Big Tarplant (*Blepharizonia plumosa*)

**Status**

<table>
<thead>
<tr>
<th></th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td><strong>Federal:</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>State:</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>CNPS:</strong></td>
<td>List 1B</td>
</tr>
</tbody>
</table>

**Population Trend**

<table>
<thead>
<tr>
<th></th>
<th>Details</th>
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<tbody>
<tr>
<td><strong>Global:</strong></td>
<td>Unknown</td>
</tr>
<tr>
<td><strong>State:</strong></td>
<td>Unknown</td>
</tr>
<tr>
<td><strong>Within Inventory Area</strong></td>
<td>Unknown</td>
</tr>
</tbody>
</table>

**Data Characterization**

The location database for big tarplant includes 36 data records dated from 1916 to 1998 (California Natural Diversity Database 2001). Twenty-nine of the occurrences were documented within the last 10 years. Seven of the occurrences have not been observed for over 60 years, but all the other occurrences are believed to be extant (California Natural Diversity Database 2001). Most of the occurrences are of high precision and may be accurately located, including those within the inventory area.

Very little ecological information is available for big tarplant. The published literature on the species pertains primarily to its taxonomy. The main sources of general information on this species are the Jepson Manual (Hickman 1993) and the California Native Plant Society (2001). Specific observations on habitat and plant associates, threats, and other factors are summarized in the California Natural Diversity Database (2001).

**Range**

Big tarplant is endemic to the Mount Diablo foothills and is found primarily in eastern Contra Costa, eastern Alameda, and western San Joaquin Counties (Hoover 1937).

**Occurrences within the ECCC HCP/NCCP Inventory Area**

In the inventory area, big tarplant is known from 4 occurrences on Cowell Ranch, west of Brentwood, and 7 occurrences on Roddy Ranch, south of Antioch (California Natural Diversity Database 2001). The historic occurrences in Antioch are likely to have been extirpated, although at least 1 population is present at Black Diamond Mines Regional Park (Preston pers. comm.). Big tarplant may also be present in the hills south of Pittsburg, where it was collected in 1937 and last seen in 1992 (Preston pers. comm.).
Biology

Physical Description

Big tarplant is an herbaceous annual that grows to between 1 and 3 feet tall. Seedlings appear in early spring, but the plants do not begin to bloom until mid-summer. The blooming period, during which the plants produce many heads with white flowers, generally occurs between August and October.

Two species of big tarplant are present in the inventory area: big tarplant and viscid big tarplant (*Blepharizonia laxa*). Viscid big tarplant is the more widely distributed species, ranging throughout most of the south Coast Ranges and reaching its northern limit in Contra Costa County. The two species, which often occur in adjacent populations, can be differentiated by their branching patterns, the amount and color of the simple and glandular hairs on the stems and leaves, the chemical compounds produced by the glands, and by genetic markers (Hickman 1993, Baldwin et al. 2001, Preston pers. comm.). The two species can hybridize, but the hybrids are infertile (Baldwin et al. 2001).

Habitat

Big tarplant occurs in annual grassland on clay to clay-loam soils, usually on slopes and often in burned areas, below 1,500 feet (California Natural Diversity Database 2001). In Contra Costa County, the occurrences are primarily on soils of the Altamont series.

<table>
<thead>
<tr>
<th>Species Associated with Big Tarplant</th>
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</thead>
<tbody>
<tr>
<td><em>Avena species</em></td>
<td>wild oats</td>
</tr>
<tr>
<td><em>Bromus species</em></td>
<td>brome grasses</td>
</tr>
<tr>
<td><em>Epilobium brachycarpum</em></td>
<td>panicled willow-herb</td>
</tr>
<tr>
<td><em>Eriogonum angulosum</em></td>
<td>angle-stemmed wild buckwheat</td>
</tr>
<tr>
<td><em>Eriogonum gracile</em></td>
<td>slender woolly wild buckwheat</td>
</tr>
<tr>
<td><em>Grindelia camporum</em></td>
<td>Great Valley gumplant</td>
</tr>
<tr>
<td><em>Holocarpha obconica</em></td>
<td>San Joaquin tarplant</td>
</tr>
<tr>
<td><em>Holocarpha virgata</em></td>
<td>virgate tarplant</td>
</tr>
<tr>
<td><em>Lagophylla ramosissima</em></td>
<td>common hareleaf</td>
</tr>
<tr>
<td><em>Lolium multiflorum</em></td>
<td>Italian ryegrass</td>
</tr>
<tr>
<td><em>Nassella pulchra</em></td>
<td>purple needlegrass</td>
</tr>
</tbody>
</table>

Threats

Big tarplant occurs in only a few highly restricted populations and is endangered throughout its range (California Native Plant Society 2001). The primary threat to big tarplant has been habitat loss from conversion to urban development.
Ground disturbance and erosion caused by cattle grazing and competition from invasive exotics such as yellow star-thistle (*Centaurea solstitialis*) may also pose a threat to populations (California Natural Diversity Database 2001).

**Conservation and Management**

Big tarplant may require management of nonnative annual grasses for long-term population viability. Prescribed burns may be an effective method for managing grasslands in which big tarplant occurs. Such burns should be conducted under conditions that favor low-intensity fire because high plant mortality appears to result from high-intensity fires. Gregory and his colleagues (2001) found that disc seeds of big tarplant germinate at much higher frequencies than ray seeds, and advise that only disc seeds should be used in the creation of new populations.

**Species Distribution Model**

**Model Description**

**Model Assumptions**

Primary habitat: Annual grassland below 1,500 feet on the Altamont soil series (Soil Conservation Service 1977).

Secondary habitat: all other annual grassland below 1,500 feet.

**Rationale**

Big tarplant occurs in annual grassland on clay to clay-loam soils, usually on slopes and often in burned areas, below 1,500 feet (California Natural Diversity Database 2001). In Contra Costa County, the occurrences are primarily on soils of the Altamont series (Soil Conservation Service 1977).

**Results**

Figure 2 shows the modeled big tarplant habitat within the ECCC HCP/NCCP inventory area. The distribution of known occurrences is consistent with the predicted suitable habitat of the model.

**Literature Cited**


Big Tarplant (*Blepharizonia plumosa*)

California Natural Diversity Data Base. 2001. RareFind 2, Version 2.1.2 (September 5, 2001 update). California Department of Fish and Game, Sacramento, CA


