

5-YEAR REVIEW

Delhi Sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*)

GENERAL INFORMATION

Species: Delhi Sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*), an invertebrate subspecies

Date listed under the Endangered Species Act: September 23, 1993

Federal Register citation: USFWS 1993 (58 FR 49881)

Classification: Endangered

Recovery Plan: Amendment, October 4, 2019

Recovery Priority Number: 6C

BACKGROUND

Under the Endangered Species Act of 1973, as amended (Act; 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. 2008. Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*); 5-Year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office, Department of the Interior. 30 pp.

We initiated a status review for the Delhi Sands Flower-loving Fly in 2005. The review was finalized on March 31, 2008 and recommended no change in status.

Federal Register notice announcing this status review: On January 27, 2020, we published a *Federal Register* notice announcing initiation of the 5-year review of this species, and the opening of a 60-day period to receive information from the public (USFWS 2020a, pp. 4692–4694). No comments relative to the Delhi Sands Flower-loving Fly were received.

Species Overview and Habitat: The Delhi Sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*; DSF) belongs to the Dipteran family Mydidae. It is a relatively large fly, ranging from approximately 1.5 to 4 centimeters (0.6 to 1.6 inches). The species is associated with arid, sandy habitats, including dune systems of inland desert valleys, rivers, deltas, and beach strands. The DSF is generally found in areas containing Delhi fine sands soil type and is only known from Riverside and San Bernardino Counties, with most occupied DSF habitat located within a limited area of southwestern San Bernardino County.

ASSESSMENT

Information acquired since the last status review

This 5-year Review was conducted by the USFWS Carlsbad Field Office. Data for this review were solicited from the public and interested parties through a *Federal Register* notice announcing it on January 27, 2020. Additionally, we conducted a literature search, a review of information in our files, and a review of information included in the published 2019 recovery plan amendment. We received additional survey reports/monitoring reports from Osborne Biological Consulting, Dale Powell, Amec Foster Wheeler Environmental Infrastructure Incorporated, Forensic Entomology Services, Environmental Intelligence LLC, and EnviroPlus Consulting Incorporated following the completion of the 2008 5-year status review (USFWS 2020b; CFWO GIS database; Figure 1).

SUMMARY OF NEW INFORMATION SINCE 2008

Distribution

The DSF is presumed to be extant in each of the three Recovery Units (RU) (Ontario RU, Jurupa RU, and Colton RU). In 2018, several individuals were reported in the Ontario RU near a small, conserved parcel (Powell 2018, entire). Within the Jurupa RU and Colton RU, five core areas have been identified where larger DSF populations are most recently known; one in the Jurupa RU [Southridge/Teledyne Core (22 ha; 54 acres)] and four in the Colton RU [King is Coming Core (91 ha; 225 acres), Hospital Core (45 ha; 111 acres), Colton Dunes Core (174 ha; 430 acres), and Angelus Core (104 ha; 257 acres)] (USFWS 2019, Figure 1). These core areas comprise several separate land parcels, some of which are conserved. We note that insufficient data are available to adequately delineate unique biological populations, and we use the term “population” in this review to indicate physically separated locations occupied by the subspecies to be consistent with language in the recovery plan.

Our analysis of post-2008 5-year review information indicate the species is still present in most areas of the species’ current range proximal to, if not within, the five core populations and the recently documented population in the Ontario RU. Hence, the species distribution remains essentially the same as described in our 2008 5-year review. One exception to this is the recent observation south of the Southridge/Teledyne Core in the Jurupa RU (Figure 1). This observation illustrates two important pieces of new information: possible occupancy of lands contiguous with conserved areas not identified as DSF habitat (it was not mapped as such in existing databases), and ongoing threats to habitat from development (adjacent, likely formerly occupied habitat north of Granite Hill Drive has been developed since 2007). However, the available Delhi Sands soil GIS layers are generally considered incomplete or inaccurate in places and flies have been found outside of its boundaries (USFWS 2019, p. 3).

2021 5-year Review for Delhi Sands Flower-Loving Fly

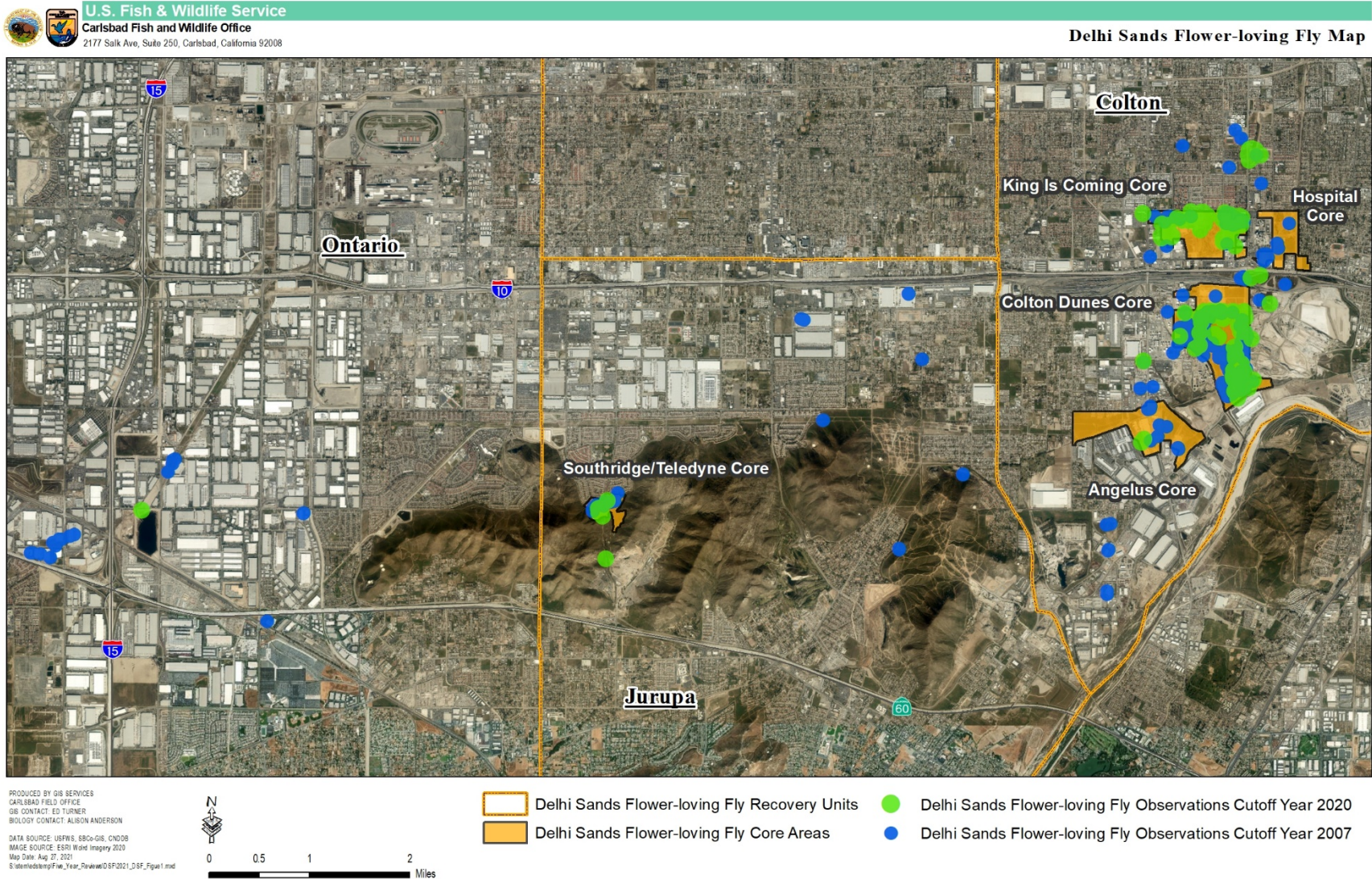


Figure 1. Delhi Sands flower-loving fly observations up to 2007 (blue) and from 2008 to 2020 (green) within the Ontario, Jurupa, and Colton Recovery Units.

Threats

At listing, development, agriculture, disking for fire control, off-road vehicles, trash, collection of individuals, and small population size were considered threats to DSF (USFWS 1993, pp. 49884–49885). The 1997 recovery plan noted that dumping of manure and sand mining were threats at listing that are no longer on-going. In 2008, invasive species was identified as an additional threat due to nonnative plants that compete with native plants and reduce arthropod diversity and abundance. The invasive, nonnative Argentine ants (*Linepithema humile*) can impact DSF individuals and populations through direct attack, predation, and competition (USFWS 2008, p. 22). These threats were considered on-going in the 2019 recovery plan amendment (USFWS 2019, p. 7). Based on the best available information, habitat destruction associated with development continues to be the primary threat followed by weed abatement for fire control, trash dumping, off-road vehicle use, small population size, and isolation due to fragmentation.

CONCLUSION

In the 2008 5-year review, we recommended no status change for DSF. Since 2008, we have received new occurrence information that informs our understanding of the species distribution. Based on currently available information, DSF is extant in the 3 RUs and new observations were recorded in the Ontario and Jurupa RUs. After reviewing the best available scientific information, we conclude that DSF 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 2008 5-year review and 2019 recovery plan amendment remain an accurate reflection of the species current status.

RECOMMENDATIONS FOR FUTURE ACTIONS

The recommended actions listed below are to be completed over the next 5 years. Successful implementation of these actions will reduce threats to DSF. We recognize that conservation of this taxon will require cooperation and coordination with partners to minimize impacts from current threats and aid with future restoration efforts.

Since listing, efforts have been made to conserve habitat in the five populations (core areas) since habitat loss continues to be the primary threat. There are several parcels currently conserved for the DSF in the three RUs (USFWS 2020b, CFWO GIS database), but much of the remaining potential and suitable habitat is in small, fragmented parcels. Most of this habitat is not actively managed to maintain or increase the overall abundance of DSF. Thus, while some progress has been made at reducing these threats, loss and degradation of habitat remain the primary threats to survival and recovery of DSF. To be self-sustaining, each population will need to be able to move among and recolonize suitable isolated habitat patches. This would minimize impacts from inbreeding, maintain genetic diversity, and increase population size of the DSF. We have identified the following recommendations to aid recovery of the DSF:

1. Review function of the Ontario RU. Determine if all conserved land parcels, in conjunction with additional management and conservation, could support a functional population.

2021 5-year Review for Delhi Sands Flower-Loving Fly

2. Investigate the addition of a core recovery area in occupied, undeveloped lands between North Pepper Avenue and North Meridian Avenue, north of West Randall Avenue.
3. Protect as much remaining habitat as possible including small parcels that act as “stepping stones” linking core areas for dispersal.
 - a. Seek section 6 under the Act or other grant funding for acquisition of habitat from willing sellers in areas with suitable or restorable habitat to help meet recovery criteria.
 - b. Work to secure commitments to direct mitigation and other funding for purchase of credits at the Colton Dune Bank.
 - c. Work with our partners including Rivers and Land Conservancy and Colton Dune Bank to get funding for continued monitoring and management needs to expand conserved habitat.
4. Explore methods to restore/enhance habitat to reclaim former and degraded habitat.
 - a. Investigate potential suitability of other types of fine sand (besides Delhi).
 - b. Update soil mapping of Delhi sands and other potentially suitable soil types.
 - c. Work with Rivers and Land Conservancy to investigate the feasibility of conducting experimental treatment at Alere gully restoration project (unoccupied habitat), including:
 - i. Import suitable substrate.
 - ii. Excavate top layer of substrate to estimated larval depth to remove thick vegetation and duff layer.
 - iii. Test disking within 2 years.
5. Assess population(s) within conserved habitat and independent survey data on privately owned parcels to determine where and estimate how many DSF occupied areas remain.
6. Minimize ongoing habitat degradation by reducing disking of native vegetation, removal of nonnative vegetation cover, and prevent dumping in native habitat.

Work with local jurisdictions and fire authorities to educate and increase enforcement of dumping prohibitions and discourage disking as a way to reduce fire risk; respectively.

REFERENCES CITED

- Powell, D. 2018. Delhi Sands flower loving fly Ontario RU. Department of the Interior. Report to US Fish and Wildlife Service. 2 pp.
- [USFWS] U.S. Fish and Wildlife Service. 1993. Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Delhi Sands Flower-loving Fly. *Federal Register*: 58 FR 49881–49887.
- [USFWS] U.S. Fish and Wildlife Service. 2008. Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*); 5-Year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office, Department of the Interior. 30 pp.
- [USFWS] U.S. Fish and Wildlife Service. 2019. Recovery Plan for the Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*): Amendment I. Carlsbad Fish and Wildlife Office, Department of the Interior. 17 pp.
- [USFWS]. U.S. Fish and Wildlife Service. 2020a. Endangered and threatened wildlife and plants; initiation of 5-year status reviews of 66 plant species in California and Nevada. *Federal Register* 85:4692–4694.
- [USFWS] U.S. Fish and Wildlife Service. 2020b. Carlsbad Fish and Wildlife Office, Geographic Information System Analysis, Summary of Procedures.

FIELD OFFICE APPROVAL

Lead Field Supervisor, Fish and Wildlife Service

Approve

Scott A. Sobiech
Field Supervisor