Brodiaea orcuttii (Orcutt's Brodiaea)

Introduction

The MSCP Biological Monitoring Plan (1996) identifies Carmel Mountain and Del Mar Mesa as City of San Diego *Brodiaea orcuttii* monitoring locations. The General Dynamics, Carroll Canyon, and Nobel Drive populations have also been monitored since 2001 when they were identified via City-wide rare plant surveys.

Results

Site	Lead Monitor/s	Date	Method*	Result
General Dynamics	Greer/ Johnson	April 28, 2005	Permanent Plots, GPS	Shrub Adjacent Plot Density = 43.08 plants/m^2 Open Area Plot Density = 39.42 plants/m^2 Total Permanent Plot Density = 41.25 plants/m^2 Total Population Area = 7,022 m^2
Nobel Drive	Johnson	April 29, 2005	Census	23 Plants
Carroll Canyon	Greer/ Johnson	April 28, 2005	Permanent Plots, GPS	Permanent Plot Density = 36.78 m^2 Total Population Area = 18,006 m^2

*Please see the *City of San Diego MSCP Rare Plant Monitoring: Field Monitoring Methods* manual for a full description of plant monitoring methods and locations.

In 2005, a revised monitoring protocol was utilized for the General Dynamics and Carroll Canyon *Brodiaea orcuttii* populations based on input from Dr. Kathryn McEachern. Six permanent plots (1 x 3 m) were selected by staff within both sites in order to track potential habitat change/succession. Three plots were placed immediately adjacent to shrub-dominated areas; three were placed in areas not immediately adjacent shrub habitats. All plots were selected in the field by staff (non-random). All plots were staked using surveyors nails and were also mapped using submeter GPS technology. Within each 1 x 3 m plot, all flowering and non-flowering individuals within each plot were counted (census) and recorded.

Relatively high average densities within the permanent plots were noted for General Dynamics and Carroll Canyon (41.25 plants/m^2 and 36.78 plants/m^2, respectively). The only other time densities were calculated was in 2003, when densities of 20.08 and 2.11 plants per meter squared were calculated at General Dynamics and Carroll Canyon, respectively.

Slightly lower densities were noted in open areas than in shrub adjacent areas at General Dynamics; however it is not anticipated that this difference is significant. Due to an oversight in data collection at Carroll Canyon, it could not be determined which plots were shrub adjacent and which were open. If the scientific advisors group determines that this method will be continued, new field forms will be prepared that are specific to this type of data collection.

At the General Dynamics site, several invasive species were noted, though density is relatively low at this time. Species noted include *Centaurea melitensis* (Tocolote), *Vulpia myuros* var. *myuros* (Fescue), *Nicotiana glauca* (Tree Tobacco) and *Polypogon monspeliensis* (Annual Rabbitsfoot Grass).

The Brodiaea population at Nobel Drive has declined slightly since monitoring began in 2001, when 43 plants were counted at the site. This may be due to the abundant cover of annual non-native grasses at the site (primarily *Lolium perenne*).

At the Carroll Canyon site, an area on the north side of the property was noted to have Eucalyptus cuttings dumped in it. In addition to *B. orcutti,* the area supported vernal pools and the federally endangered species *Eryngium aristulatum.* It appeared that the cuttings originated from the 12734 Calle de las Rosas residence, as the property had a recently-trimmed Eucalyptus and was immediately adjacent the dumping. MSCP and Park and Recreation staff reported this issue to Shirley Hall of City of San Diego Code Enforcement Department via email on May 16, 2005. A follow-up was sent to Ms. Hall on January 24, 2006 regarding the outcome of the issue; however, no response has been received to date.

Management Recommendations

General Dynamics

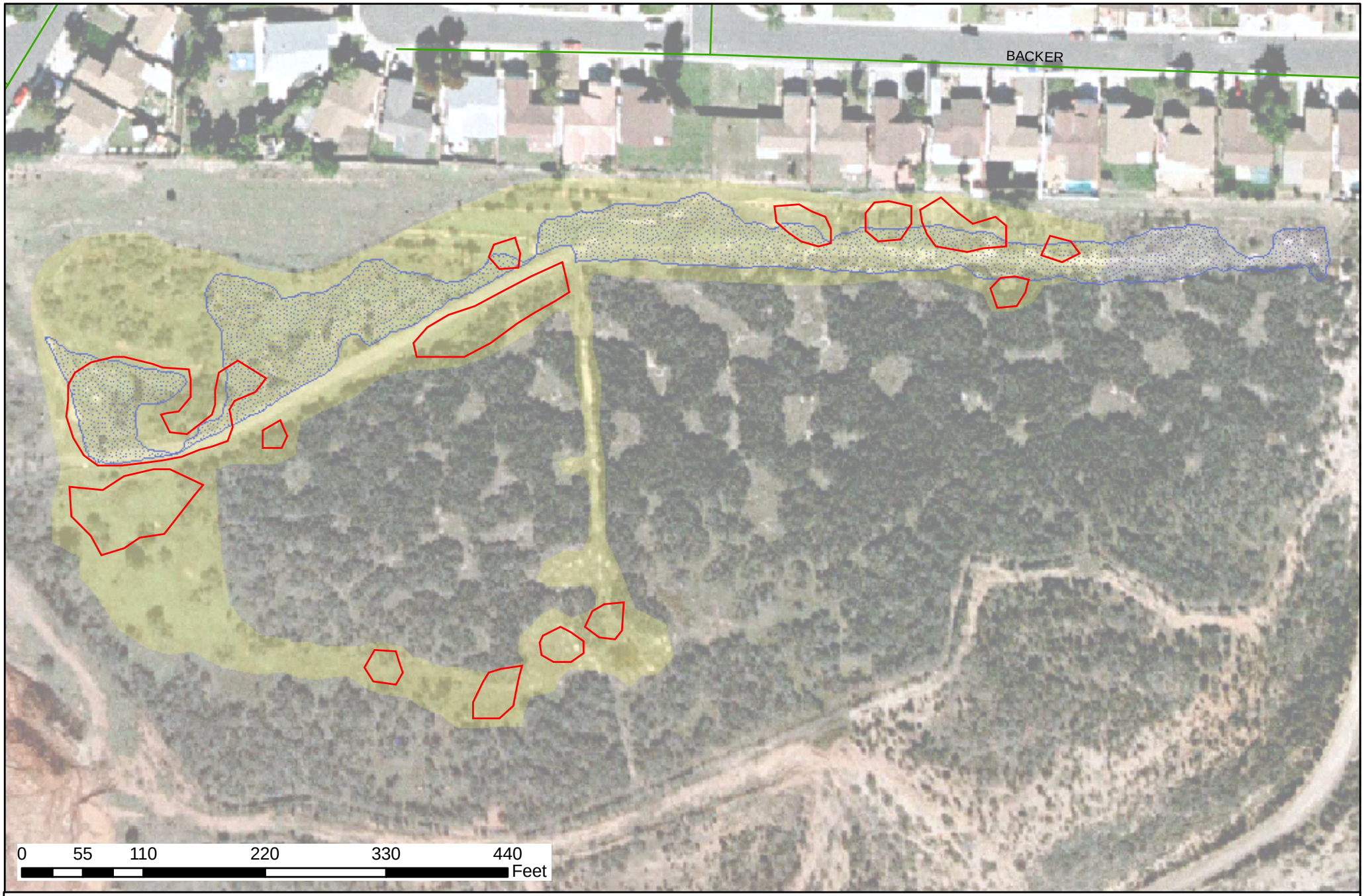
Invasive species such as *Centaurea melitensis* (Tocolote), *Vulpia myuros* var. *myuros* (Fescue), *Nicotiana glauca* (Tree Tobacco) and *Polypogon monspeliensis* (Annual Rabbitsfoot Grass) should be controlled at the site. Fencing surrounding the site should also be repaired; there are several breaks in the fence where it appears that trespassers may be entering the site.

Carroll Canyon

Removal of the illegally dumped *Eucalyptus* should be pursued if the case was not addressed through Code Enforcement. Additionally, several non-native grasses are present at the site (e.g., *Bromus* sp.) and should be controlled.

Nobel Drive

Invasive grasses pose a significant threat at this site and should be controlled. A proposal has been submitted through the Transnet EMP Funding program for vernal pool management throughout the City and would include dethatching around the Nobel Drive vernal pools, which would include the *Brodiaea orcuttii* population area.



2005 Population

2003 Population

Approximate Survey Area

Brodiaea orcuttii

Carroll Canyon Site

Survey Date: April 28th, 2005

Source: K. Greer, M. Johnson, J. Garcia, L. Hierl

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