

5-YEAR REVIEW

Short Form Summary

Species Reviewed: Picture-wing Fly (*Drosophila tarphytrichia*)

Current Classification: Endangered

Federal Register Notice announcing initiation of this review:

U.S. Fish and Wildlife Service. 2022. Endangered and threatened wildlife and plants; initiation of 5-year status reviews of 167 species in Oregon, Washington, Idaho, Montana, California, Hawai‘i, Guam, and the Northern Mariana Islands. Federal Register 87 (90): 28,031–28,034.

Lead Region/Field Office:

Region 1/Pacific Islands Fish and Wildlife Office (PIFWO), Honolulu, Hawai‘i

Name of Reviewer(s):

Charmian Dang, Fish and Wildlife Biologist, PIFWO

John Vetter, Animal Recovery Coordinator, PIFWO

Megan Laut, Recovery Team Manager, PIFWO

Methodology used to complete this 5-year review:

This review was conducted by staff of the PIFWO of the U.S. Fish and Wildlife Service (USFWS), beginning in October of 2023. The review was based on a review of current, available information since the last 5-year review for *Drosophila tarphytrichia* (USFWS 2019, entire). The evaluation by Charmian Dang, Fish and Wildlife Biologist, was reviewed by John Vetter, the Animal Recovery Coordinator, and Megan Lau, the Recovery Team Manager.

Background:

For information regarding the species’ listing history and other facts, please refer to the USFWS Environmental Conservation Online System (ECOS) database for threatened and endangered species (<https://ecos.fws.gov/ecp/species>).

Review Analysis:

Please refer to the previous 5-year reviews for *Drosophila tarphytrichia* published on August 28, 2012 and May 19, 2019 (available at <https://ecos.fws.gov/ecp/species/6666>), for a complete review of the species’ status, threats, and management efforts. No new threats or new information regarding the species’ biological status has come to light since listing to warrant a change in the Federal listing status of *D. tarphytrichia* as endangered.

This picture-wing fly is an endangered endemic species found only on the island of O‘ahu. It uses species of *Charpentiera* (Amaranthaceae; pāpala) for breeding. The current status and trends for *Drosophila tarphytrichia* are provided in the tables below.

New status information:

No new records of *Drosophila tarphytrichia* have been documented since the previous 5-year review. The Army Natural Resources Program (ANRP) conducts regular surveys for

Drosophila species at several sites in the Waianae mountains, including the two sites where this species was last observed in 1997, but no individuals of *D. tarphytrichia* have been recorded (ANRP 2019, p. 193-195; ANRP 2020, p. 187-188; ANRP 2021, p. 176; ANRP 2022, p. 182; ANRP 2023, p. 198).

New Threats:

There are no new threats known at this time.

New management actions:

Drosophila tarphytrichia's main host plant, *Charpentiera obovata* (pāpala), is an endemic species and has been outplanted at Kahanahāiki between 2019–2021 (ANRP 2019, p. 106; ANRP 2020, p. 84; ANRP 2021, p. 79) and at Kapuna Upper in 2021 (ANRP 2021, p. 81) by the ANRP as part of their habitat restoration plan.

The DLNR-DOFAW is actively managing the Honouliuli Forest Reserve with fence maintenance, construction of ungulate exclosures, and ungulate control. It also maintains the fire break and water catchment tanks in this forest reserve (Peralta 2022, in litt., entire).

Synthesis:

Drosophila tarphytrichia has not been observed since this species was listed as endangered under the Endangered Species Act in 2006. Since the last 5-year review was completed in 2019, no new information on the status of *D. tarphytrichia* has been collected. Historically, *D. tarphytrichia* was known from both the Ko'olau and the Wai'anae Mountains between 580 and 885 meters (1,900 and 2,900 feet) above sea level. This species is now considered to be extirpated from the Ko'olau Range where it was originally discovered near Mānoa Falls on O'ahu. *Drosophila tarphytrichia*'s four mesic forest habitat sites in the Wai'anae Mountains include Pu'u Kua, Mauna Kapu, Kalua'ā Gulch, and Palikea. Only Kalua'ā Gulch and Palikea were occupied during the last surveys conducted in 1972 and 1997, respectively (Kaneshiro, 2005, in litt.). At the four Wai'anae habitat sites, a total of 31 *D. tarphytrichia* individuals were recorded on 36 different survey dates between 1965 and 1997 (Kaneshiro, 2005, in litt.). *Drosophila tarphytrichia* was not observed during eight surveys conducted in the Wai'anae Mountains on the Honouliuli Preserve between 2009–2011 (Magnacca, 2012a, in litt.) and in subsequent searches by the ANRP (ANRP 2019, p. 193-195; ANRP 2020, p. 187-188; ANRP 2021, p. 176; ANRP 2022, p. 182; ANRP 2023, p. 198).

A Draft Recovery Outline that included *Drosophila tarphytrichia* was published in August of 2006. No Final Recovery Plan for *D. tarphytrichia* has been written, thus, recovery criteria and goals have not been identified for this species. Threats identified in the Final Listing Rule and Draft Recovery Outline are not sufficiently managed throughout the range of the species (Table 2). Therefore, *D. tarphytrichia* meets the definition of endangered as it remains in danger of extinction throughout its range.

Table 1. Status and trends of *Drosophila tarphytrichia* from listing through current 5-year review.

Date	No. wild individuals	Downlisting Criteria identified in Recovery Plan	Downlisting Criteria completed?
2006 (Listing)	No recent sightings	Not yet established	N/A
2006 (Draft Recovery Outline)	No recent sightings	Not yet established	N/A
2008 (Critical Habitat)	No recent sightings	Not yet established	N/A
2012 (5-year review)	No recent sightings	Not yet established	N/A
2019 (5-year review)	No recent sightings	Not yet established	N/A
2024 (5-year review)	No recent sightings	Not yet established	N/A

Table 2. Threats to *Drosophila tarphytrichia* and ongoing conservation efforts.

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Ungulate degradation of habitat	A	Ongoing	Yes. Hawai'i Department of Land and Natural Resources, Division of Forestry and Wildlife is actively managing the Honouliuli Forest Reserve with fence maintenance, construction of ungulate exclosures, and ungulate control.
Established ecosystem altering invasive plant species degradation of habitat	A	Ongoing	No.
Climate change degradation or loss of habitat	A, E	Increasing	No.
Rodent predation or herbivory degradation of habitat	C	Ongoing	No. <i>Charpentiera obovata</i> is vulnerable to rat predation and the plants are vulnerable to habitat degradation.
Alien predators - Invertebrates	C	Ongoing	No. <i>Drosophila tarphytrichia</i> face substantial predation pressure from nonnative insects such as ants.
Inadequacy of	D	Ongoing	Yes. O'ahu has a biosecurity program in place

existing regulatory mechanisms			to prevent introduction of invasive species but the program is in its beginning stage.
Alien competitors	D, E	Ongoing	No. <i>Drosophila tarphytrichia</i> larval stage may possibly face resource competition from nonnative tipulid flies (crane flies, family Tipulidae). Existing regulations offer inadequate protection to these species from the introduction of nonnative insects and the loss of their host plant.
Human disturbance	E	Ongoing	No.
Environmental catastrophes	E	Ongoing	No.
Stochastic events— Reduced viability due to low numbers	E	Ongoing	No. <i>Drosophila tarphytrichia</i> has not been documented since 1997. No current population or distribution is known. No <i>D. tarphytrichia</i> are in captive rearing.

Recommendations for Future Actions:

- Survey and Inventory - Develop and implement a systematic *Drosophila tarphytrichia* survey and monitoring plan that includes historic habitats and other suitable habitats on O‘ahu.
- Develop and implement a Recovery Plan and Recovery Implementation Strategy.
- Habitat and natural process protection, management, and restoration.
 - Protect, manage, and restore *Drosophila tarphytrichia* habitat and the habitat of its host plant, *Charpentiera obovata*.
 - Evaluate the need to re-establish or supplement *Charpentiera obovata* and wild picture-wing fly populations within their historical range.
- Evaluate *Charpentiera obovata* populations and enhance age class structure from seedling to senescent phase, if necessary.
- Survey and document predator threats.
- Ungulate monitoring and control.
 - Construct and maintain fenced exclosures to protect all *Drosophila tarphytrichia* life stages and host plant from the negative impacts of feral ungulates.
 - Monitor fenced areas to maintain absence of ungulates.
- Fire, predation, herbivore, and disease monitoring and control - Implement effective control methods for fire, rat, nonnative insect, predator, and ungulate threats, and habitat altering plant disease within the vicinity of *Drosophila tarphytrichia* and its host plant populations.
- Climate change adaptation strategy - Research the suitability of habitat for reintroducing this species and its host plants in the future due to the impacts of climate change.
- Stochastic events - build resilience and redundancy - Increase numbers of populations and individuals scattered through the historic range to reduce impacts

- from low numbers.
- Population biology research.
 - Conduct biological and ecological research on *Drosophila tarphytrichia*.
 - Conduct biological and ecological research on the host plant of *Drosophila tarphytrichia*.
- Captive rearing and reintroduction - Evaluate the need to develop and implement a captive rearing and reintroduction program for *Drosophila tarphytrichia* in its historic range.
- Alliance and partnership development - Coordination efforts with stake holders for host plant management and invasive plant, insect, and mammal control.
- Outreach and Education - Develop and implement a public information program.

References:

See previous 5-year reviews completed in 2012 and 2019 for a more complete list of references (USFWS 2012, 2019). Only references not included in these documents are provided below.

[ANRP] Army Natural Resources Program, O‘ahu. 2019. Status report for the Mākua and O‘ahu Implementation Plans. U.S. Army Garrison, Hawai‘i. 253 pp.

[ANRP] Army Natural Resources Program, O‘ahu. 2020. Status report for the Mākua and O‘ahu Implementation Plans. U.S. Army Garrison, Hawai‘i. 238 pp.

[ANRP] Army Natural Resources Program, O‘ahu. 2021. Status report for the Mākua and O‘ahu Implementation Plans. U.S. Army Garrison, Hawai‘i. 232 pp.

[ANRP] Army Natural Resources Program, O‘ahu. 2022. Status report for the Mākua and O‘ahu Implementation Plans. U.S. Army Garrison, Hawai‘i. 255 pp.

[ANRP] Army Natural Resources Program, O‘ahu. 2023. Status report for the Mākua and O‘ahu Implementation Plans. U.S. Army Garrison, Hawai‘i. 281 pp.

[USFWS] U.S. Fish and Wildlife Service. 2019. *Drosophila tarphytrichia* (Picture-wing Fly) 5-Year Review Summary and Evaluation. 5 pp.

[USFWS] U.S. Fish and Wildlife Service. 2022. Endangered and threatened wildlife and plants; initiation of 5-year status reviews of 167 species in Oregon, Washington, Idaho, Montana, California, Hawai‘i, Guam, and the Northern Mariana Islands. Federal Register 87(90): 28,031–28,034.

In Litteris

Peralta, R. 2022. in litt. Email communication between Ryan Peralta, Forest Management Supervisor, Division of Forestry and Wildlife and Charmian Dang, U.S. Fish and Wildlife Service, Honolulu, Hawai‘i on January 7, 2022.

**U.S. FISH AND WILDLIFE SERVICE
SIGNATURE PAGE for 5-YEAR REVIEW of
Picture-wing Fly (*Drosophila tarphytrichia*)**

Pre-1996 DPS listing still considered a listable entity? N/A

Recommendation resulting from the 5-year review:

- Delisting
- Reclassify from Endangered to Threatened status
- Reclassify from Threatened to Endangered status
- No Change in listing status

Review Conducted By:

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