

Aleptina arenaria (White Sands Owlet Moth)



Canadian National Collection of
Insects, 2010



David Lightfoot,



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Taxonomy

- **Class:** INSECTA
- **Order:** LEPIDOPTERA
- **Family:** NOCTUIDAE
- **Genus:** Aleptina
- **Scientific Name:** *Aleptina arenaria* Metzler and Forbes, 2011
- **Common Name:** White Sands Owlet 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 3. A new species of *Aleptina* Dyar, 1902 (Lepidoptera, Noctuidae, Amphipyryinae, Psaphidini). ZooKeys 149: 125-133.

Agency Status

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

Description

Aleptina arenaria is a medium-sized gray noctuid moth with tan-colored markings at the base and medial region of the forewing (Metzler and Forbes 2011).

Habitat and Ecology

Aleptina arenaria occurs in the gypsum sand dune ecosystem and surrounding area of the Chihuahuan Desert. Adults are attracted to black light. The larval form and host plant of this species is unknown, but specimens have been collected in interdune areas (Metzler and Forbes 2011).

Geographic Range:

This Noctuid moth is known only from the Tularosa Basin of Otero County, in southern New Mexico, particularly within White Sands National Park (Metzler and Forbes 2011). It has also been recorded near by in Oliver Lee Memorial State Park (Moth Photographers Group 2024).

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 world'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 and surrounding area. Insect species of the gypsum sands are relatively poorly characterized (Metzler *et al.* 2009), however because of its small range, *A. arenaria* 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. Likely due to lack of surveys, it has not been recorded regularly since time of description.

References:

- Metzler, E.H.. 2021. The remarkable endemism of moths in White Sands National Park. *News of the Lepidopteristsâ€™™ Society*63: (156-162).
- 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, Noctuidae, Agrotini). *Zookeys* 9: (47-62).
- 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.
- 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 .
- 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 .
- [Moth Photographers Group. 2024. 45533. http://mothphotographersgroup.msstate.edu](http://mothphotographersgroup.msstate.edu)
- Metzler, E.H. and Forbes, G.H.. 2011. The Lepidoptera of White Sands National Monument, Otero County, New Mexico, USA 3. A new species of *Aleptina* Dyar, 1902 (Lepidoptera, Noctuidae, Amphipyriinae, Psaphidini). *ZooKeys* 149: (125-133).
- 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).
- 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).
- 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).
- 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).
- Gottfried, M., Pauli, H., Futschik, A., *et al.* 2012. Continent-wide response of mountain vegetation to climate change. *Nature Climate Change* 2: (111-115).
- [ITIS. 2024. Integrated Taxonomic Information System \(ITIS\). 2024. https://www.itis.gov/](https://www.itis.gov/)

More Information

