Schinia poguei (Pogue's Flower Moth)

Gary Alpert,

Taxonomy

- **Class**: INSECTA
- **Order**: LEPIDOPTERA
- **Family**: NOCTUIDAE
- **Genus**: Schinia
- **Scientific Name**: *Schinia poguei* Metzler and Forbes, 2011
- **Common Name**: Pogue's Flower Moth
- **Synonyms**:
- **Taxonomic Name Source**:Metzler, E.H. and G.S. Forbes. 2011. The Lepidoptera of White Sands National Monument, Otero County, New Mexico, USA 4. A new species of *Schinia* Hübner, 1818 (Lepidoptera, Noctuidae, Heliothinae). ZooKeys 149: 135-144.

Agency Status

- **NMDGF**:
- **Federal Status**:
- **BLM Sensitive**:
- **USFS**:
- **IUCN Red List**: Not Evaluated
- **Nature Serve Global**: GNR
- **NHNM State**: S1
- **NM Endemic**:YES

Description

This moth is mostly tan in background color with thin dark brown bands crossing the forewings and wide white bands on the fore- and hindwing (Metzler and Forbes 2011).

Habitat and Ecology

This species occurs only in the gypsum sand dune ecosystem of the Chihuahuan Desert. Adults are attracted to black light. The larval form and host plant of *Schinia poguei* is unknown, but specimens were collected in interdune areas populated by cottonwoods (*Populus* spp.) and saltbush (*Atriplex* spp.) (Metzler and Forbes 2011).

Schinia moths are called the â€œflower mothsâ€• because as caterpillars they feed on buds or flowers of their host plant. In most cases, *Schinia* are oligophagous, meaning specialized to feed on one genus or a few related genera of plants (Mitter *et al*. 1993). In Texas, many species are known in association with Asteraceae plants. Often adults in this genus have tight association with their host plants; the oviposit on the plant and pollinate it, at the same time (D. Wagner pers. comm. 2024). Larvae are short-lived, feeding for less than a month, perhaps due to this flower-specific lifestyle (Peigler and Vinson 1988). They are also found frequently as adults on flowers, resting during daylight hours, feeding on nectar, and providing pollination services at night (BugGuide 2024).

Geographic Range:

This moth is only known from the Tularosa Basin of Otero County, in southern New Mexico, particularly within White Sands National Park (Metzler and Forbes 2011). It has been collected from just two localities in close proximity to each other, though it is possible the species will eventually be recorded in additional areas of the gypsum sand ecosystem.

Conservation Considerations:

The majority of gypsum sand habitat in New Mexico is under management by the National Park Service and the US Department of Defense (DOD). This species occurs in White Sands National Park, which is the worldâ€™s largest white gypsum sand field and completely protected from resource extraction and development (Metzler *et al*. 2009). The neighboring dune area is managed by the DOD White Sands Missile Range, so the degree of disturbance affecting this mothâ€™s habitat there is unknown. However, neither site manages habitat for this species specifically. This species is poorly understood. Research on the distribution, population size and trend, habitat and life history, and the impact of threats is needed.

Threats:

This species is endemic to the White Sands gypsum ecosystem. Insect species of the gypsum sands are relatively poorly characterized (Metzler *et al*. 2009). However because of its small range, *Schinia poguei* may be highly habitat-specific and adapted to feed on plants of the unique gypsum soils of White Sands (Metzler 2021).

The White Sands dune field is an ecosystem at risk of instability due to extensive groundwater extraction on the eastern edge of the Tularosa Basin. 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).

Groundwater extraction is more heavily utilized in periods of drought and increased temperatures. 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). In addition to increased groundwater use, drought may impact the species in other ways. Drought has been shown to advanced timing to adulthood has been observed in some butterfly species, which may lead to phenological mismatch with plant resources (Forister *et al*. 2018) and drought may adversely impact larval host plants and nectar sources (Pettorelli *et al*. 2007, Gottfried *et al*. 2012). In addition, endemic species are on average at three times higher risk of extinction from threat of climate change than other native species (Manes *et al*. 2021)

White Sands is also threatened by invasive species, in particular Saltcedar (*Tamarix* spp.), which creeps into the

interdune areas where the water table is high and outcompetes native plants while increasing soil salinity (Hager 1998).

Population:

The population size and trend are not known for this species. As it was not described until 2011 (Metzler and Forbes 2011), and because of lack of survey, it has not been recorded regularly since time of description.

References:

- Gottfried, M., Pauli, H., Futschik, A., *et al*. 2012. Continent-wide response of mountain vegetation to climate change. *Nature Climate Change* 2: (111-115).
- Metzler, E.H.. 2021. The remarkable endemism of moths in White Sands National Park. *News of the Lepidopteristsâ€™ Society* 63: (156-162).
- Metzler, E.H.. 2017. Lepidoptera of White Sands National Monument, Otero County, New Mexico, USA 8. Description of the female of *Protogygia whitesandsensis* Metzler & Forbes, 2009 (Lepidoptera: Noctuidae, Agrotini). *SHILAP Revista de LepidopterologÃa* 45: (207-211).
- 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).
- ITIS. 2024. Integrated Taxonomic Information System (ITIS). 2024. https://www.itis.gov/
- Metzler, E.H. and Forbes, G.H.. 2011. The Lepidoptera of White Sands National Monument, Otero County, New Mexico, USA 4. A new species of *Schinia* HÃ¼bner, 1818 (Lepidoptera, Noctuidae, Heliothinae). *ZooKeys* 149: (135-144).
- Moth Photographers Group. 2024. 45533. http://mothphotographersgroup.msstate.edu
- Hager, S.B.. 1998. The thermoregulatory and reproductive behavior of the lesser earless lizard, Holbrookia maculata, at White Sands National Monument, New Mexico. New Mexico State University, Las Cruces, New Mexico .
- 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 .
- Manes, S., Costello, M.J., Beckett, H., Debnath, A., Devenish-Nelson, E., Grey, K.-A., Jenkins, R., Khan, T.M., Kiessling, W., Krause, C., Maharaj, S.S., Midgley, G.F., Price, J., Talukdar, G. and Vale, M.M. . 2021. Endemism increases speciesâ€™ climate change risk in areas of global biodiversity importance. *Biological Conservation* 257.
- Metzler, E., Bustos, D. and Forbes, G.. 2009. The Lepidoptera of White Sands National Monument, Otero County, New Mexico, USA 1. Two new species of Noctuidae (Lepidoptera, Noctuinae, Agrotini). *Zookeys* 9: (47-62).
- 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).
- Forister, M.L., Fordyce, J.A., Nice, C.C., Thorne, J.H., Waetjen, D.P. and Shapiro, A.M.. 2018. Impacts of a millennium drought on butterfly faunal dynamics. *Climate Change Responses* 5: (9-Jan).
- Pettorelli, N., Pelletier, F., von Hardenberg, A., Festa-Bianchet, M. and CÃ´tÃ© S.D. 2007. Early onset of vegetation growth vs rapid green-up: impacts on juvenile mountain ungulates. *Ecology* 88: (381-390).
- GBIF.org. 2024. GBIF Occurrence Download. 2024. https://doi.org/10.15468/dl.yta3js

More Information