5-YEAR REVIEW

Cercocarpus traskiae
(Catalina Island mountain-mahogany)

GENERAL INFORMATION:

Species*:* *Cercocarpus traskiae* (Catalina Island mountain-mahogany), a plant species

Date listed under the Endangered Species Act: August 8, 1997

Federal Register (FR) citation(s): USFWS 1997 (62 FR 42692)

Classification: Endangered

BACKGROUND:

Under the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq*.), the U.S. Fish and Wildlife Service (USFWS), referred to as "we" in this document, maintain lists of endangered and threatened wildlife and plant species (referred to as the List) in the Code of Federal Regulations (CFR) at 50 CFR 17.11 (for wildlife) and 17.12 (for plants). Section 4(c)(2)(A) of the Act requires us to review each listed species' status at least once every 5 years.

Most recent status review: USFWS 2007. *Cercocarpus traskiae* (Catalina Island mountain-mahogany) 5-year review: Summary and evaluation. Prepared by the Carlsbad Fish and Wildlife Office, Carlsbad, California. September 2007. 15 pp.

We initiated a status review for *Cercocarpus traskiae* in 2006. The review was finalized on September 24, 2007, and recommended no change in status.

FR Notice citation announcing this status review: USFWS 2020 (85 FR 4692); Endangered and Threatened Wildlife and Plants; Initiation of 5-year Status Reviews of 66 Species in California and Nevada; January 27, 2020. *Federal Register* 85:42692–4694.

On January 27, 2020, we published a FR notice announcing initiation of the 5-year review of this species, and the opening of a 60-day comment period to receive information (USFWS 2020, pp. 4692–4694). No comments relative to *Cercocarpus traskiae* were received.

Species Background: *Cercocarpus traskiae* is an evergreen tree or shrub in the Rosaceae (rose) family that reaches 15 feet tall and produces basal sprouts. Plants are believed to be long-lived and may take several years to reach reproductive maturity. Though the species has been outplanted to other areas on the island, naturally occurring plants have only been documented on the southwestern coast of Santa Catalina (Catalina) Island in Southern California, in an area of the island known as Wild Boar Gully (or Salta Verde Point). The Catalina Island Conservancy (CIC), a non-profit private land trust, owns about 88 percent of Catalina Island, including all of Wild Board Gully where *C. traskiae* occurs.

ASSESSMENT:

Information acquired since the last status review:

This 5-year review was conducted by the USFWS's Carlsbad Fish and Wildlife Office. Data for this review were solicited from the public and interested parties through a FR notice announcing this review on January 27, 2020. We also contacted State agencies, species experts, non-governmental organizations, partners, and stakeholders to request any data or information we should consider in our review. Additionally, we conducted a literature search and a review of information in our files.

Abundance

Blanche Trask found 40 to 50 plants when she discovered *Cercocarpus traskiae* in 1897 (Eastwood 1898, p. 136). At the time of listing, 100 years after the discovery of the species, *C. traskiae* was only known from a single population of six mature trees (USFWS 1997, p. 42693). Early genetics work identified the six genetically pure *C. traskiae* trees (named tree A, B, C, D, WB1, and WB2; Figure 1) (Rieseberg and Swensen 1996, p. 313). Five additional plants in the watershed were identified as being of hybrid origin with the naturally occurring *C. betuloides* var. *blancheae* (trees named E, F, G, WB3, and BL) (Rieseberg and Swensen 1996, p. 313). At the time of the last 5-year review in 2007, one sapling appearing to be morphologically pure *C. traskiae* had grown to the size of an adult tree (named WB4), and thus we considered the number of mature individuals of the species to be seven (USFWS 2007, p. 5).

Since the last status review, one additional tree appearing to be morphologically pure *Cercocarpus traskiae* was discovered in 2008 (named SR1) (CNDDB 2021), and one seedling that has not yet been morphologically or genetically described was discovered in 2011 (named SR2; Figure 1) (Kauppinen 2021a, *in litt.*). Therefore, the current number of *C. traskiae* trees is now eight (due to SR1) and could be up to nine (if including SR2); however, additional morphological and genetic analysis of newly discovered individuals is needed to confirm SR2 genetics. Additionally, a basal diameter measurement of SR2 is needed to confirm if this individual is large enough to now be considered an adult [3 cm (1.2 in)].

On February 10, 2021, staff with the CIC visited Wild Boar Gully to check the survivorship of known adult *Cercocarpus traskiae* individuals as the population had not been evaluated since 2015 (Kauppinen 2021b, *in litt.*). Of the individuals visited during the survey (SR2, A, B, WB1, C, D, WB3, WB4, E, F, G), all were still alive. Some individuals are now showing strong sectoring in the crown, especially trees E and G (both hybrids), where an estimated 60 percent of the crown was dead (Kauppinen 2021b, *in litt.*). None of the trees examined on February 10, 2021, had strong central boles; most growth was in the form of suckers [some of which were up to 12.7 cm (5.0 in) in diameter breast height] (Kauppinen 2021b, *in litt.*).

This reported shift in morphology from tree form to shrub form was noted in a monitoring report in 2008 (Landis 2008, p. 11). Monitoring in the 2000s showed that basal sprouts on some trees were thick enough to be measured as independent trunks (Landis 2008, p. 10). There appears to be a pattern of a rotting central trunk surrounded by maturing basal sprouts, suggesting that stems may have a limited lifespan and the current elder generation of *Cercocarpus traskiae* individuals may be becoming shrubs after having been trees (Landis 2008, p. 10). We have no

information regarding the biological implications of this shift to shrub form, and how it may affect population demographics.

Inventory and monitoring of recruits (i.e., seedling and saplings) occurred throughout the 2000s (Knapp 2006, p. 5), but new information since the last 5-year status review regarding recruits is not available at this time.

Outplantings

Cuttings of unknown genetic stock were outplanted at eight locations on Catalina Island in the late 1980s and 1990s, but the status (e.g., survivorship) of those outplantings is currently unknown (Figure 2) (Knapp 2006, p. 8). An additional outplanting effort using cuttings of genetically pure *Cercocarpus traskiae* individuals was proposed at the time of our last status review (Knapp 2006, p. 8). As of this review, we understand that cuttings were collected, but the CIC ultimately did not undertake the outplanting effort because the cuttings did not survive (Knapp 2021, *in litt.*).

Taxonomy

We consider the listed entity to be *Cercocarpus traskiae*, as noted in the Jepson eFlora Project (Vanden Heuvel and Lis 2012, pp. 1171–1172). However, some recent taxonomic treatments do not recognize this name at the species level, instead using the taxon rank of variety, with the name *C. betuloides* var. *traskiae* (Henrickson and Vanden Heuvel 2014).

Threats

The primary threats to the species at listing were degradation of habitat and direct herbivory, browsing, and rooting from introduced herbivores (i.e., goats, pigs, bison, and deer); unauthorized collection; invasion of exotic species; fire; and hybridization with *Cercocarpus betuloides* var. *blancheae* (USFWS 1997, pp. 42697–42700).

In our 2007 status review (USFWS 2007, pp. 6–11), we determined the species was threatened by fire and hybridization (Factor E); and by browsing (Factor C) and habitat degradation (Factor C) from introduced herbivores. Impacts from herbivores were considered a rare event because herbivore populations had been reduced on the island since the time of listing, and an herbivore exclosure fence was constructed around the *Cercocarpus traskiae* population at Wild Boar Gully to protect the species in 1999 (Knapp 2006, p. 2). However, we considered historical erosion and degradation of habitat from past herbivores (both Factor A) to be remaining threats. The threat of exotic species (Factor E) and unauthorized collection (Factor B) was reduced at the time of the last status review. Encroaching native plants, small population size, and landslides (all Factor E) were considered new threats.

We believe each of the threats discussed in the 2007 status review are still relevant and acting upon the population at Wild Boar Gully, although the magnitude of each threat may be slightly higher or lower than in 2007. In addition, climate change may threaten population resilience currently and into the future; however, we have not evaluated the individual and species needs of *Cercocarpus traskiae* relative to a changing climate. Further investigation into the threat of climate change is needed.

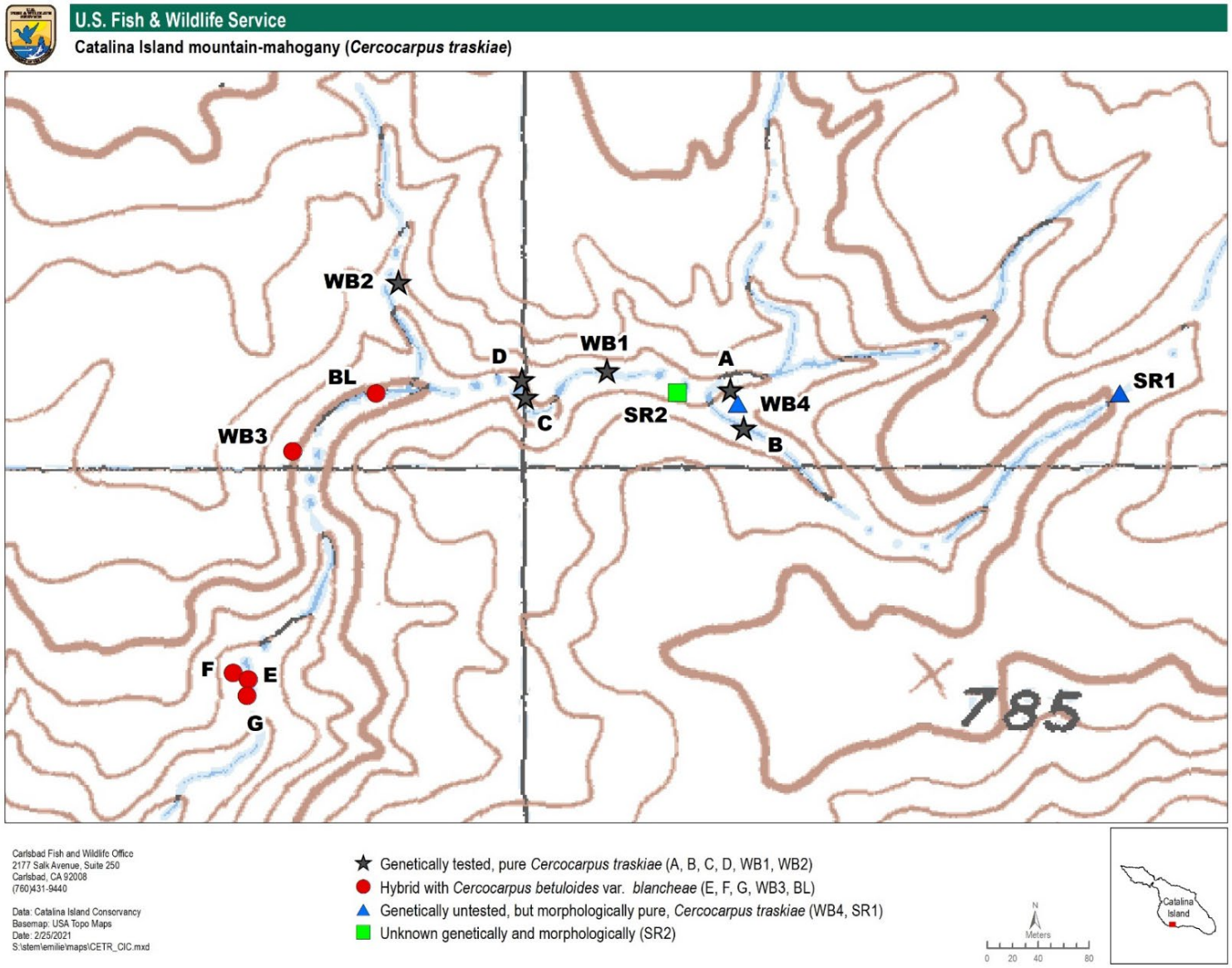

Figure 1. *Cercocarpus traskiae* locations on Catalina Island. Data by CIC, mapping by USFWS (Kauppinen 2021a, *in litt.*).

Conservation

In 2019, a Masters student at University of California – Irvine developed a research proposal in partnership with the CIC and the Tree of Life Nursery to use plant tissue culture to produce viable genetically "pure" *Cercocarpus traskiae* propagules for restoration and genetic preservation of the species (Alison 2019, p. 2). The research effort shifted to other priority species and was not completed beyond preliminary methods testing for *C. traskiae*. However, interest remains from staff at CIC and the Tree of Life Nursery to develop a protocol for tissue culture propagation of *C. traskaie*, and proposals for external funding are in development. Tissue culture propagation for *C. traskiae* is a novel conservation tool that can produce genetically pure, clonal lines from every remaining wild individual for *ex situ* storage (e.g., germplasm or cryopreservation banks) or for future translocations. The species may benefit from tissue culture propagation instead of traditional nursery techniques (e.g., propagation through cuttings) or *ex situ* storage (e.g., seed banking) because: (1) the progeny (i.e., seeds) of *C.traskiae* in Wild Boar Gully may be the result of hybridization with *C. betuloides* var. *blancheae* and therefore traditional seed banking or nursery cultivation may not result in the genetic stock desired; and (2) previous efforts to translocate cuttings from genetically pure *C. traskiae* have failed. Tissue culture propagation is a promising method to explore for the conservation of *C. traskiae*. Successful tissue culture propagation for *C. montanus* was recently demonstrated in Utah, providing additional support for use of the tool within the genus (Paudel 2020, p. 66). Ultimately, one goal of the conservation effort is to outplant genetically pure populations of *C. traskiae* outside of Wild Boar Gully (Kauppinen 2021c, *in litt.*). Establishing additional populations of *C. traskiae* aligns with the conservation recommendation #6 below, as discussed in our 2007 status review (USFWS 2007, p. 13).

In addition, the Ackerman Native Plant Nursery on Catalina Island has 28 *Cercocarpus traskiae* individuals in propagation, most of which are about 10 years old (Kauppinen 2021b, *in litt.*). These individuals provide some additional species redundancy should a catastrophic event occur in Wild Boar Gully, but their genetics are unknown and they may be of hybrid origin.

Conclusion:

After reviewing the best available scientific information, we conclude that *Cercocarpus traskiae* remains an endangered species. The evaluation of threats affecting the species under the factors in 4(a)(1) of the Act and analysis of the status of the species in our 2007 status review remains an accurate reflection of the species current status.

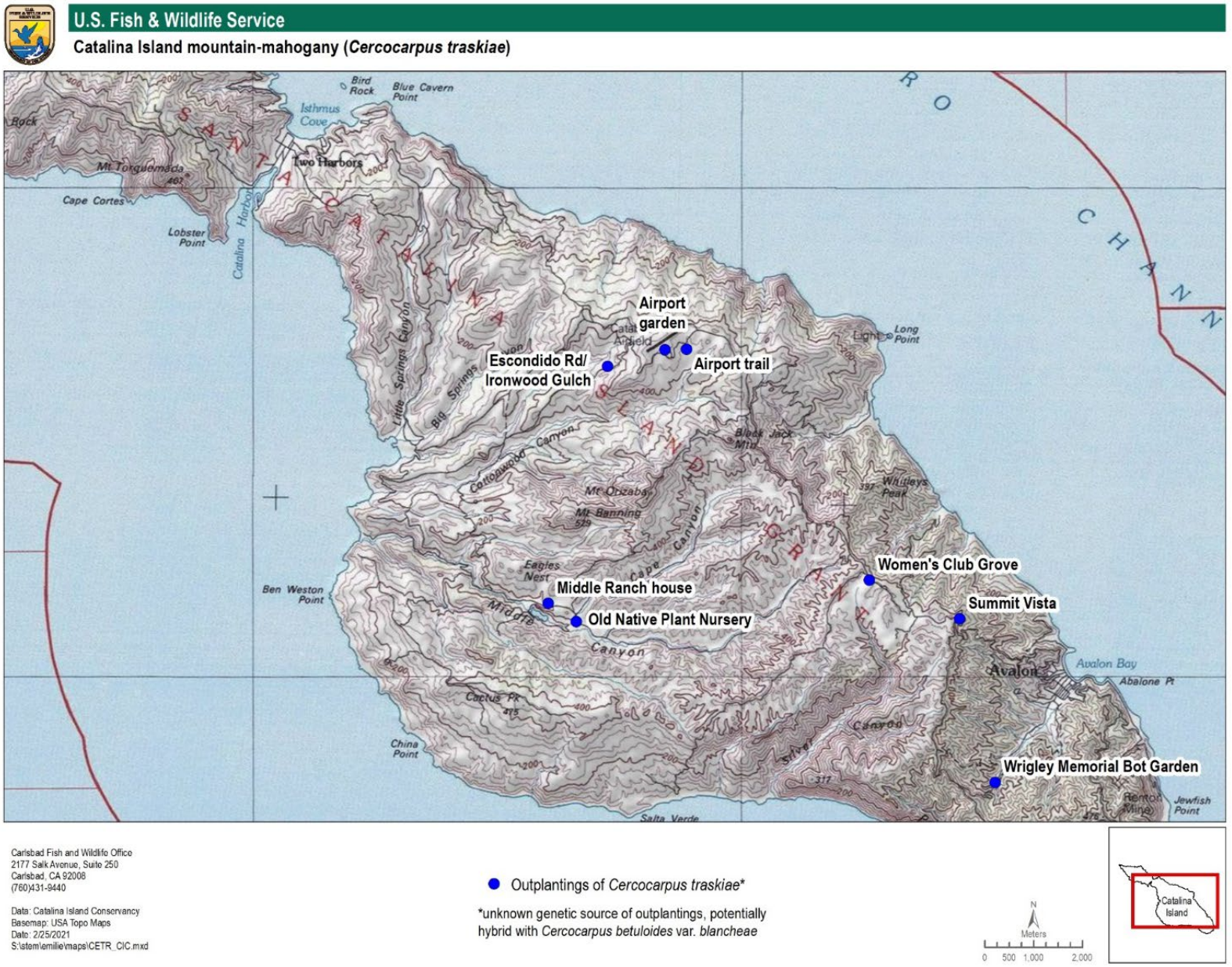

Figure 2. *Cercocarpus traskiae* outplantings of unknown genetic stock on Catalina Island. Data by CIC, mapping by USFWS (Kauppinen 2021a, *in litt.*).

RECOMMENDATIONS FOR FUTURE ACTIONS:

The recommended actions listed below were identified in the 2007 status review (USFWS 2007, p. 12-13). The actions were intended to reduce threats to *Cercocarpus traskiae* and provide information to better understand the biological and physical factors limiting the population growth and distribution. We recognize that conservation of *C. traskiae* will require cooperation and coordination with partners (especially CIC) to minimize impacts from current threats, aid future restoration, and maximize effectiveness of limited funding. We continue to believe the actions described in 2007 are relevant to the conservation of *C. traskiae*. Minor updates to the actions from 2007 are underlined below.

1. Establish an effective *ex situ* conservation program for this species (e.g., seed bank, germplasm or cryopreservation bank, or living collection) that includes maintenance of genetic diversity and plans to facilitate out-plantings, including *ex-situ* populations of the species to protect against detrimental stochastic events.

2. Determine the incidence, nature, and management consequences of self-incompatibility in *Cercocarpus traskiae.*

3. Determine the genetic identity of all of the *Cercocarpus* seedlings, saplings, and adults present in Wild Boar Gully, as well as plants at older outplanting sites.

4. Determine the potential threat from continuing hybridization of *Cercocarpus traskiae* and occurring *C. betuloides* var. *blancheae* and implement management actions to alleviate the threat.

5. Identify the micro-habitat requirements most conducive to seedling production and establishment.

6. Determine the best method (e.g., tissue culture propagation or cuttings) for establishing additional populations that are self-sustaining and capable of participating in the evolutionary future of the species. Establish success criteria and remediation measures for these established populations.

We identified the following additional recommendation to supplement those described above from 2007:

7. Conduct surveys for *Cercocarpus traskiae* throughout potentially suitable habitat on Catalina Island, starting with areas near Wild Boar Gully with similar soils and environmental conditions as the currently occupied location. A co-occurring endangered plant species, *Sibara filifolia*, has recently been detected to the west of the herbivore exclosure fence at Wild Boar Gully where similar gabbro soils are present, and surveys for *C. traskiae* should be considered in this location, as well as others, to ensure additional individuals have not gone undetected and therefore exposed to unmanaged threats (e.g., herbivory).

8. Complete updated inventory and monitoring of adults and recruits (i.e., seeds, seedlings, and saplings) at the Wild Boar Gully population. Locate, inventory, and monitor past outplantings. These efforts will update our understanding of the current species status.

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PERSONAL COMMUNICATIONS, *IN LITTERIS*:

Kauppinen, S. 2021a. Native Plant Manager, Catalina Island Conservancy. Email correspondence to Colleen Draguesku, USFWS, Carlsbad Fish and Wildlife Office, Carlsbad, California. Dated February 5, 2021. Subject: Ctrask files.

Kauppinen, S. 2021b. Native Plant Manager, Catalina Island Conservancy. Email correspondence to Colleen Draguesku, USFWS, Carlsbad Fish and Wildlife Office, Carlsbad, California. Dated February 10, 2021. Subject: C. trask map.

Kauppinen, S. 2021c. Native Plant Manager, Catalina Island Conservancy. Email correspondence to Colleen Draguesku, USFWS, Carlsbad Fish and Wildlife Office, Carlsbad, California. Dated January 28, 2021. Subject: Re: Cercocarpus traskiae 5-Year Review in 2021.

Knapp, D. 2021. Director of Conservation and Research, Santa Barbara Botanic Garden. Email correspondence to Colleen Draguesku, USFWS, Carlsbad Fish and Wildlife Office, Carlsbad, California. Dated February 10, 2021. Subject: Re: Cercocarpus traskiae outplantings?

FIELD OFFICE APPROVAL:

Lead Field Supervisor, Fish and Wildlife Service

☒ Approve

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