Plagiomimicus astigmatosum (Southwestern Brown Moth)

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Taxonomy

- **Class**: INSECTA
- **Order**: LEPIDOPTERA
- **Family**: NOCTUIDAE
- **Genus**: Plagiomimicus
- **Scientific Name**: *Plagiomimicus astigmatosum* (Dyar, 1921)
- **Common Name**: Southwestern Brown Moth
- **Synonyms**: Stibadium astigmatosum Dyar 1921 Dyar 1921
- **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**:NO

Description

This small to medium sized moth can be recognized by the forewings which are light brown with a few thin white stripes and diffuse white coloration at the tips. The larva is unknown (Poole 1995).

Habitat and Ecology

The habitats and ecology of this rare moth are not well understood. The noctuid genus *Plagiomimicus* is associated with xeric habitats in North America (Adams and Lafontaine 2009). Based on the known occurrences, this species is found in mid-elevation areas within several ecoregions, including the Chihuahuan Desert, Madrean Sky Islands, and the Southwestern Tablelands, which are typically characterized as arid grasslands or shrublands.

The larval habits and host plant of this species are unknown, but others in the subfamily Stiriinae are associated with hosts in the Aster family (Asteraceae) (Powell and Opler, 2009). D. Wagner (pers. comm. 2024) suggests the host plant may be in the genus *Helianthus*, but more research is needed. Adult *P. astigmatosum* are active in September (Poole, 1995). *Plagiomimicus* moths are pollinators (Wiesenborn 2020).

Geographic Range:

Plagiomimicus astigmatosum is a moth species found in the southwestern United States. it has been recorded in Cochise County, Arizona, Lincoln and Otero Counties, New Mexico, and Jeff Davis County, Texas (Poole 1995, GBIF.org 2024, Moth Photographers Group 2019). With increased survey effort, the species may be found in additional occurrences.

Conservation Considerations:

There is no targeted conservation for this species. Research is needed to better understand the distribution, population size and trend, habitats and ecology, and threats to this rare species.

Threats:

Threats to this species are not well understood, thought threats causing declines in other Lepidoptera in the region, including increased drought due to climate change, livestock grazing, and invasive species, may also be impacting this rare species.

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). While the impacts of drought on this species have not been studied, advanced timing to adulthood has been observed in other Lepidopteran species, both at low and high elevations (Forister *et al*. 2018). This may lead to phenological mismatch with plant resources. Drought may also adversely impact larval host plants and nectar sources; in warmer and drier years the optimal window for herbivory is shortened (Pettorelli *et al.* 2007) and plant productivity is lower (Gottfried *et al*. 2012).

Invasive non-native grasses in the Chihuahuan Desert, many of which were planted for livestock, have been shown to negatively affect local invertebrate communities (Litt and Steidl 2010). This loss in biodiversity and abundance may partly be due to the crowding out of native plants required by these herbivores. The Sonoran Desert is also home to over 350 invasive species (Gibson 2023), which may outcompete native plants.

In addition, this species is likely a specialist on plants in the family Asteraceae (Powell and Opler 2009, D. Wagner pers. comm. 2024). Reliance on a single host plant magnifies sensitivity to habitat loss and increases the risk for phenological mismatch (Kotiahoâ€¯*et al*.â€¯2005, Palashâ€¯*et al*.â€¯2022).

Population:

The population size and trend are not known for this species. Collections of *Plagiomimicus astigmatosum* from southeastern Arizona have not been made since the speciesâ€™ description, so whether it persists there is unknown. It is very rare in collections (Poole 1995), which may reflect its population size, or may reflect a lack of collecting effort in the regions where it occurs. In addition, D. Wagner (pers. comm. 2024) suggests this may be one of the rarest moths in

the western U.S.

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