Colletes aridus (Thirsty Plaster Bee)

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Taxonomy

- **Class**: INSECTA
- **Order**: HYMENOPTERA
- **Family**: COLLETIDAE
- **Genus**: Colletes
- **Scientific Name**: *Colletes aridus* Stephen, 1954
- **Common Name**: Thirsty Plaster 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

Bees in this genus are generally medium-sized, with extensive white, gray, or brown hair on a black integumen (Caril and Wilson 2023). Males of this species are about 7.5mm in length with mostly white hairs. They have short, deep brown to black antenna. They also have a have a short malar space (one-third as long as wide), no dark hairs on the body, an impunctate first tergum, and white sternal fasciae. Females are about 8.5mm. They appear most closely related to *Colletes scopiventer,* though they differ in having no dark hairs on the thoractic dorsum, shorter prothoractic spines, and much narrower fascial foviae (Stephen 1952).

Habitat and Ecology

Little is known about the habitats and ecology of this species. It has been collected from what are most likely grassland habitats in the South Central Semiarid Prairies and Chihuahuan Desert ecoregions. Collection records range from mid-April through mid-June, and at least one specimen was collected on Pope's Phacelia (*Phacelia popei*), a plant in the

waterlily family (Hydrophyllaceae) (Stephen 1952).

Bees in this genus are called cellophane bees because they line their nest cells with a polyester-like material, which they secrete from their Dufourâ€™s gland (Michener 2007). They usually nest in the ground and depending on the species, they can be particular about the soil substrate in which they nest (Wilson and Carril 2016). Alternatively, some species nest in pithy stems (Michener 2007). Though the bees are solitary, in some species nesting sites are used year after year, and over time large aggregations of nests appear (Wilson and Carril 2016). Many, though not all, bees in this genus are oligolectic, feeding on the plants of one family or genus, and the pollen provisions are liquid, rather than firm balls (Michener 2007).

Geographic Range:

This species is known from very few occurrences in southeastern New Mexico, and western Texas, in the United States. In New Mexico it is known from Vaugh and Milagro, in Guadalupe County and in Texas, records are known from Comstock and Langtry, in Val Verde County, McCamey, in Upton County, Catarina, in Dimmit County, and Van Horn, in Culberson County (Stephen 1952, Chesshire *et al*. 2023). In addition, the species has recently been recorded in the Texas Panhandle, close to the New Mexico State Line, at Muleshoe and Buffalo Lake National Wildlife Refuges (Auerbach *et al.* 2019).

Conservation Considerations:

There are no conservation measures in place for this species, though several recent records are from National Wildlife Refuges. While these lands are protected from land-use change, they are no removed from the major threat of increased drought due to climate change. Research is needed to better understand the distribution of this species, population size and trend, habitats and ecology, and threats.

Threats:

Threats to this species are not well understood, though agricultural intensification, drought, oil and gas extraction, and invasive species are likely threats. The shortgrass prairies at the eastern extent of the species range have undergone substantial long-term declines due to agricultural conversion. Agricultural intensification continues in the region, which has led to reduction and fragmentation of native grasslands (Auerbach *et al*. 2019).

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 several *Colletes* species at one site the Chihuahuan Desert were attributed to small body size of the bees, and associated sensitivity to heat and desiccation (Kazenel *et al.* 2024).

The majority of occurrence also fall within the Permian Basin, which had over 350 operating oil rigs as of December 2022 (The Coalition to Protect Americaâ€™s National Parks, 2023). While further development might result in habitat loss, reduced air quality is also a concern. Drilling and natural gas flaring is a major driver of the high ozone levels, and ozone has been shown to significantly impact flower visitation by many pollinating insects (Ryalls *et al*. 2022).

Chihuahuan Desert grasslands, which encompass part of the range of this species, have been invaded by several notable non-native grass species, many of which were planted for use by livestock. Invasion by these grasses has been shown to negatively affect the local invertebrate communities. In one study, for every 100 g/m^2 of the invasive grass *E. lehmanniana*, a 21% decrease in Lepidoptera and a 14% decrease in overall insect abundance was observed (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.

Population:

The population size and trend are not known for this species, though it is recorded very rarely. Apart from a 2020 record from Upton County, Texas (McCoshum 2020) and 2013 records from Muleshoe and Buffalo Lake National Wildlife Refuges (Auerbach *et al.* 2019), this species has not been recorded since 1986. Surveys are needed.

References:

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More Information

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