

**Changed from California Rare Plant Rank 1B.2 to 1B.3 in the CNPS Inventory on February 19, 2013**

**Rare Plant Status Review: *Castilleja grisea***

**Proposed Rank Change from 1B.2, G3 / S3 to ~~4-2~~ 1B.3, G3 / S3**

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Changes made to the original document appear in blue text.

**Background**

*Castilleja grisea* is a perennial herb in the Orobanchaceae that has been included as a California Rare Plant Rank (CRPR) 1B.2 plant since the CNPS Inventory, First Edition (1974). In 1977, *C. grisea*, along with three other plants endemic to San Clemente Island, became the first plants to receive Endangered status under the Endangered Species Act (USFWS 1977). It is still both State- and Federally-Endangered, although it was recently proposed for downlisting to Federally-Threatened (USFWS 2012).

*Castilleja grisea* is mostly restricted to the island's canyons, but may have been more widespread on the upland flats historically (Raven 1963). More than a century of grazing pressure reduced its global population to only about 450 individuals by 1979 (Heckard et al. 1987). Finding a living *Castilleja grisea* specimen at that time was so difficult that it often involved climbing steep rocky cliffs, just about the only habitat that was not accessible to the island's feral goats (Oberbauer 1978).

Following the removal of feral herbivores from the island by the U.S. Navy from 1972 to 1991, populations of *Castilleja grisea* have been making a strong recovery. By 1997, there were 37 known occurrences, consisting of somewhere from 1 to 600 individuals each; the total global population was estimated at more than 3,500 individuals (Junak and Wilken 1998, S. Junak pers. comm. 2000). There are currently 38 known element occurrences (EOs) with an estimated global population of between 35,000 and 61,700 individuals. A lower estimate of 11,733 individuals across 29 occurrences was provided by the U.S. Fish and Wildlife Service (USFWS 2012), but more recent data suggest higher population numbers. Surveys conducted in the 2011 and 2012 field season yielded a total of approximately 35,000 individuals, but some parts of the island could not be surveyed, so this estimate serves as a lower bound (SERG 2012, E. Howe. pers. comm. 2013). Data from the CNDDDB indicate that there are about 61,700 individuals; 47,600 of those plants are included in CNDDDB EO #3, a large occurrence spanning 15 km along the island's rugged eastern side (see "Localities" and "Populations" sections of the attached "Locations\_CastillejaGrisea" spreadsheet). However, there is some overlap in population counts within EO #3, so the actual global population is likely less than 61,700 (E. Howe pers. comm. 2013). Given the large number of individuals and the broad geographic extent of *C. grisea* on San Clemente Island, obtaining highly accurate population counts has been a challenge, but the Navy is currently considering new survey methods to improve accuracy (B. Munson pers. comm. 2013).

Recent intensive survey work by the Soil Ecology and Restoration Group (SERG 2012) has been crucial in documenting the successful recovery of *C. grisea*. Of the 38 known occurrences, three are presumed extirpated and four are historical, but presumed extant (occurrences not documented in the past 20 years are considered historical by the CNDDDB). The remaining 31 occurrences are recent, with 24 of them being ranked “good” or “excellent” by the CNDDDB. The largest occurrence (CNDDDB EO #3) is greater than all the other occurrences combined in terms of number of plants and geographic area. Of the known occurrences, 17 of them have over 100 individuals. Although there is now only one more known occurrence than what was previously thought in 1998, there have actually been 12 occurrences added to the CNDDDB since 1998 (CNDDDB 2012), an indication of recruitment and/or intensification of survey effort. Many of the older occurrences were combined because recent surveys showed that they were not separated by more than one quarter mile, thus reducing the total number of occurrences.

An in-depth assessment of the threats to *Castilleja grisea* was included in the USFWS (2012) proposal, which detailed the threats from land use, fire and fire management, erosion, and nonnative plants (note that the USFWS estimated a total of 29 occurrences, so threats to occurrences are based on that number instead of the total of 38 occurrences documented by the CNDDDB). Land use on the island is detailed in the attached “Background\_SanClementIsland” document, and is expected to only have minimal, diffuse effects on *C. grisea* occurrences (USFWS 2012). Junak and Wilken (1998) reported fire as a threat to plants in the southern part of the island. Although in-depth studies on the effects of fire on *C. grisea* have not been conducted, the plant has survived and even expanded its distribution in areas that have burned (USFWS 2012). The USFWS (2012) estimated that about 65% of the 29 occurrences are in areas that could be subject to recurrent fires caused by military training. The Navy installs fuel breaks using techniques such as strip burning, herbicides, and fire retardant. While the fuel breaks pose minor threats to about 20% of *C. grisea* occurrences, their benefit in controlling fires outweighs the low-level, diffuse effects they pose to some occurrences (USFWS 2012). Erosion is also expected to affect some occurrences, particularly those on the steep eastern escarpment. Erosion increased and passed natural levels during the period of overgrazing, and there may still be some residual impacts. Also, military activities may increase erosion rates through road construction, soil compaction, and disturbance, but many of the occurrences of *C. grisea* are on very rugged terrain and in areas [with no current and proposed future training, and are of low military value as defined by the Integrated Natural Resource Management Plans](#) ~~that are restricted from Navy use~~ (B. Munson pers. comm. 2012). Furthermore, the Navy implements erosion control measures in all projects, and an island-wide erosion control plan is currently being developed (USFWS 2012). Nonnative plants also pose a low-level threat to *Castilleja grisea*. Nonnative grasses are frequently found in low abundance in the maritime desert scrub habitat where *C. grisea* frequently occurs. Inspections of vehicles that are brought onto the island help to prevent new invasions, and existing invaders are kept in check through management and control efforts by the SERG crew (USFWS 2012; K. Gross, A. Sims, and D. Slakey pers. obs. 2012). Although continued low-level threats to *C. grisea* are detailed in the USFWS report, the successful recovery of *C.*

*grisea* after the removal of feral herbivores suggests that the species as a whole is no longer highly threatened.

With a total of 38 occurrences, and only 24 of which ranked as “good” or “excellent” in the CNDDDB, *Castilleja grisea* has not met the general criteria for downranking from CRPR 1B to CRPR 4 based on occurrence numbers alone (in general, CRPR 1B contains plants that are known from fewer than 50 occurrences ranked “excellent” or “good” by the CNDDDB). However, with its current high number of estimated individuals and very large area of occupancy of some occurrences (namely CNDDDB EO #3), it is apparent that *C. grisea* has made a very strong recovery. It is also still actively recruiting throughout the island (K. Gross, A. Sims, and D. Slakey pers. obs. 2012), and its distribution and population sizes are expected to continue to increase with time (E. Howe and B. Munson pers. comms. 2012). Given its recovery, the presence of very large occurrences with high numbers of individuals, lack of serious threats from Navy activities in the majority of occurrences, and the active management of its area of occupancy by the Navy and SERG, CNPS and CNDDDB recommend downranking *C. grisea* from 1B.2 to 4.2 **1B.3**. If significant threats to *Castilleja grisea* occur/decrease in the future, and/or if populations and individuals appear to decline/increase, CNPS and CNDDDB will re-evaluate its status at that time.

### Recommended Actions

CNPS: Re-rank from 1B.2 to 4.2 **1B.3**

CNDDDB: Keep as G3 / S3

### Revised CNPS Inventory Record

*Castilleja grisea* Dunkle

San Clemente Island paintbrush

Orobanchaceae

Rank 4.2 **1B.3**

San Clemente Island

San Clemente Island Central (SCMC) 3211874, San Clemente Island North (SCMN) 3211885, San Clemente Island South (SCMS) 3211873

Coastal bluff scrub, coastal scrub / rocky, often canyons; elevation 10 – 535 meters.

Perennial hemiparasitic herb; blooms December – August.

~~Previously on List 1B.2;~~ **Significantly recovered** recovering after removal of feral herbivores on SCM Isl. by the Navy. Potentially threatened by Navy activities, frequent fire and fire control measures, erosion, and non-native plants. See *Bulletin of the Southern California Academy of Sciences* 42:31 (1943) for original description.

### Literature Cited

Heckard, L., California Natural Diversity Database, and California Native Plant Society. 1987. California Native Plant Status Report for *Castilleja grisea*.

Junak, S. and D. Wilken. 1998. Sensitive plant status survey: NALF San Clemente Island, California. Final Report. Santa Barbara Botanic Garden Technical Report No. 1.

Sent to SW, C. Burton, A. Folarin, E. Havstad, E. Howe, K. Leyse, D. Mathews, K. Merrill, B. Munson, K. Ulrich on 01/10/2013

Oberbauer, T.A. 1978. The story of a rare plant picture. *Fremontia* 6(1): 21.

\_\_\_\_. 1994. San Clemente Island Revisited. *Fremontia* 22(2): 11-13.

Raven, P.H. 1963. A Flora of San Clement Island, California. *Aliso* 5(3): 289-347.

Soil and Ecology Restoration Group (SERG). 2012. Native plant occurrences on San Clemente Island [Shapefile geospatial data]. Created by E. Howe (November 2012).

U.S. Fish and Wildlife Service (USFWS). 2012. Endangered and threatened wildlife and plants; 12-month finding on a petition to downlist three San Clemente Island plant species; proposed rule to reclassify two San Clemente Island plant species; taxonomic correction. Federal Register 77(95): 29078-29128.

\_\_\_\_. 1977. Endangered and threatened wildlife and plants: determination of critical habitat for six endangered species. Federal Register 42(155): 40685-40694.