Apiocera bilineata (Dune Flower-loving Fly)

No Photo Available

Taxonomy

- **Class**: INSECTA
- **Order**: DIPTERA
- **Family**: APIOCERIDAE
- **Genus**: Apiocera
- **Scientific Name**: *Apiocera bilineata* Painter, 1932
- **Common Name**: Dune Flower-loving Fly
- **Synonyms**:
- **Taxonomic Name Source**:Cazier, M.A. 1982. A revision of the North American flies belonging to the genus *Apiocera* (Diptera, Apioceridae). Bulletin of the American Museum of Natural History 171: 287-467.

Agency Status

- **NMDGF**:
- **Federal Status**:
- **BLM Sensitive**:
- **USFS**:
- **IUCN Red List**: Not Evaluated
- **Nature Serve Global**: GNR
- **NHNM State**: S1
- **NM Endemic**:NO

Description

Species in the genus *Apiocera* are stocky Mydas-like flies, with shorter antenna. This species, *Apiocera bilineata*, appears to be most closely related to *A. sonorae*, though it can be distinguished by its mostly white hairy dististyles (which are the blade-shaped accessory parts of the male genitalia), gray frosted body, partially or entirely hairy femora, and shorter posterior tarsal pulvilli (adhesive foot pads) (Cazier 1982).

Habitat and Ecology

This species is mostly found in sand dune habitats. The specimens taken at the type locality were found running on bare sand at White Sands National Park. At Samalayuca, specimens were found in short vegetation near the base of the Samalayuca dune field and in Villa Ahumada, individuals were found on the moist bank of a ditch, where they were placing their mouthparts on the moist sandy soil. Specimens have been collected from late June through early August (Cazier 1982).

Breeding sites for other species of *Apiocera* are typically in proximity to a water source and are near oviposition sites. Generally, females are thought to lay their eggs in soft, sandy soils where there is at least sparse plant cover for projection. Sand dunes are particularly favorable to many species, and individuals tend to be most abundant around the sparsely vegetated edges of dunes. Other types of habitats that are also favorable for egg laying include sand deposits along rivers, streams, creeks, and around springs and lakes. The larval food source is unknown for the entire genus, though it is possible the larvae feed on plant tissues near the oviposition sites. *Apiocera* species have a muscoid, sponging type mouthpart, which are not suitable for accessing the nectaries of flowers or for consuming pollen grains. They are designed instead to soak up water from damp sand and sponge honey-dew from aphid infested plants. Aphid honey dew is the only known food source of adult *Apiocera*. Most species seems to need access to water, where they are often found visiting the damp sand or soil. In arid habitats, it is likely they can travel a considerable distance from breeding areas to find water sources. These flies are often called flower-loving flies, which

is a misnomer. While they are sometimes observed visiting flowers and do incidentally pick up the occasional grain of pollen, this is seemingly not an important part of their ecology (Cazier 1982).

Geographic Range:

This species is known from sand dune habitats in southern New Mexico, in the United States and northern Chihuahua, Mexico. The type was taken from White Sands National Park, New Mexico and Cazier (1982) includes the Samalayuca Dunes and Villa Ahumada, both in Chihuahua, as additional occurrence localities. The species has also been recorded at several additional sites in New Mexico, in Dona Ana County along the Rio Grande River, and in Luna County, just east of Columbus (GBIF.org 2024). Occurrences farther afield, including along the Pecos River in eastern New Mexico and in the Tusas Mountains of northern New Mexico (GBIF.org 2024) may not be valid, as it is thought this species is a habitat specialist on dune systems. The species has only been collected once in the last 40 years. Surveys are needed to ensure the species remains extant across its range.

Conservation Considerations:

There are no conservation measures in place for this species. It is found in at least one protected area, White Sands National Park. While this may protect against certain threats, such as land use changes, it will not protect against the main threats of drought and habitat instability. Research is needed on current distribution, population size and trend, habitats and ecology, and threats.

Threats:

Threats to this species are not well understood, though inferences can be made, based on threats to the habitat. Sand-dominated ecosystems in the southwest are threatened by motility, especially as a result of drought conditions (Bogle *et al*. 2015), which are expected to become more severe, prolonged and frequent due to climate change (USGCRP 2018). In the Tularosa Basin bordering White Sands National Park, for example, hydrologic modeling has shown that increased groundwater pumping in response to increased temperatures and drought conditions will lead to water level decreases up to 1.5 meters. The dune field only exists as a permanent landscape feature because the gypsum sands are held in place at the base by water weight wicked up from the ground, so a decrease in water resources could result in increased sand motility, and therefore instability of the interdune habitats where herbivorous insects live (Bourret 2015). In addition, this species depends on consistent water sources (Cazier 1982), which may become less available as droughts increase and as cities and agricultural areas expand, putting higher demand on groundwater resources.

Population:

The population size and trend are not known for this species. It has been recorded only once since 1983 (GBIF.org 2024), though survey effort in the region is lacking.

References:

- ITIS. 2024. Integrated Taxonomic Information System (ITIS). 2024. https://www.itis.gov/
- Bogle, R., Redsteer, M.H. and Vogel, J.. 2015. Field measurement and analysis of climatic factors affecting dune mobility near Grand Falls on the Navajo Nation, southwestern United States. *Geomorphology* 228: (41-51).

- Bourret, S.M.. 2015. Stabilization of the White Sands gypsum dune field, New Mexico, by groundwater seepage: a hydrological modeling study.. New Mexico Institute of Mining and Technology, Socorro, New Mexico .
- Cazier, M.A.. 1982. A revision of the North American flies belonging to the genus *Apiocera* (Diptera, Apioceridae). *Bulletin of the American Museum of Natural History* 171: (285-464).
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More Information