

5-YEAR REVIEW
Short Form Summary
Species Reviewed: Picture-wing Fly
(*Drosophila tarphytrichia*)
Current Classification: Endangered

Federal Register Notice announcing initiation of this review:

[USFWS] U.S. Fish and Wildlife Service. 2017. Endangered and threatened wildlife and plants; initiation of 5-year status reviews of 138 species in Hawaii, Oregon, Washington, and California. Federal Register 82 (75): 18665–18668.

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, O‘ahu, Kaua‘i, Northwestern Hawaiian Islands, and American Samoa Island Geographic Team, PIFWO
Megan Laut, Animal Recovery Coordinator, Conservation & Restoration Team, PIFWO
Gregory Koob, Conservation & Restoration Team Manager, Conservation & Restoration Team, PIFWO

Methodology used to complete this 5-year review:

This review was conducted by staff of the Pacific Islands Fish and Wildlife Office (PIFWO) of the U.S. Fish and Wildlife Service (Service). The review was based on a review of current, available information since the last 5-year review for *Drosophila tarphytrichia* (USFWS 2012). The evaluation by the Wildlife Biologist was reviewed by the Animal Recovery Coordinator and Conservation and Restoration Team Manager.

Background:

For information regarding the species listing history and other facts, please refer to the U.S. Fish and Wildlife Service’s Environmental Conservation On-line System (ECOS) database for threatened and endangered species (http://ecos.fws.gov/tess_public).

Review Analysis:

Please refer to the previous 5-year review for *Drosophila tarphytrichia* published on August 28, 2012 (available at https://ecos.fws.gov/docs/five_year_review/doc4092.pdf), for a complete review of the species’ status, threats, and management efforts. No significant information regarding the species’ biological status has come to light since listing to warrant a change in the Federal listing status of *D. tarphytrichia*.

This picture-wing fly is an endangered endemic species found only on the island of O‘ahu. The current status and trends for *Drosophila tarphytrichia* are provided in the tables below.

New status information:

No new status information.

New Threats:

Climate change

- Climate change may pose a threat to the larval host plant of this species. Fortini *et al.* (2013) conducted a landscape-based assessment of climate change vulnerability for native plants of Hawai‘i using high-resolution climate change projections. Climate change vulnerability is defined as the relative inability of a species to display the possible responses necessary for persistence under climate change. The assessment by Fortini *et al.* (2013) was conducted for *Charpentiera obovata* (family Amaranthaceae) and concluded that this larval host species is vulnerable to the impacts of climate change, with vulnerability scores of 0.132 (on a scale of 0 being not vulnerable to 1 being extremely vulnerable to climate change). Therefore, additional management actions are needed to conserve this picture-wing fly larval host species.

New management actions:

No new management actions.

Synthesis:

Since the 5-year review in 2012, no new information on the status of *Drosophila tarphytrichia* has been collected. Historically, *Drosophila 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. The 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 Kāua, Mauna Kapu, Kalua‘a Gulch, and Palikea. Only Kalua‘a 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 from 2009-2011 (Magnacca, 2012a, *in litt.*).

A Draft Recovery Outline that included *Drosophila tarphytrichia* was published in August 2006. With no final recovery plan for *D. tarphytrichia*, 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.

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.
- Habitat and natural process protection, management, and restoration.
 - Protect, manage, and restore *Drosophila tarphytrichia* habitat and larval host plant, *Charpentiera obovata*, habitat.
 - Evaluate the need to re-establish or supplement *Charpentiera obovata* and

- wild picture-wing fly populations within their historical range.
- Evaluate *Charpentiera obovata* population 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 plant 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 ranges.
 - Alliance and partnership development—Visit stake holders for host plant management and invasive plant, insect, and mammal control.
 - Outreach and Education—Develop and implement a public information program.

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

Date	No. wild individuals	No. released	Downlisting Criteria identified in Recovery Plan	Downlisting Criteria completed?
2006 (Listing)	No recent sightings	0	Not yet established	No
2006 (Draft Recovery Outline)	No recent sightings	0	Not yet established	No
2008 (Critical Habitat)	No recent sightings	0	Not yet established	No
2012 (5-year review)	No recent sightings	0	Not yet established	No
2017 (5-year review)	No recent sightings	0	Not yet established	No

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 DLNR-DOFAW is actively managing the Honouliuli Forest Reserve with fence maintenance, construction of ungulate exclosures and ungulate control (Peralta, 2018, <i>in litt.</i>)
Established ecosystem altering invasive plant species degradation of habitat	A	Ongoing	No.
Climate change	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.
Lack of adequate biosecurity legislation and regulation	D	Ongoing	Yes. O‘ahu has a biosecurity program in place 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, possibly faces resource competition from nonnative tipulid flies (crane flies, family Tipulidae) (Science Panel 2005). 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. Surveys have not been conducted since 2011. <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.

References:

See previous 5-year review completed in 2012 for a more complete list of references (USFWS 2012). Only references not included in that document are provided below.
 Fortini, L., J. Price, J. Jacobi, A. Vorsino, J. Burgett, K. Brinck, F. Amidon, S. Miller, S. Gon II, G. Koob, and E. Paxton. 2013. A landscape-based assessment of climate change vulnerability for all native Hawaiian plants. Technical report HCSU-044. Hawaii Cooperative Studies Unit, University of Hawaii at Hilo, Hawaii. 134 pp.

[USFWS] U.S. Fish and Wildlife Service. 2017. Endangered and threatened wildlife and plants; initiation of 5-year status reviews of 138 species in Hawai‘i, Oregon, Washington, and California. Federal Register 82 (75): 18665–18668.

***In Litt.* Reference:**

Peralta, R. *in litt.* 2018. 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 October 26, 2018.

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

For **Field Supervisor, Pacific Islands Fish and Wildlife Office**