management Strategic Plan for Conserved Lands in Western San Diego County, v. 08.27.2013.

San Diego Management and Monitoring Program (SDMMP). 2014. Rare plant monitoring protocol and field form. Updated 3/5/15.

Tremor, S. 2015. Mammalogist, San Diego Natural History Museum. Personal communication with J. Stallcup. December 3.

Photograph Acknowledgements

Cover photo: CBI

Figures 1-3: CBI

Figures 4-6: CBI, EDI

Figures 7-11: EDI