Perdita aperta (Bare Fairy Bee)

No Photo Available

Taxonomy

- **Class**: INSECTA
- **Order**: HYMENOPTERA
- **Family**: ANDRENIDAE
- **Genus**: Perdita
- **Scientific Name**: *Perdita aperta* Timberlake, 1968
- **Common Name**: Bare Fairy Bee
- **Synonyms**:
- **Taxonomic Name Source**:Integrated Taxonomic Information System (ITIS). 2008. World Bee Checklist Project (version 03-Oct-2008). Integrated Taxonomic Information System: Biological Names. Online. Available: http://www.itis.gov.

Agency Status

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

Description

So far, only the males of *Perdita aperta* have been described. They are similar in form to members of the *nitidella* group, though they are distinctly larger and the femora are heavily marked with dark colors. They are 4-4.5 millimeters in size, with dark-bluish green head and thorax, though parts of the face are bright yellow. The pronotum is mostly yellow with a broad green band, and the abdomen is dark with enclosed yellow bands. The legs are also mostly yellow (Timberlake 1968).

Habitat and Ecology

The habitats and ecology are not well understood for this species. It is found across several ecoregion types in the Desert Southwest, including the Chihuahuan Desert, the Southwest Tablelands, and lower elevations of the Arizona/ New Mexico Mountains. This suggests it may be found in a variety of habitats including arid grasslands and shrublands.

Species of *Perdita* are almost all oligolectic (Michener 2007). As such, their emergence is usually timed to coincide with the floral bloom period of their host plants (Wilson and Carril 2016). They nest in the soil within branched burrows that each end in a single cell, which is more or less horizontal (Michener 2007). A few species nest gregariously, with females nesting in close proximity to one another (Wilson and Carril 2016). Other species are communal nesters, with more than one female sharing a nest entrance (Michener 2007), yet others are more solitary. Instead of covering nest cells in a water proof coating, like other species in the family Andrenidae do, *Perdita* cover only the spherical ball of pollen provisioned for larvae in a coating (Wilson and Carril 2016). Many species are specific about the soil type they choose to nest in (Wilson and Carril 2016). Adult emergency seems to be dependent on humidity levels which indicate significant rain events above ground, at least for desert species (Wilson and Carril 2016).

Geographic Range:

This species is endemic to the southwestern United States. It is known to occur at several localities in New Mexico, including near Carrizozo, Fort Sumner, and the Sevilleta National Wildlife Refuge, one site in the Guadalupe Mountains of West Texas, and one site along the Mogollon Rim in Arizona (Chesshire *et al.* 2023, Timberlake 1968).

Conservation Considerations:

There are no conservation measures in place for this species. It is known to occur in at least one protected area, the Sevilleta National Wildlife Refuge, though it is not removed from the main threat of severe drought in this refuge. Research is needed to better understand the current distribution, population size and trend, habitats and ecology, and threats.

Threats:

The threats to this species are not well understood, though drought is likely the main threat. The southwestern U.S. saw its driest 22-year period from 2000 to 2021, since at least 800 CE (the time period used in previous climatic reconstructions) (Williams *et al.* 2022). Droughts are projected to become more prolonged, severe, and common in the region under future climate change scenarios (USGCRP 2018). Drought may negatively impact bee species by reducing floral resource availability (Phillips *et al.* 2017). In addition, declines observed in *Perdita* species at one site the Chihuahuan Desert have been attributed to small body size of these bees, and associated sensitivity to heat and desiccation (Kazenel *et al*. 2024).

Population:

The population size and trend are not known for this species. However, based on 16 years of abundance data from the Sevilleta National Wildlife Refuge and experimentally determined heat and desiccation tolerances, climate sensitivity models predict this species is likely to decline in the coming years (Kazenel *et al*. 2024). In the last 20 years, this species has only been collected at the Sevilleta, which has an extensive bee monitoring program. Surveys are generally limited throughout the range, so a lack of records likely does not indicate true absence. However, the species should be confirmed across its distribution.

References:

- Wilson, J.S. and Carril, O.M. 2016. The Bees in Your Backyard: A Guide to North America's Bees. Princeton University Press, Princeton, NJ .
- Kazenel, M.R., Wright, K.W., Griswold, T., Whitney, K.D. and Rudgers, J.A.. 2024. Heat desiccation tolerances predict bee abundance under climate change. *Nature* 628: (342-362).
- Timberlake, P.H.. 1968. A Revisional Study of the Bees of the Genus *Perdita* F. Smith, with a Special Reference to the Fauna of the Pacific Coast. Part VII. University of California Press, Berkeley and Los Angeles .
- Chesshire, P.R., Fischer, E.E., Dowdy, N.J., Griswold, T.L., Hughes, A.C., Orr, M.C, Ascher, J.S. Guzman, L.M, Hung, K-L.J., Cobb, N.S. and McCabe, L.M.. 2023. Completeness analysis for over 3000 United States bee species identifies persistent data gap. *Ecography* e06584: (13-Jan).
- Williams, A.P., Cook, B.I. and Smerdon, J.E. . 2022. Rapid intensification of the emerging southwestern North American megadrought in 2020â€“2021. *Nature Climate Change* 12: (232-234).
- USGCRP. 2018. Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II. *U.S. Global Change Research Program* , Washington, DC, USA : (1515).
- ITIS. 2024. Integrated Taxonomic Information System (ITIS). 2024. https://www.itis.gov/

- Michener, D.C.. 2007. The Bees of the World. The Johns Hopkins University Press, Baltimore : (953).
- Phillips, B.B., Shaw, R.F., Holland, M.J., Fry, E.L., Bardgett, R.D., Bullock, J.M. and Osborne, J.L.. 2017. Drought reduces floral resources for pollinators. *Global Change Biology* 24: (3226-3235).

More Information