

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Castilleja grisea*
(San Clemente Island paintbrush)

Current Classification: Endangered



Castilleja grisea (San Clemente Island paintbrush) on San Clemente Island south of Stone Canyon,
Photocredit: Anna Braswell (USFWS 2011).

U.S. Fish and Wildlife Service

Carlsbad, CA

July 2012

Federal Register (FR) Notice Citation Announcing Initiation of This Review:

A notice announcing initiation of the 5-year review for this taxon and the opening of a 60-day period to receive information from the public was published in the **Federal Register** on May 21, 2010 (USFWS 2010, pp. 28636–28642). No information relevant to *Castilleja grisea* was received. A 90-day finding on a petition to downlist *C. grisea* was published in the **Federal Register** on January 19, 2011, and indicated that a status review was being conducted (USFWS 2011, pp. 3069–3074).

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Methodology Used to Complete This Review:

On January 19, 2011, we announced a 90-day finding in the **Federal Register** (USFWS 2011, pp. 3069–3074) that a 2010 petition from the Pacific Legal Foundation to downlist *Castilleja grisea* presented substantial information to indicate that the petitioned action may be warranted. We published a 12-month finding and a proposed rule to reclassify *C. grisea* from endangered to threatened in the **Federal Register** on May 16, 2012 (USFWS 2012, pp. 29078–29128). We compiled the best scientific and commercial information available regarding past, present, and future threats faced by the species, and used that information to assess the status of *C. grisea* in our 12-month finding. We also worked with the U.S. Department of the Navy (Navy) (Bryan Munson) to incorporate current information and data relevant to the taxon reviewed here. Our determination included an analysis of the information provided in the petition as well as other available information on the current status of and threats to *C. grisea*, compared to its status when it was listed as endangered on August 11, 1977 (USFWS 1977, pp. 40682–40685). Included here is a brief summary of the information in the proposed rule; for a complete review of the threats (five-factor analysis), please see the proposed rule (USFWS 2012, pp. 29078–29128).

Application of the 1996 Distinct Population Segment (DPS) Policy:

The Endangered Species Act (Act) defines “species” as including any subspecies of fish or wildlife or plants, and any distinct population segment (DPS) of any species of vertebrate wildlife. This definition of species under the Act limits listing as distinct population segments to species of vertebrate fish or wildlife. Because the species under review is a plant, the DPS policy is not applicable, and the application of the DPS policy to the species’ listing is not further addressed in this review.

Background:

Since the 1970s, the distribution of *Castilleja grisea* has been documented, with its known range on coastal bluffs, slopes, canyons, escarpments and terraces across the southern two-thirds of the island (Helenurm *et al.* 2005, pp. 1221, 1226; Junak 2006, p. 47; USFWS 2007, p. 14) (Figures 1 and 2). San Clemente Island is owned by Navy and, with its associated offshore range complex, is the primary maritime training area for the Pacific Fleet and Navy Sea, Air, and Land teams. The island also supports training by the U.S. Marine Corps, the U.S. Air Force, and other military organizations. Extensive survey findings suggest that *C. grisea* has increased in prevalence throughout most of its historical range, and there are more individuals now than there were at the time of listing. It is unknown whether the higher number of occurrences represents detections due to increased survey efforts, recruitment from the seedbank, or recolonization by the listed taxa possibly as a result of the Navy's management actions.

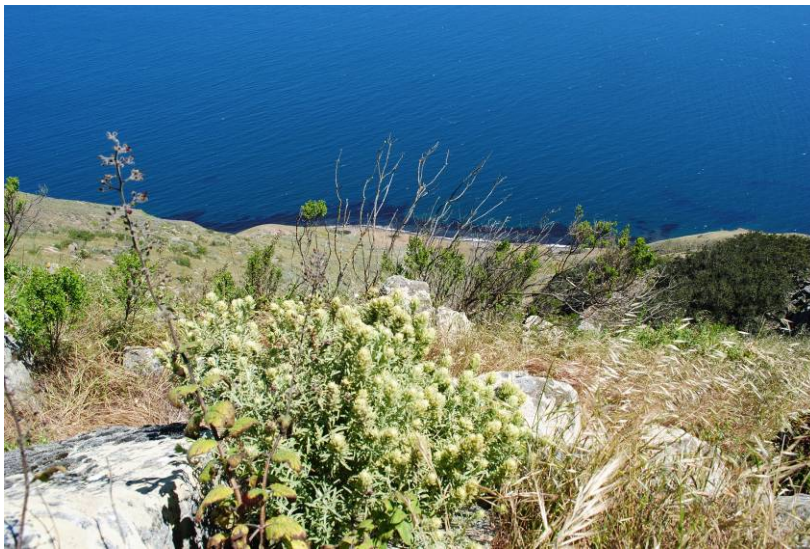


Figure 1: Habitat conditions in the occurrence of *Castilleja grisea* (light green and yellow shrub) near Stone canyon. Nonnative grass (*Avena* spp.) seen on the right-hand side of picture. Photocredit: Anna Braswell (USFWS 2011).



Figure 2: Habitat conditions in the occurrence of *Castilleja grisea* near Stone Canyon. Photocredit: Anna Braswell (USFWS 2011).

From 1850 until 1934, San Clemente Island was used for sheep ranching, cattle ranching, goat grazing, and pig farming (Navy 2002, pp. 3–4). These nonnative herbivores greatly changed the vegetative landscape of San Clemente Island and were cited in the final listing rule as the main cause for decline of *Castilleja grisea* (USFWS 1977, pp. 40682–40685). Sheep were removed from the island in the 1930s, but feral goats and pigs were not completely eradicated until 1992. This hemiparasitic plant is known to parasitize many different plants, although a definitive understanding of host-plant associations is currently unknown.

Review Analysis:

A brief discussion of threats impacting *Castilleja grisea* is discussed below. However, please refer to the proposed rule published in the **Federal Register** on May 16, 2012, for a complete discussion of the species status (including biology and habitat), five-factor analysis, and an evaluation of ongoing management efforts (USFWS 2011, pp. 29078–29128).

Castilleja grisea was listed as endangered on August 11, 1977 (USFWS 1977, pp. 40682–40685). Nineteen occurrences were known at the time of listing. Since listing, 10 new occurrences have been discovered. Based on the best available information at that time, we determined that *C. grisea* was primarily threatened by habitat alteration by grazing of feral goats and rooting of feral pigs, and competition from nonnative plants. We discussed in our 2007 5-year review that this threat was ameliorated in 1992 through the removal of herbivores; some remnant impacts from grazing, such as erosion, still exist. Additional threats to *C. grisea* discussed in the 2007 status review included: (1) erosion, (2) fire, (3) land use, and (4) access to Shore Bombardment Area (SHOBA). In 2007, access to SHOBA was described as a threat because it reduces the effectiveness of surveys and management efforts (USFWS 2007, p. 14). While access to portions of the island still limits our ability to assess the status of the taxon, access to SHOBA, in and of itself, is not considered a threat.

In the proposed rule we stated that threats to *Castilleja grisea* have changed since listing in 1977, with additional impacts from military land use, erosion, fire, fire management, and climate change, but significant declines in impacts from feral goats and pigs. A brief discussion of each threat factor is described below; however, based on the current distribution of this taxon and existing conservation efforts, overall impacts from current threats are reduced and minimized for *C. grisea*.

Factor A: Currently, the habitat of *Castilleja grisea* is threatened by destruction and modification caused by land use, erosion, nonnative plants, fire, and fire management (USFWS 2012, pp. 29078–29128). To help ameliorate these threats, the Navy is applying erosion control measures and developing an erosion control plan, implementing a Fire Management Plan, and an island-wide nonnative species control program (USFWS 2008, pp. 1–237). Though increased impacts associated with military training could impact habitat occupied by *C. grisea*, 16 of 29 occurrences fall outside of heavily impacted training areas where the most intensive habitat disturbances occur (USFWS 2012, pp. 29078–29128).

Factor B: Overutilization for commercial, recreation, scientific, or educational purposes of *Castilleja grisea* for any purpose is not currently considered a threat.

Factor C: The threat of grazing by feral goats and rooting of feral pigs was considered a serious threat to *Castilleja grisea* in the final listing rule (USFWS 1977, pp. 40682–40685) and has since been ameliorated. Currently, no other predators or diseases on San Clemente Island are known to pose a significant threat to *C. grisea*.

Factor D: *Castilleja grisea* occurrences are afforded protection through Federal (the Act and the National Environmental Policy Act) and military mechanisms (Sikes Act—Integrated Natural Resources Management Plan; USFWS 2012, pp. 29078–29128).

Factor E: Threats associated with movement of troops and vehicles, and fire continue to impact *Castilleja grisea* at 17 of 29 occurrences on San Clemente Island. The Navy is implementing a Fire Management Plan and an Integrated Natural Resources Management Plan to help minimize these threats (USFWS 2008, pp. 1–237). Climate change may also influence *C. grisea*, though the magnitude of this threat effect is largely unknown (USFWS 2012, pp. 29078–29128).

In our Proposed Rule, we carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by this species (USFWS 2012, pp. 29078–29128). After review of the information pertaining to the five threat factors, we find the ongoing threats are not sufficient to indicate that *Castilleja grisea* is presently in danger of extinction across its range. Though threats to *C. grisea* still exist and will continue into the future, the range of this taxon has substantially increased since listing (expanded from 19 to 29 occurrences), and the Navy is implementing conservation actions through their Integrated Natural Resources Management Plan to reduce threats impacting *C. grisea*. We recommended downlisting in our 2007 status review, and threats appear to have remained similar in magnitude and intensity since that time.

Recovery Criteria:

The Service published the California Channel Islands Species Recovery Plan (Recovery Plan) that included 10 plants and animals distributed among 3 of the Channel Islands, including *Castilleja grisea* (USFWS 1984, pp. 1–165). Following guidance in effect at that time, the Recovery Plan did not provide criteria that specifically addressed the threats identified for each species in the listing rule. Instead, it included six general objectives covering all taxa. The recovery objectives were developed using information available in 1984, and additional occurrences occupied by *C. grisea* have since been identified.

The Recovery Plan for *Castilleja grisea* established the following objectives for recovery of the species:

- (1) Identify present adverse impacts to biological resources and strive to eliminate them.
- (2) Protect known resources from further degradation by: (a) removal of feral herbivores, carnivores, and selected exotic plant species; (b) control of erosion in

- sensitive locations; (c) direct military operations and adverse recreational uses away from biologically sensitive areas.
- (3) Restore habitats by revegetation of disturbed areas using native species.
 - (4) Identify areas of San Clemente Island where habitat restoration and population increase of certain addressed taxa may be achieved through a careful survey of the island and research on habitat requirements of each taxon.
 - (5) Delist or upgrade the listing status of those taxa that achieve vigorous, self-sustaining population levels as the result of habitat stabilization, restoration, and preventing or minimizing adverse human related impacts.
 - (6) Monitor effectiveness of recovery effort by undertaking baseline quantitative studies and subsequent follow-up work (USFWS 1984, pp. 106–107).

In summary, while the Recovery Plan does not include taxon-specific downlisting or delisting criteria for measuring the recovery of *Castilleja grisea*, many of the actions identified in the Recovery Plan have been implemented to benefit this taxon. Most significantly, the Navy completed removal of feral goats and pigs from San Clemente Island in 1992. The improvement in the documented status of this taxon since suggests that the removal of these animals was integral to establishing vigorous, self-sustaining populations of plant taxa on the island. Threats have been reduced in areas occupied by *C. grisea* and many of the objectives have been met in part or full. Complementing the success of this conservation measure, the ecology and genetics of *C. grisea* has also been studied, and a number of programs are now in place to improve habitat suitability, prevent introductions of nonnative species, guide and track management efforts, and protect populations of these plant taxa. The Recovery Plan adopts a generalized strategy of eliminating or controlling selected nonnative species and restoring habitat conditions on the Channel Islands to support viable, self-sustaining populations of each of the addressed taxa. The Recovery Plan states that “[O]nce the threats to these taxa have been removed or minimized and the habitats are restored, adequately protected, and properly managed, reclassification for some taxa may be considered” (USFWS 1984, p. 108). Based on our review of the Recovery Plan in the proposed rule, we concluded that threats have been minimized and the status of *C. grisea* has significantly improved due to conservation measures being implemented on the island.

Synthesis:

Since listing and the removal of feral goats and pigs on San Clemente Island, the distribution of *Castilleja grisea* has expanded from 19 to 29 occurrences. These significant gains show that the species is recovering despite existing threats across the landscape. Additionally, the majority of the occurrences occupied by *C. grisea* (16 of 29 occurrences) fall outside of training areas where the most intensive habitat disturbances are likely to take place. Based on a review of the five-factor analysis, threats have been sufficiently removed or their imminence, intensity, or magnitude reduced to the extent that the species is no longer in danger of extinction throughout all or a significant portion of its range. Additionally, the status of *C. grisea* has improved due to activities being implemented by the Navy on San Clemente Island. We recommended reclassification of *C. grisea* from endangered to threatened status for two main reasons:

- (1) Since listing and the removal of feral goats and pigs on San Clemente Island, the distribution of *Castilleja grisea* has expanded from 19 to 29 occurrences, covering much of the island. These significant gains show that the species continues to expand despite existing threats across the landscape.
- (2) Under the Sikes Act, the Navy implemented an Integrated Natural Resources Management Plan to organize the management of natural resources on the island. This plan provides a framework and helps to ameliorate threats to listed species on the island and provide for long-term conservation planning. The Navy implemented nonnative plant management, avoidance and minimization measures, a Fire Management Plan, and is developing an erosion control plan to ameliorate impacts to the habitat where *Castilleja grisea* occurs.

In conclusion, we carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by this species. Though threats remain, management actions conducted by the Navy have helped to conserve listed species on the island. Their continued efforts as demonstrated through the Integrated Natural Resources Management Plan have helped to reduce impacts from military land use, erosion, nonnative plants, and fire. Based on this review of the information, pertaining to the five threat factors, we conclude threats have been sufficiently removed or their imminence, intensity, or magnitude has been reduced to the extent that *Castilleja grisea* is no longer in danger of extinction. However, ongoing threats remain throughout all or a significant portion of its range such that the species is likely to become an endangered species within the foreseeable future. Therefore, consistent with our combined 12-month finding and proposed rule to reclassify the species (USFWS 2012, pp. 29078–29128), we recommend a change in status from endangered to threatened for this taxon.

Recommendations for Future Actions:

- (1) Develop a systematic survey protocol for *Castilleja grisea* on San Clemente Island. These surveys should include confirmation of existing locations at greater regularity to better determine accurate population status and trend for the species. Additionally, these protocols should include the standardization of information collected such as habitat conditions, habitat type, number of plants, date collected, etc.
- (2) Conduct research to determine the host plant(s) of *Castilleja grisea* and degree of dependence on host plants.
- (3) Conduct studies to establish the fire tolerance and preferred fire regime of *Castilleja grisea*.
- (4) Work with the Navy to better estimate fire frequency in areas occupied by *Castilleja grisea* on San Clemente Island.

New Recovery Priority Number and Brief Rationale:

No change is requested at this time. The Recovery Priority Number for *Castilleja grisea* is 14, indicating a low degree threat and a high potential for recovery for this species.

References Cited:

- Helenurm, K., R. West, and S.J. Burckhalter. 2005. Allozyme variation in the endangered insular endemic *Castilleja grisea*. *Annals of Botany* 95: 1221–1227.
- Junak, S.A. 2006. Sensitive Plant Survey Data for San Clemente Island, California–Draft final Report. Collected for the Department of the Navy, Southwest Region under cooperative agreement with Naval Facilities Engineering Command South Division. 176 pp.
- [Navy] U.S. Department of the Navy, Southwest Division. 2002. San Clemente Island Integrated Natural Resources Management Plan Draft Final, January 2002. Prepared by Tierra Data Systems, Escondido, California. pp. 1 to 8-12 and Appendices.
- [USFWS] U.S. Fish and Wildlife Service. 1977. Determination that seven California Channel Island animals and plants are either Endangered Species or Threatened Species. **Federal Register** 42: FR 40682–40685.
- [USFWS] U.S. Fish and Wildlife Service. 1984. Recovery Plan for the Endangered and Threatened Species of the California Channel Islands. U.S. Fish and Wildlife Service, Portland, Oregon. 165 pp.
- [USFWS] U.S. Fish and Wildlife Service. 2007. *Castilleja grisea* (San Clemente Island Indian paintbrush) 5-year review. U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, Carlsbad, California. 19 pp.
- [USFWS] U.S. Fish and Wildlife Service. 2008. Biological Opinion San Clemente Island Military operations and fire management plan, Los Angeles County, California (Service File FWS–LA–09B0027–09F0040). [November, 2008].
- [USFWS] U.S. Fish and Wildlife Service. 2010. Endangered and Threatened Wildlife and Plants; Initiation of 5-year reviews of 34 species in California and Nevada; Availability of 96 complete 5-year reviews in California and Nevada. Notice of initiation of 5-year reviews; availability of completed 5-year reviews. **Federal Register** 75: FR 28636–28642.
- [USFWS] U.S. Fish and Wildlife Service. 2011. Endangered and Threatened Wildlife and Plants; 90-day finding on a petition to delist or reclassify from endangered to threatened six California species. Notice of 90-day petition findings and initiation of status reviews. **Federal Register** 76: 3069–3074.
- [USFWS] U.S. Fish and Wildlife Service. 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 Corrections. **Federal Register** 77: 29078–29128.

**U.S. FISH AND WILDLIFE SERVICE
5-YEAR REVIEW**

***Castilleja grisea* (San Clemente Island paintbrush)**

Current Classification: Endangered

Recommendation Resulting from the 5-year Review:

- Downlist to Threatened
- Uplist to Endangered
- Delist
- No change needed

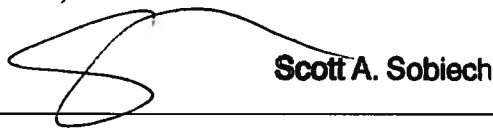
Review Conducted By: _____ Carlsbad Fish and Wildlife Office _____

FIELD OFFICE APPROVAL:

Lead Field Supervisor, U.S. Fish and Wildlife Service

ACTING

Approve _____


Scott A. Sobiech

JUN 25 2012

Date _____

**Lead Assistant Regional Director, Ecological Services, U.S. Fish and Wildlife Service,
Region 8**

Approve _____



Date 7/10/12