2014 Biological Survey and Monitoring Summary for the Crestridge-South Crest Complex

The Conservation Biology Institute (CBI) conducted surveys and monitoring for MSCP covered plant species in May and June 2014 on properties owned and/or managed by the Endangered Habitats Conservancy (EHC) in the Crestridge-South Crest preserve complex, including the Crestridge Ecological Reserve (CER), South Crest, and the recently acquired Michelson, Gibson, and Kemerko properties (Figure 1). CBI biologist Jessie Vinje worked with EHC biologist Jonathan Appelbaum to conduct all surveys and monitoring activities. Where appropriate, we used the Management Strategic Plan rare plant monitoring protocol (SDMMP 2014). We collected spatial population data (locations) with a hand-held Geographic Positioning System (GPS); spatial data and sensitive species maps are on CBI's Data Basin website (http://databasin.org).

This summary (Table 1) includes survey and monitoring results, threats, and recommendations for select covered species on CER and South Crest (*Acanthomintha ilicifolia* and *Dudleya variegata*) and on the remaining properties (*Ceanothus cyaneus* and *Nolina interrata*). Species locations are depicted on Figures 2-5. Small population sizes observed for *Acanthomintha ilicifolia* and *Dudleya variegata* were likely due to drought conditions in 2014.

Invasive and competitive native plants identified as potential threats to these covered species are listed in Table 2. Weed control should focus on those plants that (individually or in combination) may result in detrimental impacts to covered species (e.g., altered resource allocation, vegetation structure, or recruitment, or competitive exclusion) (CBI et al. 2012).

Figure 1

2014 Survey Areas (Properties) in the Crestridge-South Crest Complex

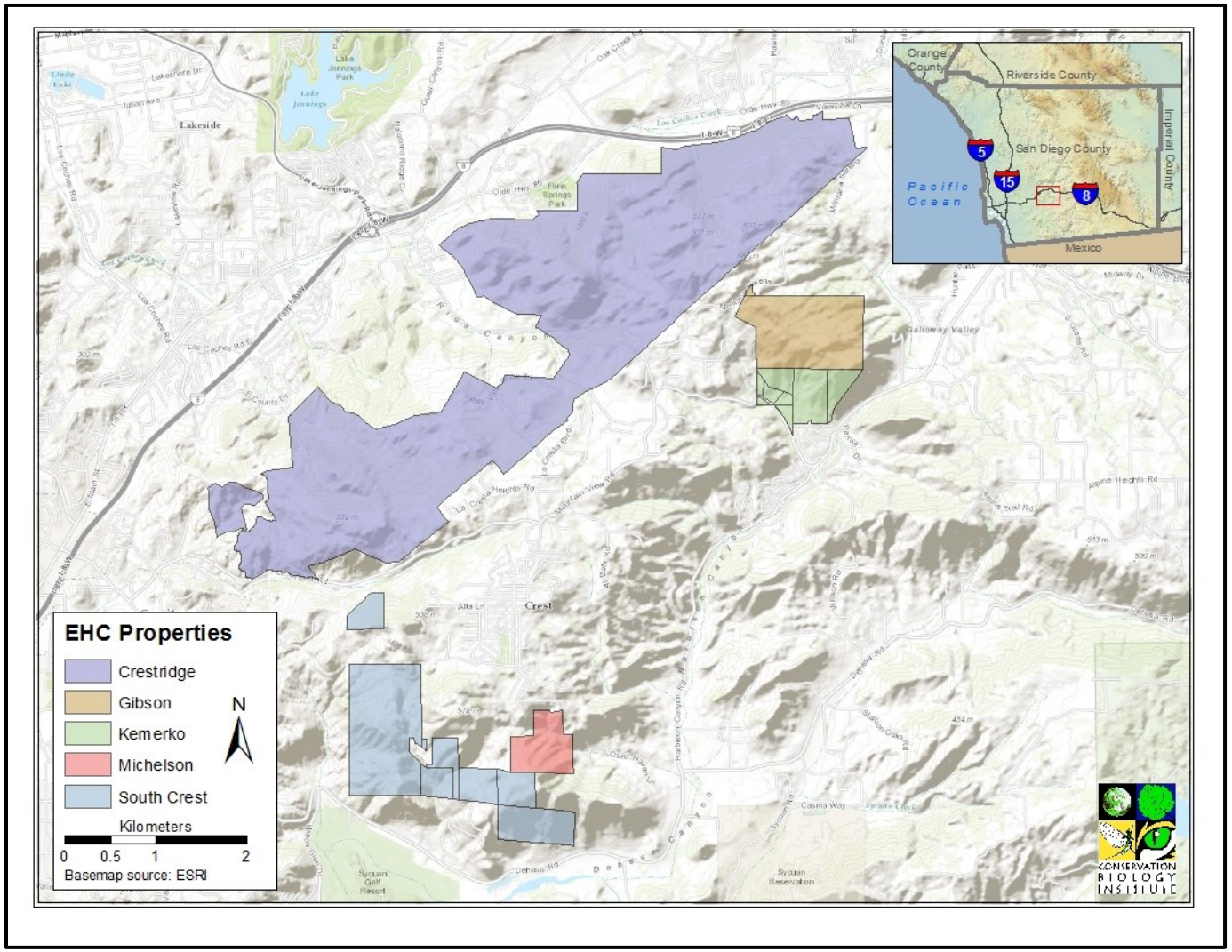

Table 1

2014 Survey Results, Threats, and Management Recommendations

Covered Species	Site	Population Size[1]	Habitat (acres)[2]	Threats	Management Recommendations
Acanthomintha ilicifolia	Crestridge	0	0.001[4]	- Invasive Plants - Competitive Native Plants - Thatch - Small Population	Weed control. Hand weed annually to control weeds unless monitoring indicates less frequent weeding is appropriate.[5] Monitoring. Monitor annually to assess status and treatment success. Refine treatment frequency and method, and implement additional management, as needed (e.g., dethatching, seed augmentation).
	South Crest	64	0.017	- Invasive Plants - Competitive Native Plants - Feral Pigs - Herbivory/Trampling (deer) - Erosion	Weed control. Hand weed annually to control weeds unless monitoring indicates less frequent weeding is appropriate.[5] Monitoring. Monitor annually to assess status, threats, and treatment success. Refine treatment frequency and method, and implement additional management, as needed (e.g., fencing, erosion control).
Ceanothus cyaneus	Gibson	80,496	124.30	- Drought[3]	Monitoring. Establish photomonitoring points and monitor annually for a period of five years to assess *Ceanothus* growth and mortality over time; correlate results with climatic conditions. Where negative trends are observed (e.g., >20% loss of mature plants), implement adaptive management (e.g., collect seed for restoration, treat invasive plants). Weed control. Develop and implement a weed control strategy to contain[7] invasives that impact *Ceanothus cyaneus*.
	Kemerko	25,720	39.70	- Drought[3] - Invasive Plants	

Covered Species	Site	Population Size[1]	Habitat (acres)[2]	Threats	Management Recommendations
					Monitoring. Implement photomonitoring as described (above) for the Gibson property.
Dudleya variegata	South Crest	9 plants	0.006	- Invasive Plants - Thatch - OHVs - Trails (unauthorized) - Erosion	Weed control. Continue weed control (e.g., hand weeding, dethatching, herbicides), as necessary, to reduce thatch and invasives. Restoration. Restore selected occupied areas after thatch removal and invasives control.[6] Access control. Inspect existing fencing and signage to ensure they remain intact. Install additional gates, fencing, and signage, as necessary, to exclude OHV use and encourage recreational users to stay on authorized trails. Erosion control. Install erosion control devices in or adjacent to *Dudleya* plants.[6] Monitoring. Monitor annually to assess status, threats, and treatment success. Refine treatment frequency and method, and implement additional management, as needed (e.g., fencing, erosion control).
Nolina interrata	Michelson	15 plants	0.007	- Invasive Plants - Thatch - OHVs	Weed control. Implement weed control (dethatching, mowing, herbicide) to reduce thatch and target invasives. Integrate invasive control on Michelson with ongoing efforts on South Crest. Access control. Install gate(s), if necessary, to exclude OHV use. Monitoring. Monitor annually to determine treatment success and threats. Refine treatment frequency and method, and implement additional management, as needed (e.g., fencing).

[1] Population size: refers to population size in 2014. Note that reported population sizes for *Ceanothus cyaneus* are estimates only. These estimates were derived by counting plants in 10 m x 10 m quadrats (n = 3) and averaging results. Quadrats were placed in stands representing high, medium, and low plant densities.

[2] Habitat: refers to habitat occupied in 2014 (acres) or, if species was not present in 2014, habitat occupied during the last survey period.

[3] Potential drought effects on *Ceanothus cyaneus* observed in 2014 included mortality, dieback, reduced growth and reduced seed production.

[4] Occupied acreage refers only to 'small' location on west-facing slope just east of Rios Canyon Road.

[5] See CBI 2014 for Best Management Practices for hand weeding within *Acanthomintha ilicifolia* populations.

[6] Indicates management actions that will occur under an existing, funded project (SANDAG *Nolina-Dudleya* project) (see *Dudleya variegata* management recommendations).

[7] Treat using herbicides or other control techniques to prevent further spread of the target invasive plant.

Figure 2
Covered Plant Species Detected on the Crestridge Ecological Reserve

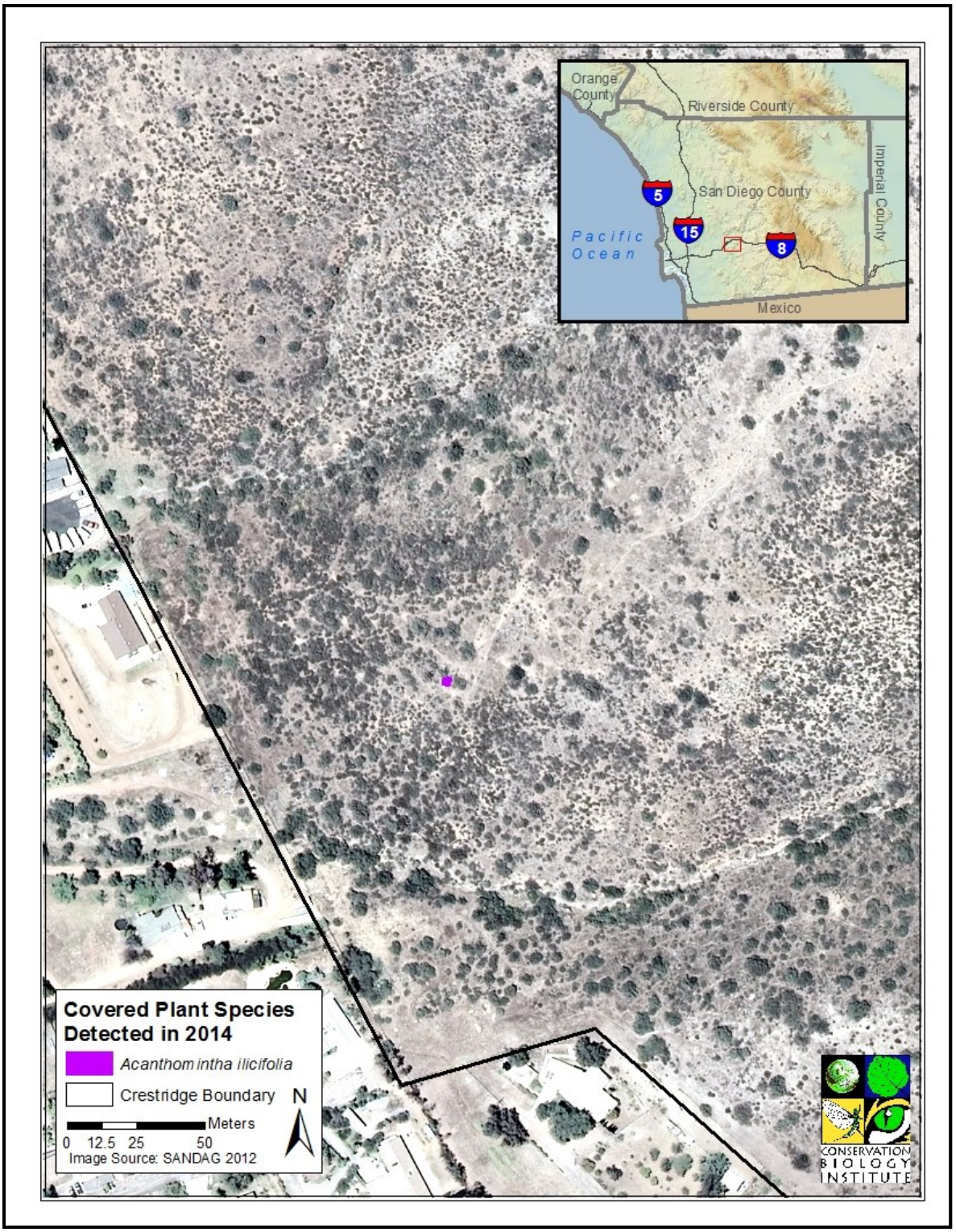

Figure 3
Covered Plant Species Detected on the South Crest Property

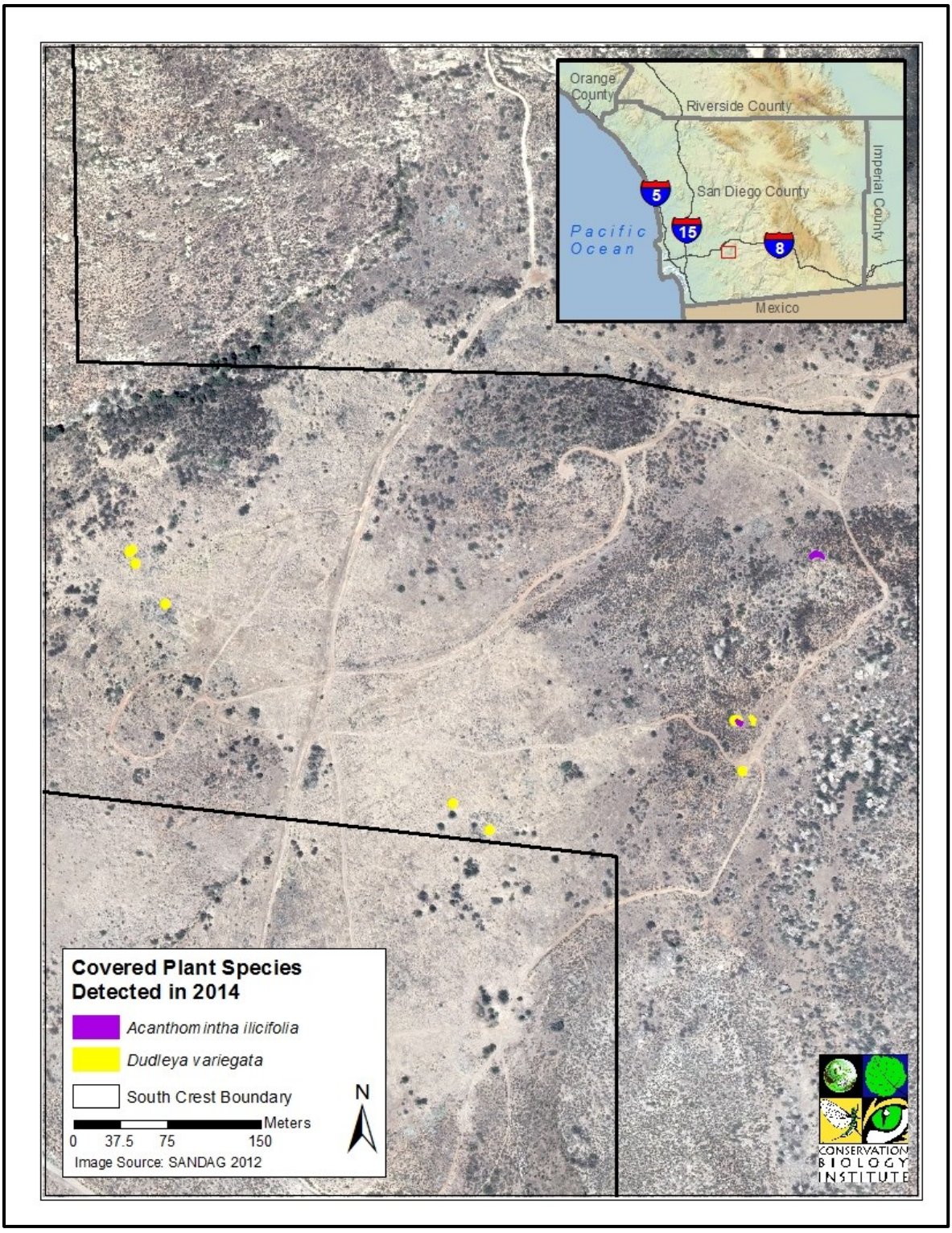

Figure 4

Covered Plant Species Detected on the Michelson Property

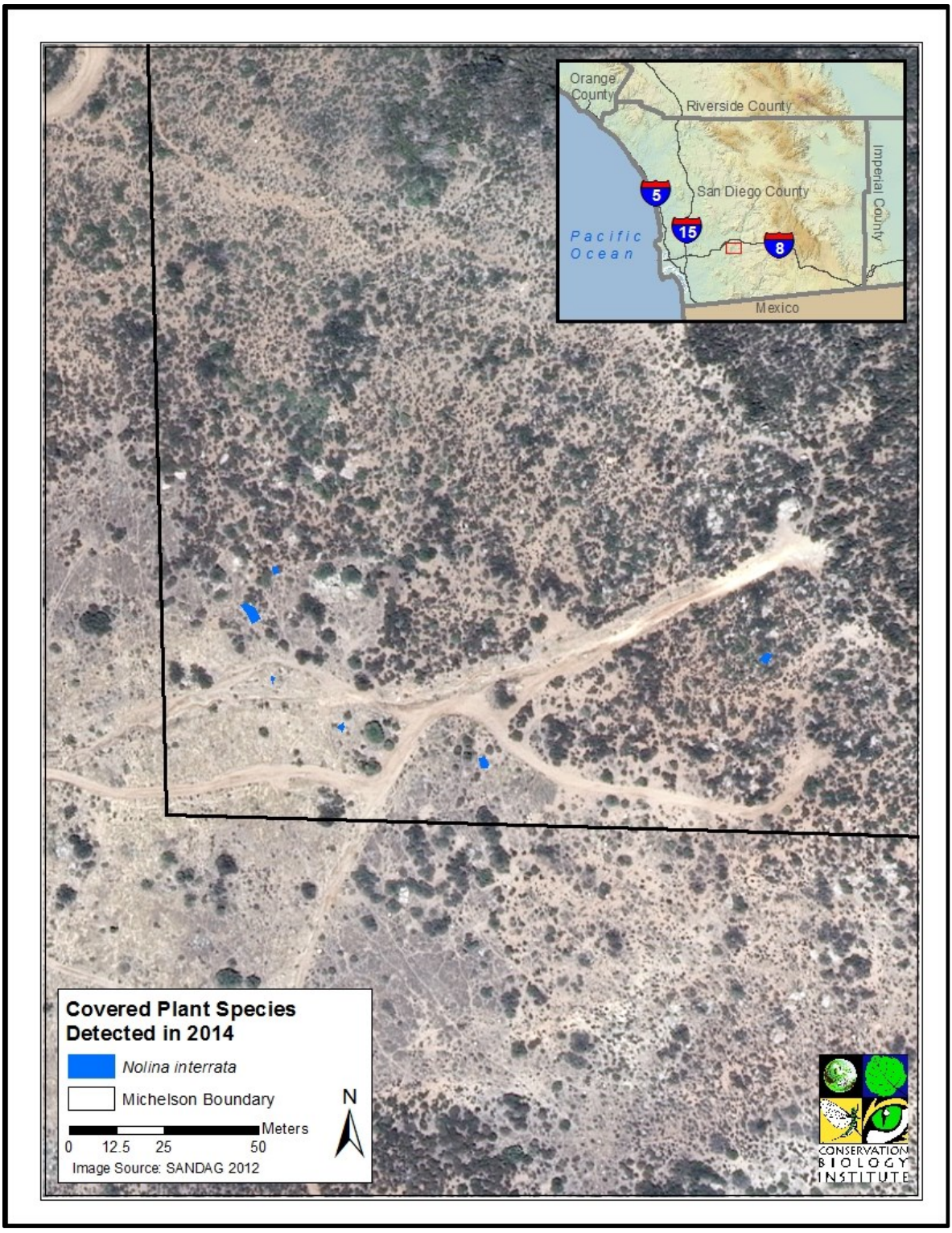

Figure 5

Covered Plant Species Detected on the Gibson and Kemerko Properties

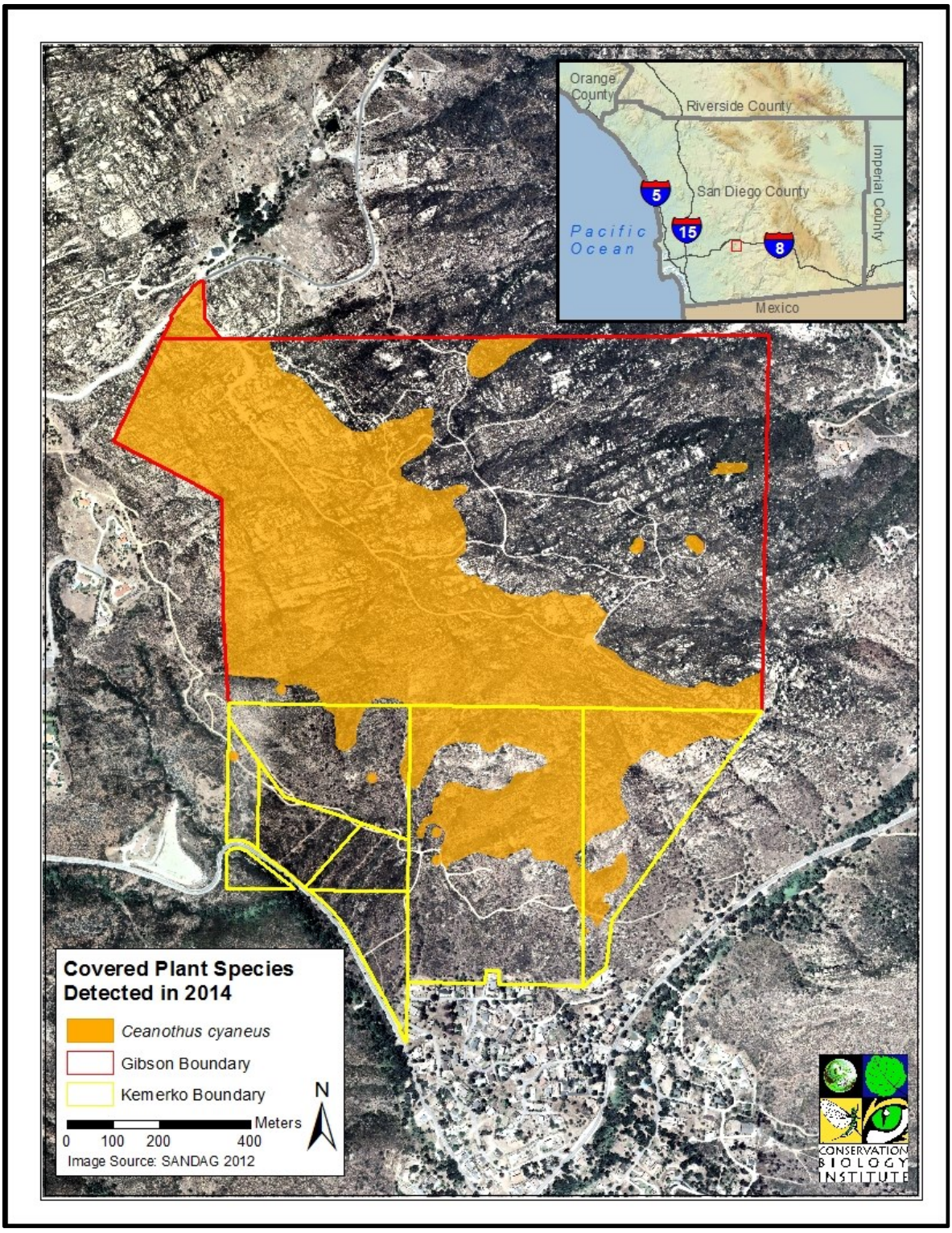

Table 2

Invasive and Competitive Native Species

Invasive Plant Species	Competitive Native Plants	Covered Species[1]	Site
Anagallis arvensis *Bromus hordeaceus and madritensis* *Brassica nigra* *Centaurea melitensis* *Erodium cicutarium* *Hirschfeldia incana* *Sonchus asper*	*Deinandra fasciculata*	*Acanthomintha ilicifolia*	Crestridge
Avena barbata *Brachypodium distachyon* *Brassica nigra* *Bromus hordeaceus and madritensis* *Centaurea melitensis* *Erodium cicutarium* *Hirschfeldia incana* *Hypochaeris glabra* *Sonchus asper* *Sonchus oleraceus*	*Deinandra fasciculata* *Gutierrezia* sp.	*Acanthomintha ilicifolia*	South Crest
Ehrharta sp. *Melinis repens*	none	*Ceanothus cyaneus*	Kemerko
Avena barbata *Brachypodium distachyon* *Bromus madritensis* *Brassica nigra* *Centaurea melitensis* *Erodium cicutarium* *Hedypnois cretica* *Hypochaeris glabra* *Sonchus oleraceus*	none	*Dudleya variegata*	South Crest
Avena barbata *Brachypodium distachyon*	none	*Nolina interrata*	Michelson

[1] Indicates affected covered plant species.

References

Conservation Biology Institute (CBI). 2014. Adaptive management framework for the endangered San Diego thornmint, *Acanthomintha ilicifolia*, San Diego County, California. March. Prepared in collaboration with San Diego Management and Monitoring Program.

Conservation Biology Institute, California Invasive Plant Council, and Dendra, Inc., 2012. Management priorities for invasive non-native plants – a strategy for regional implementation, San Diego County, California. September.

San Diego Management and Monitoring Program (SDMMP). 2014. Management strategic plan (MSP) 2014 monitoring protocol for rare plant occurrences on conserved lands in western San Diego County. March.