Protogygia whitesandsensis (White Sands Cutworm Moth)

Metzler et al. 2009,

Taxonomy

- **Class**: INSECTA
- **Order**: LEPIDOPTERA
- **Family**: NOCTUIDAE
- **Genus**: Protogygia
- **Scientific Name**: *Protogygia whitesandsensis* Metzler and Forbes, 2009
- **Common Name**: White Sands Cutworm Moth
- **Synonyms**:
- **Taxonomic Name Source**:Lafontaine, J.D., and B.C. Schmidt. 2010. Annotated check list of the Noctuoidea (Insecta, Lepidoptera) of North America north of Mexico. ZooKeys 40:1-239.

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 silvery gray, with bands of white and brown on the gray forewing (Metzler 2017). The male has wide, pectinate antennae. This species is more gray and white than closely related species which are more brown (Metzler *et al*. 2009).

Habitat and Ecology

This species occurs in a unique gypsum sand dune ecosystem within the Chihuahuan Desert. Adults are attracted to black light. The larval form and host plant of *Protogygia whitesandsensis* is unknown, but specimens were collected on interdune vegetation (Metzler *et al.* 2009). This species may be an important pollinator as it is closely related to moths in the genus *Copablepharon*, which are specialized pollinators due to their long tongues (D. Wagner pers. comm. 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 *et al*. 2009).

Conservation Considerations:

The majority of gypsum sand habitat in New Mexico, where this species is found, 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). However, this site does not manage 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, *Protogygia whitesandsensis* 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. It was not described until 2009 (Metzler *et al*. 2009), and because of lack of survey, it has not been recorded regularly since time of description.

References:

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More Information