

## ***Cordylanthus orcuttianus* (Orcutt's Bird's Beak)**

### **MSCP Biological Monitoring Plan (BMP) Priority Listing and Required Monitoring Frequency [CBI Recommended Monitoring Frequency]:**

First priority, Annually [Annually]

### **BMP Required and CBI Recommended City Monitoring Locations (BMP Point and Site Priority):**

Goat Canyon-Spooner's Mesa (P-23; High priority)

Note: Goat Canyon and Spooner's Mesa are part of the Tijuana Park, which is owned and overseen by County of San Diego.

### **Additional CBI Recommended Monitoring Location:**

Otay River Valley

### **Years Monitored:**

2001, 2002, 2003, 2004, 2005 (Otay River Valley)

### **Methodology/Methodology Background:**

In previous years, *C. orcuttianus* was monitored by counting all individuals within 1 meter quadrats, then using the counts to estimate total population. However, quadrats were selected in the field in a non-random manner, and several quadrats were eliminated due to presence of poison oak. Based on this information and a site visit in spring 2005 during which it was noted that *C. orcuttianus* tends to occupy areas immediately adjacent trails or other disturbed areas within the Otay River Valley, Dr. Kathryn McEachern recommended the 2005 monitoring method for this species. A revised methodology as follows: In 2005, four permanent plots (1 x 3 m) were established within the Otay River Valley *C. orcuttianus* population in order to track potential habitat change/succession. Two plots were placed immediately adjacent and parallel to trails; three were placed in areas not immediately adjacent a trail. All plots were selected in the field by staff (non-random). All plots were staked using surveyors nails and were also mapped using GPS technology. Within each 1 x 3 m plot, all flowering and non-flowering individuals within each plot are counted (census) and recorded using standard data sheets. An individual is considered flowering if any flowering structures are present (i.e., buds are counted as flowering individuals) or if the plant has flowered (e.g., dried flower).

In addition to counts within the permanent plots, all general areas in the valley known to support *C. orcuttianus* are re-visited and surveyed. Population boundaries are flagged and mapped using a sub-meter GPS unit.

Note that the 2001 CBI report suggests preserve-wide "mapping species distribution and quantitative or semi-quantitative surveys to assess resource abundance, density or other indices to monitor status and trends through time." The report lists Goat Canyon-Spooner's Mesa and Otay River Valley in its 'summary of species locations recommended for qualitative monitoring;' which may be the only known locations of the species. Reiser (1994), however, states that "An old biological survey report notes this species near the large borrow pit at the extreme eastern end of the Tijuana Hills south of Monument Road. Data Base reports are from 0.75 mile due east of Wruck Canyon on Otay Mesa, and south of the Borderland Air Sports Center 1.5 miles east of

Lower Otay Reservoir” and that “The Otay River colonies should be considered the only vigorous extant U.S. population and should be rigidly protected.”

Figure 19. City of San Diego *Cordylanthus orcuttii* Otay River Valley Monitoring Location, Vicinity Map

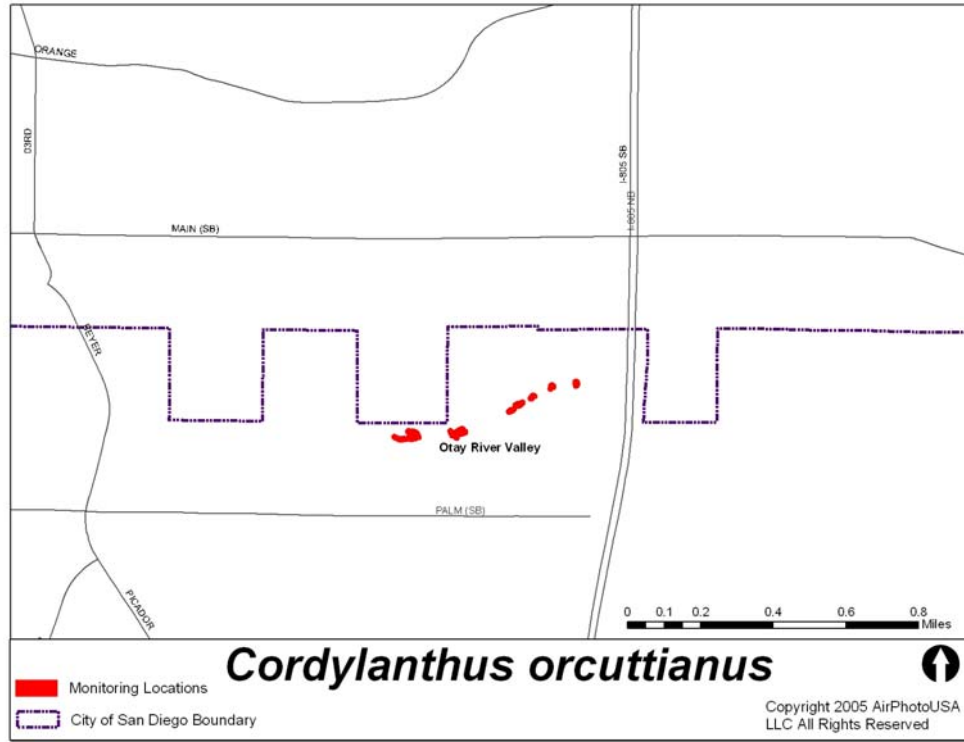
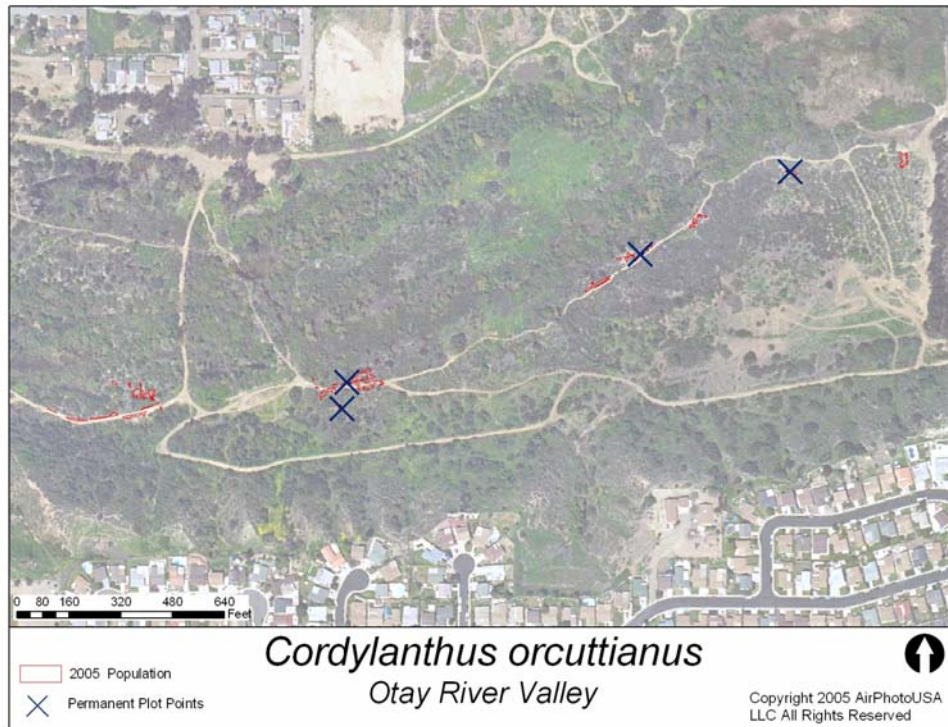


Figure 20. City of San Diego *Cordylanthus orcuttii* Monitoring Location, Otay River Valley



## ***Cylindropuntia californica* var. *californica* (Snake Cholla)**

(Formerly *Opuntia parryi* var. *serpentina*)

### **MSCP Biological Monitoring Plan (BMP) Priority Listing and Required Monitoring Frequency [CBI Recommended Monitoring Frequency]:**

Third priority, Every five years [Every five years]

### **BMP Required and CBI Recommended City Monitoring Locations (BMP Point and Site Priority):**

Spring Canyon (P-26; Moderate priority)

### **Additional Locations Monitored in the City:**

Balboa Park, Otay Mesa

### **Years Monitored:**

2002 (Balboa Pk, Otay Mesa, Spring Cnyn)

2005 (Otay Mesa, Spring Cnyn – presence/absence and threats assessment only)

### **Methods:**

All individual plants were located and mapped using submeter GPS technology in 2002. 2005 monitoring included qualitatively observing the populations, noting overall habitat composition and percent non-native cover and noting any other potential management issues that may be present. Plants should be re-mapped (GPS'd) periodically, at approximately five year intervals.

Note that the 2001 CBI report suggests preserve-wide “mapping species distribution and quantitative or semi-quantitative surveys to assess resource abundance, density or other indices to monitor status and trends through time;” however, the report includes only Spring Canyon in its ‘summary of species locations recommended for qualitative monitoring’ in the City of San Diego.

### **Directions to Spring Canyon Site:**

From downtown area, take I-5 or I-805 south to Otay Mesa Road/905. Take Otay Mesa Road/905 east, go several miles, passing the San Ysidro High School on the right, then go right on Cactus Road. At the end of Cactus, go right on Calle de Linea. Shortly after the turn and before the trucking business area, there is an entrance to the canyon on the right. Take this road trail and off-road trails and/or hiking trails to the monitoring site using aerial and/or GPS.

Figure 21. City of San Diego *Cylindropuntia californica* var. *californica* Monitoring Locations, Regional Map

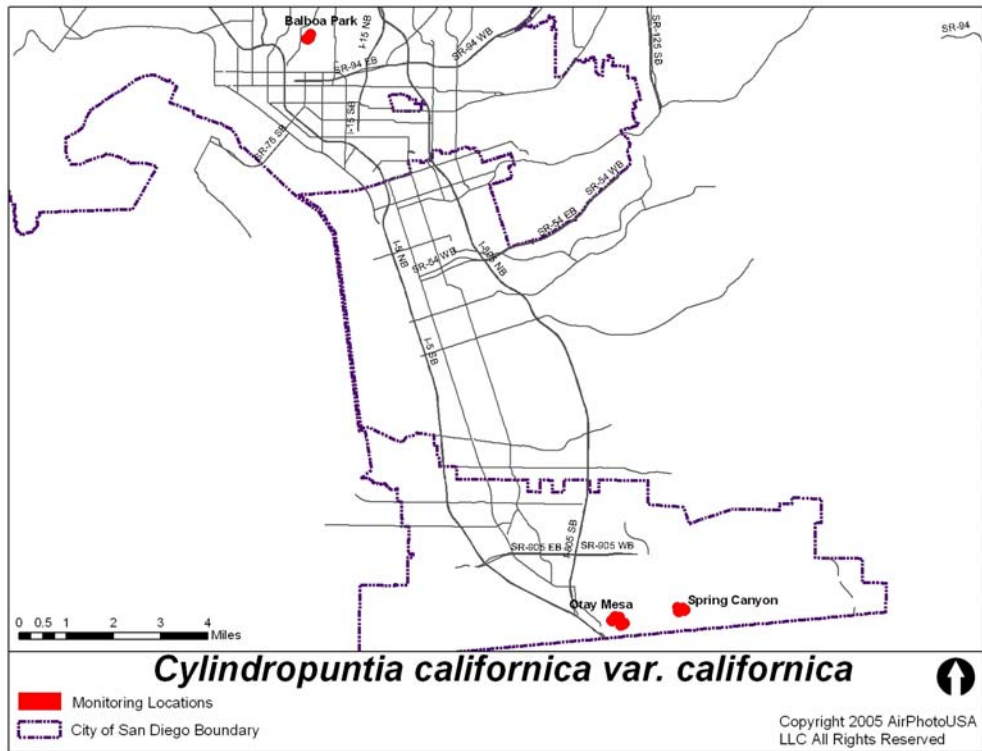


Figure 22. City of San Diego *Cylindropuntia californica* var. *californica* Monitoring Location, Balboa Park

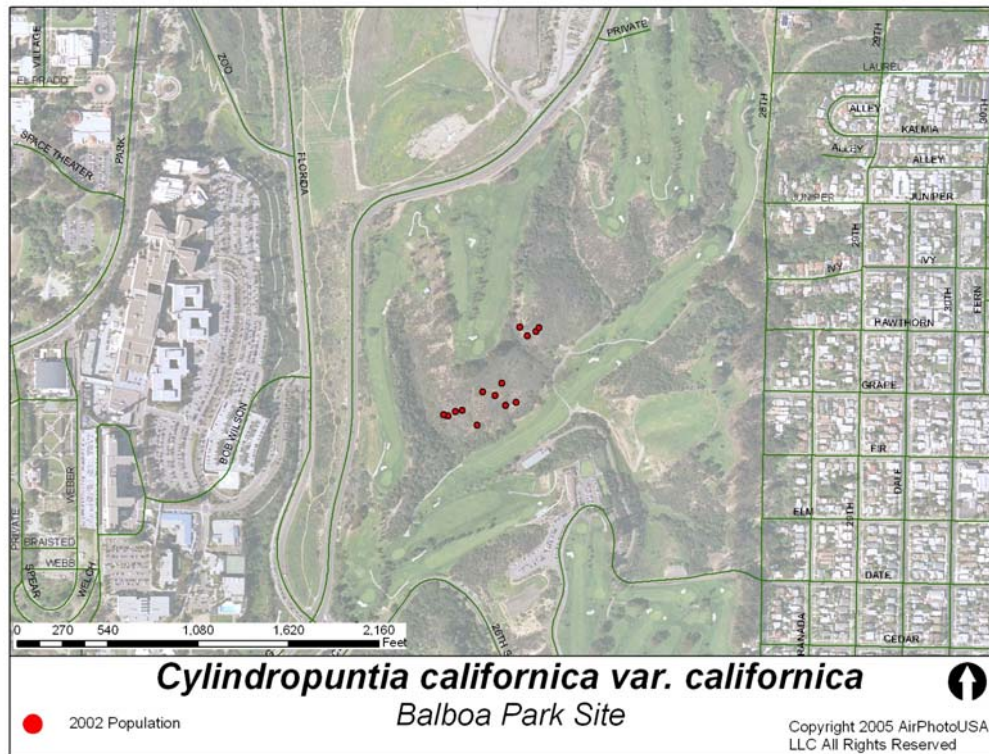




Figure 23. City of San Diego *Cylindropuntia californica* var. *californica* Monitoring Location, Otay Mesa

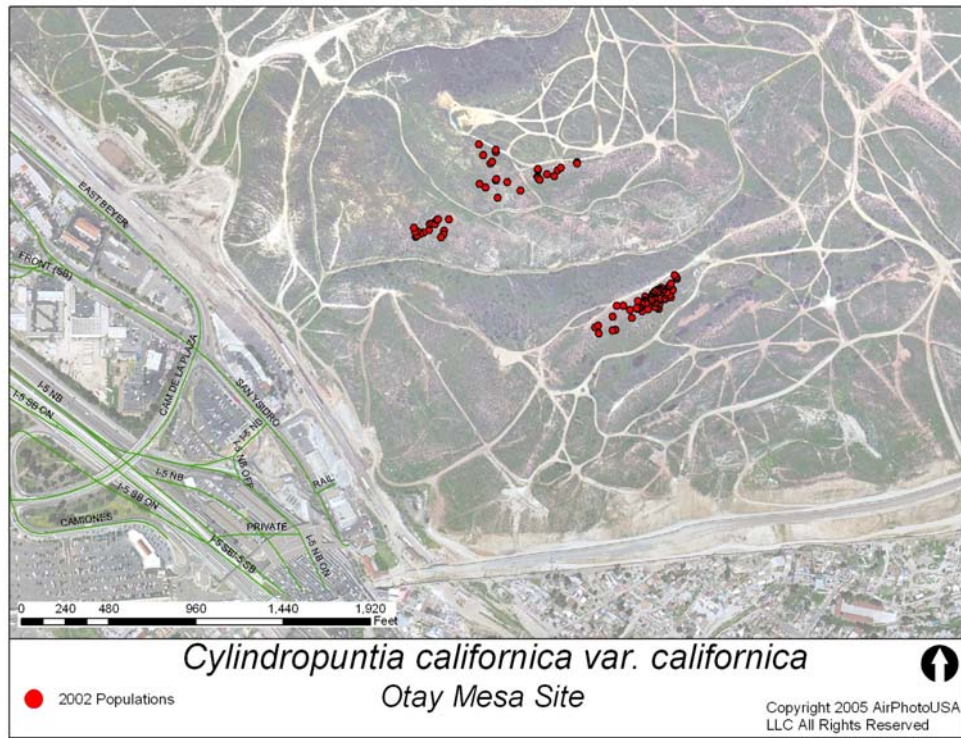
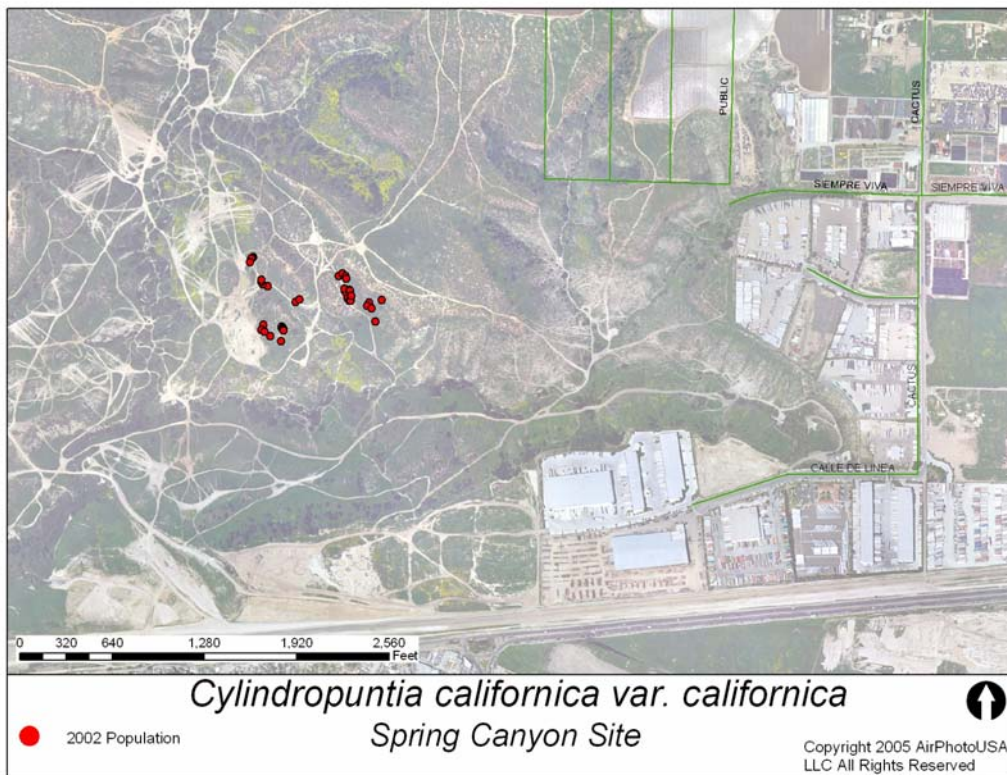


Figure 24. City of San Diego *Cylindropuntia californica* var. *californica* Monitoring Location, Spring Cnyn



## ***Deinandra conjugens* (Otay Tarplant)**

(Formerly *Hemizonia conjugens*)

### **MSCP Biological Monitoring Plan (BMP) Priority Listing and Required Monitoring Frequency [CBI Recommended Monitoring Frequency]:**

First priority, Annually [Annually]

### **BMP Required and CBI Recommended City Monitoring Locations:**

None

### **Additional Non-Required Monitoring Locations:**

Proctor Valley

### **Years Monitored:**

2003 (Proctor Vly)

2004 (Proctor Vly)

2005 (Proctor Vly)

### **Methodology:**

There are three east/west transects within the Proctor Valley Otay Tarplant population that were established in 2000 using a random numbers table. Transects are used for belt transect surveying; all plants within one-half meter of either side of the transect are counted (for a one-meter wide belt). Population boundaries are also periodically flagged and mapped using a sub-meter GPS unit. Otay Tarplant can be confused with the more common *Deinandra fasciculata* (Fascicled Tarweed), but can be distinguished in the field by having eight ray flowers (petals); Fascicled Tarweed has only five. In 2005, a large area of of tarplant was found to be located nearby the previously mapped population (to the west, on other side of trail). However, it is unclear whether this area is newly established or this area simply wasn't surveyed in previous years. As such, it is recommended that an approximate survey area be delineated in future reports and mapping.

General: Note that the 2001 CBI report suggests preserve-wide annual "Non-quantitative surveys to assess resource presence/absence or distribution, using habitat mapping, aerial photography, or other imagery, and mapping of species distribution." According to the report, such preserve-level monitoring would be used "to inform management decisions – required of all preserve managers at all preserve units and monitoring directives."

Figure 25. City of San Diego *Deinandra conjugens* Monitoring Location, Regional Map

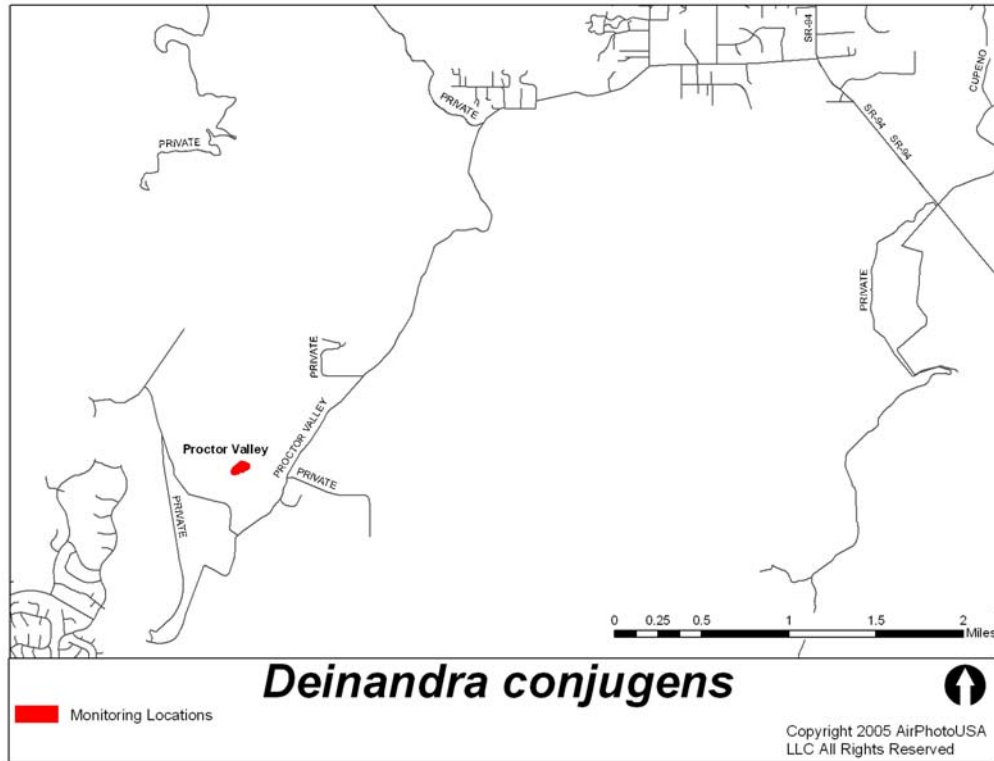
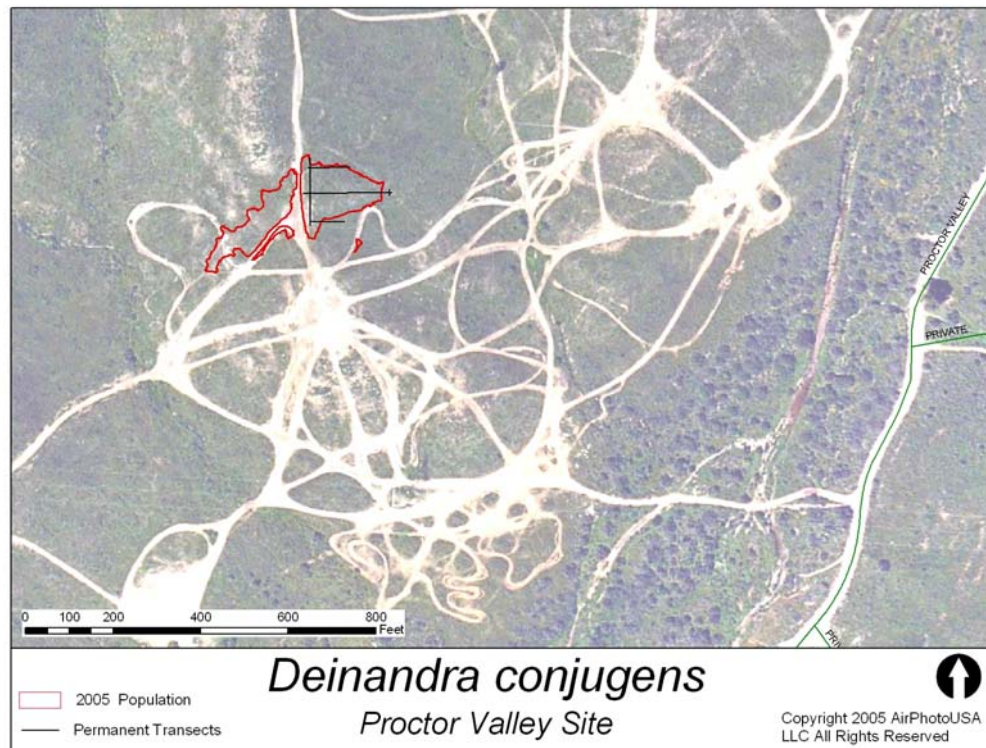


Figure 26. City of San Diego *Deinandra conjugens* Monitoring Location, Proctor Valley





## ***Dudleya brevifolia* (Short-Leaf Dudleya)**

(Formerly *Dudleya blochmaniae* ssp. *brevifolia*)

### **MSCP Biological Monitoring Plan (BMP) Priority Listing and Required Monitoring Frequency [CBI Recommended Monitoring Frequency]:**

First priority, Annually [Annually]

### **BMP Required and CBI Recommended City Monitoring Locations (BMP Point and Site Priority):**

Del Mar Heights/Crest Canyon (P-3; High priority)

Carmel Mountain (P-8; High priority)

### **Additional CBI Recommended Monitoring Location:**

Del Mar Mesa

Note that neither the City's 2001 reconnaissance surveys nor the California Natural Diversity Database report any *Dudleya brevifolia* from the Del Mar Mesa area; thus, this area is not monitored.

### **Additional Locations Monitored in the City:**

Skeleton Canyon (UCSD property)

Note that Torrey Pines populations have been surveyed by City staff in the past; however, these populations are on state lands and are no longer monitored by city staff due to access restrictions and staffing shortages; additionally, the 2001 CBI identifies State Parks as the responsible agent for these populations.

### **Years Monitored:**

1999 (Crml Mtn)

2000 (Crml Mtn)

2001 (Crml Mtn, Crest Cnyn, Skeleton Cnyn)

2002 (Crml Mtn, Crest Cnyn, Skeleton Cnyn)

2003 (Crml Mtn, Crest Cnyn, Skeleton Cnyn, Torrey Pines)

2004 (Crml Mtn, Crest Cnyn, Skeleton Cnyn)

2005 (Crml Mtn, Crest Cnyn, pres/abs at Skeleton Cnyn)

### **Methods:**

Carmel Mountain Permanent transects have been established at Carmel Mountain within three subpopulations. Transects of varying lengths were randomly selected using a random numbers table in 1999. Each subpopulation is adjacent to a trail, and transects are perpendicular to the trail, with the beginning point of each transect considered to be end nearest the trail. At each transect, beginning from the end closest to the trail, a one-meter quadrat is placed along the left side of each transect. All *D. brevifolia* individuals are counted within alternate one meter quadrats, skipping the first quadrat along the transect (e.g., the quadrat is laid with right side on the transect line and the bottom of the quadrat perpendicular to the transect starting point. This quadrat is not counted and the quadrat is flipped along its edge to the next 1m quadrat along the transect. All individuals in this second quadrat are counted and recorded, then the process is repeated along the length of each transect). If a quadrat does not fall entirely within the transect, it is not counted (i.e., if a quadrat falls at the end of the transect and is partially beyond the

transect terminus, it is not counted). Flowering status is also recorded for each plant counted: An individual is considered flowering if any internal flowering structures are visible (i.e., stamens, pistils) or if the plant has flowered (e.g., dried flower). It is non-flowering if no floral structures are present or if the plant is in bud stage only, with no internal flowering structures visible.

Crest Canyon There are two *D. brevifolia* subpopulations at Crest Canyon. The southernmost population is very small and scattered, and occurs in an area of high foot traffic. In 2005, locations of *D. brevifolia* in this area were recorded using a sub-meter GPS unit and all individuals were counted and recorded on data sheets. The more northern population, which is larger, is mapped using sub-meter GPS technology and notes are taken regarding co-occurring species (esp non-natives) and any potential threats or management concerns regarding the population.

In the past, the northern population was monitored by selecting points in the field (non-randomly), and counts for several one m<sup>2</sup> plots were counted to estimate the total population number. Due to the delicacy of this species and potential for trampling, as well as questions about previous methodology, quadrats were not performed in this area in 2005. Instead, the population boundary was mapped using a sub-meter GPS unit, and potential population threats were assessed.

Skeleton Canyon Skeleton Canyon is owned by the University of California, San Diego. *D. brevifolia* has been monitored at this site by mapping the populations using sub-meter GPS and counting all individuals (census).

Torrey Pines State Park *D. brevifolia* has been monitored at Torrey Pines State Park in 2003 by mapping the populations using sub-meter GPS.

General Note that the 2001 CBI report suggests preserve-wide “mapping species distribution and quantitative or semi-quantitative surveys to assess resource abundance, density or other indices to monitor status and trends through time.” The report lists Del Mar Heights (Crest Canyon; P3), Carmel Mountain, Del Mar Mesa and Crest Canyon in its ‘summary of species locations recommended for qualitative monitoring’ for the City of San Diego, which may be the only known locations of the species in the City. Note that the double citation of Crest Canyon is presumably a mistake; it is believed that “Del Mar Heights (Crest Canyon; P3)” and “Crest Canyon” both refer to the two populations within Crest Canyon Park.

Figure 27. City of San Diego *Dudleya brevifolia* Monitoring Locations, Regional Map

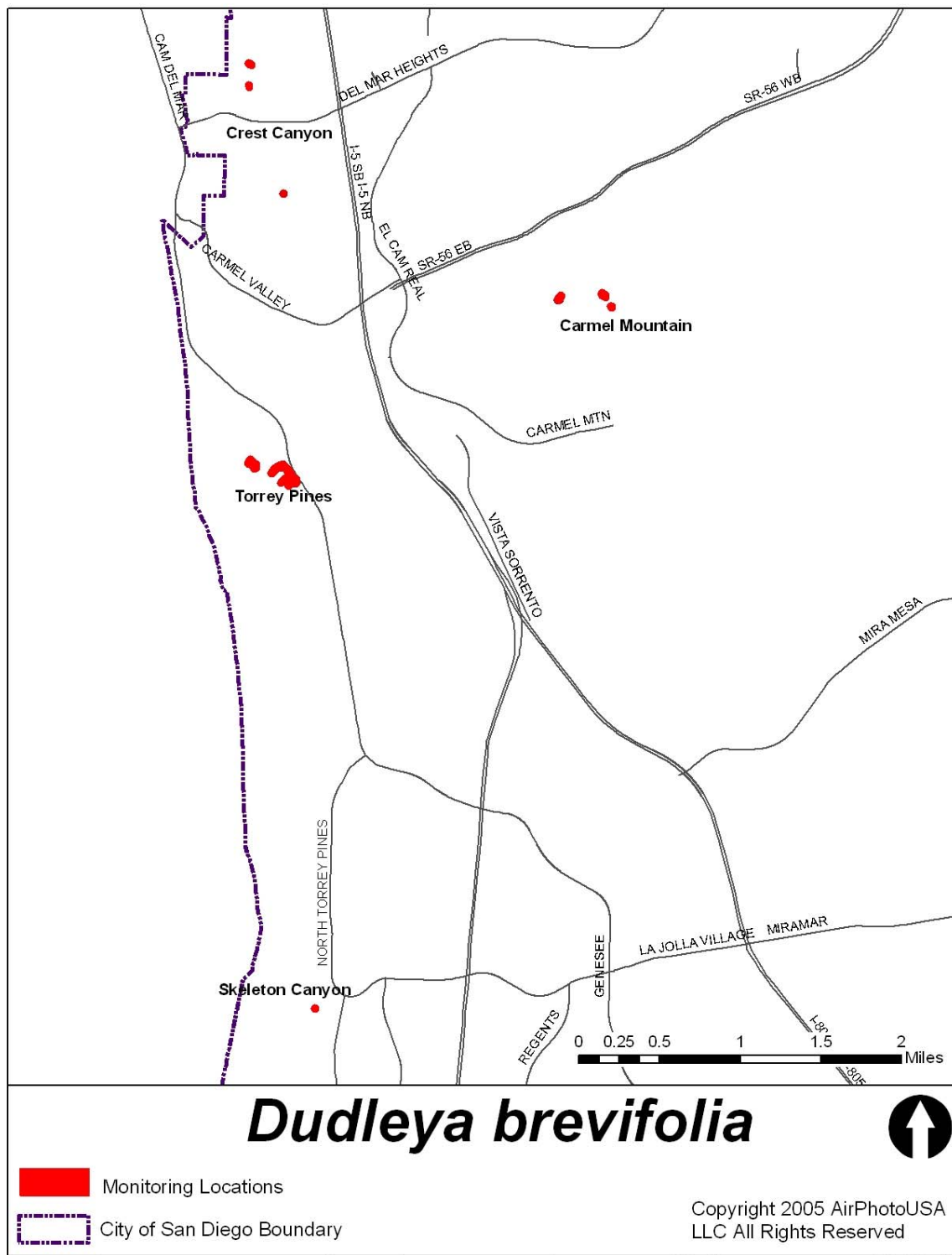
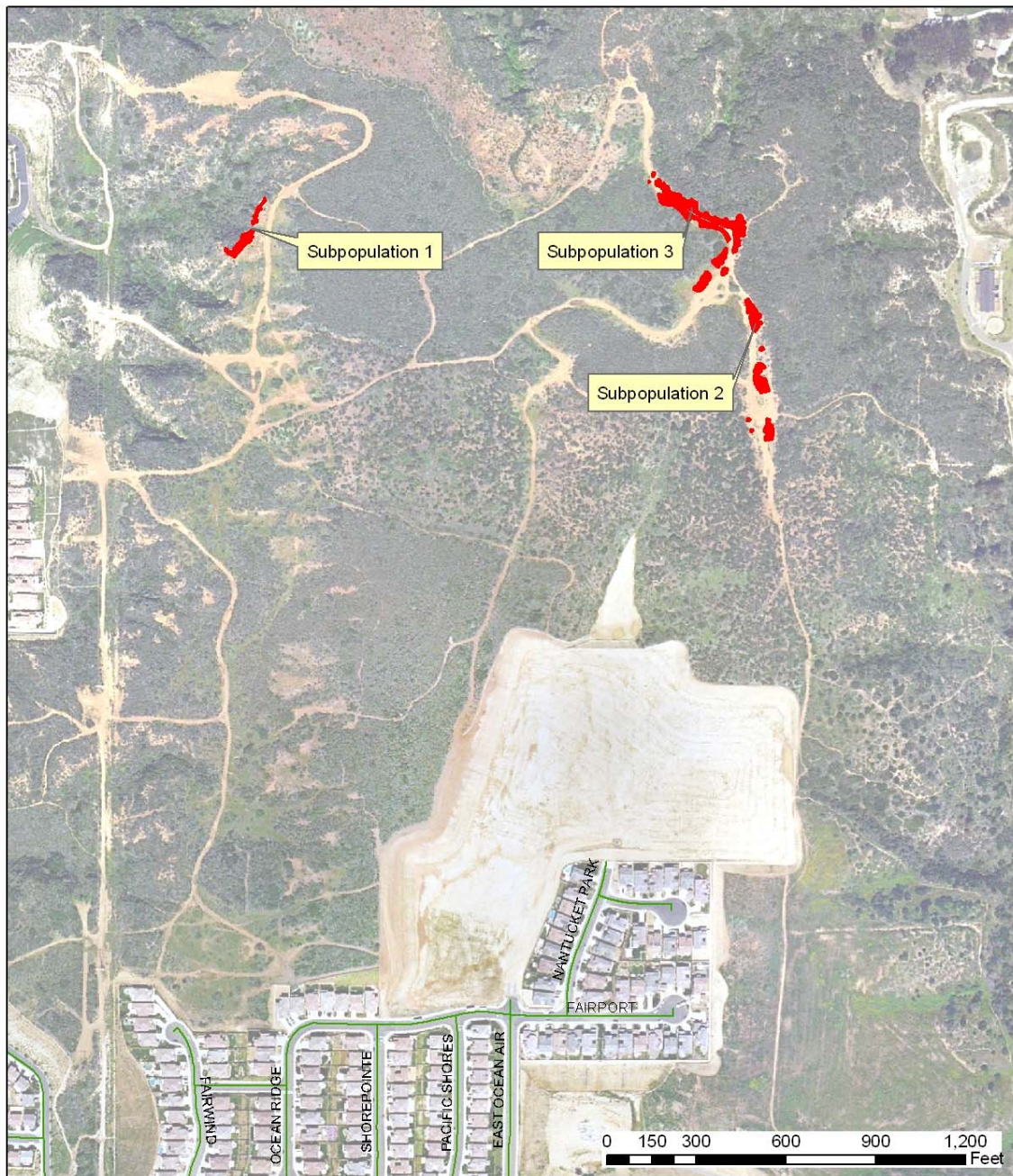


Figure 28. City of San Diego *Dudleya brevifolia* Monitoring Locations, Carmel Mtn



*Dudleya brevifolia*  
Carmel Mountain Site



 2005 Population

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Figure 29. City of San Diego *Dudleya brevifolia* Monitoring Locations, Crest Cnyn



**Figure 30. City of San Diego *Dudleya brevifolia* Monitoring Location, Skeleton Canyon**

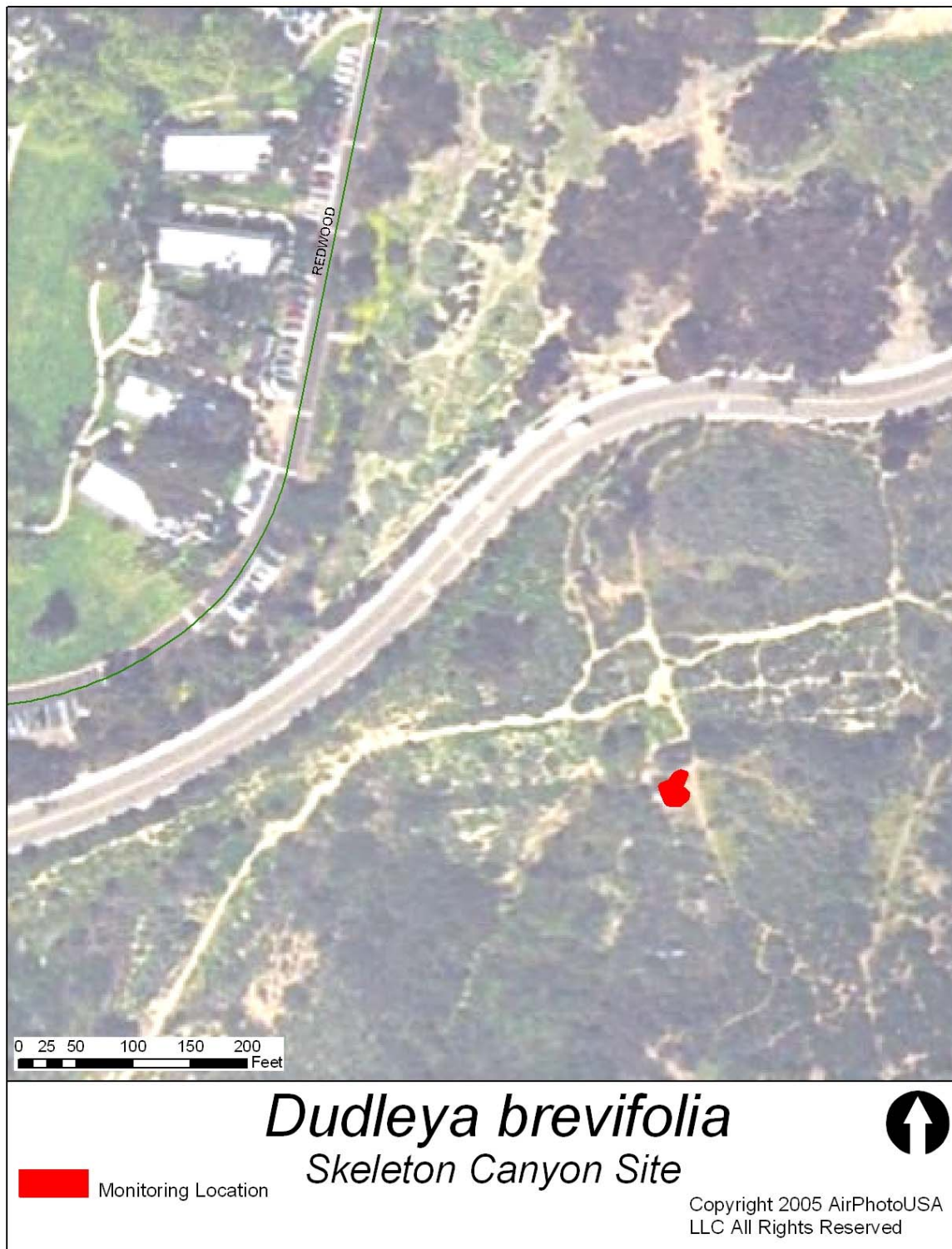




Figure 31. City of San Diego *Dudleya brevifolia* Monitoring Location, Torrey Pines

