

Osmia watsoni (Watson's Mason Bee)



Smithsonian Institution,

Taxonomy

- **Class:** INSECTA
- **Order:** HYMENOPTERA
- **Family:** MEGACHILIDAE
- **Genus:** *Osmia*
- **Scientific Name:** *Osmia watsoni* Cockerell, 1911
- **Common Name:** Watson's Mason 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:** [G2](#)
- **NHNM State:** S1
- **NM Endemic:** NO

Description

Like many other *Osmia* species, *Osmia watsoni* is a medium sized, metallic bluish- black bee, with long white hairs on the thorax and robust mandibles (Carril and Wilson 2023). It is unique from other *Osmia* due to the the last antennomere of the male antenna, which is flattened, disc shaped, and shiny black (Cockerell 1912). While the scape and pedicel are also black, the remaining antennomeres are testaceous.

Habitat and Ecology

This species has been reported from blue grama grasslands of the Chihuahuan Desert and shortgrass prairies in northern Texas (Auerbach *et al.* 2019, Kazenel *et al.* 2020). It is unknown if this species is a generalist or specialist, though it has been collected on both milkvetch (*Astragalus* sp.) and *Salvia* (*Salvia* sp.), which are in the families Fabaceae and Lamiaceae, respectively. The nesting behaviors of this species is also unknown. Some *Osmia* nest in the ground, while others use plant stems or holes in wood. Most nests are sealed with mud or masticated plant material

(Carril and Wilson 2023).

Geographic Range:

This species was described from a specimen collected from Albuquerque, New Mexico (Cockerell 1912), though it has not been recorded there recently. In New Mexico it has also been recorded at the Sevilleta and Bosque del Apache National Wildlife Refuges (Chesshire *et al.* 2023). It is also known from Texas, where it has been collected at the foot of the Guadalupe Mountains in West Texas and in the Texas Panhandle, close to the New Mexico State Line, at Muleshoe and Buffalo Lake National Wildlife Refuges (Chesshire *et al.* 2023, Auerbach *et al.* 2019).

Conservation Considerations:

There are no conservation measures in place for this species, though all 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 and to examine whether drastic declines at one site are happening across the range, like we infer. Research on habitats and ecology and threats is also needed.

Threats:

The threats to this species are not well understood. Declines observed in this and other species at one site the Chihuahuan Desert have been attributed to small body size of these bees, and associated sensitivity to heat and desiccation (Kazenel *et al.* 2024). 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 additionally impact bee species by reducing floral resource availability (Phillips *et al.* 2017). The shortgrass prairies at the eastern extent of the species range have also experienced 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).

Population:

The population size is not know for this species, though drastic declines have been observed where the species was monitored from 2002 through 2019 at the Sevilleta National Wildlife Refuge (Wright *et al.* 2023, Kazenel *et al.* 2024). For the first eight years of the study, an average of 94 individuals were collected annually. In the last eight years of the study, only 18 individuals were collected, on average per year. This is a decline of 80% across the study period. As this data comes from a protected area where the land use has not changed, it can be inferred that similar declines may be happening across the range of the species.

References:

- Cockerell, T.D.A.. 1912. Names applied to bees of the genus *Osmia*, found in North America. *Proceedings of the United States National Museum* 42: (215-225).
- [ITIS. 2024. Integrated Taxonomic Information System \(ITIS\). 2024. https://www.itis.gov/](https://www.itis.gov/)
- [Ascher, J.S. and Pickering, J.. 2024. Discover Life bee species guide and world checklist \(Hymenoptera\): *Osmia watsoni* Cockerell, 1911. 2024.](#)

<https://www.discoverlife.org/mp/20q?search=Osmia+watsoni&flags=subgenus:>

- Chesshire, P.R., Fischer, E.E., Dowdy, N.J., Griswold, T.L., Hughes, A.C., Orr, M.C, Ascher, J.S. Guzman, L.M, Hung, K-L.J., Cobb, N.S. and McCabe, L.M.. 2023. Completeness analysis for over 3000 United States bee species identifies persistent data gap. *Ecography* e06584: (13-Jan).
- 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).
- Phillips, B.B., Shaw, R.F., Holland, M.J., Fry, E.L., Bardgett, R.D., Bullock, J.M. and Osborne, J.L.. 2017. Drought reduces floral resources for pollinators. *Global Change Biology* 24: (3226-3235).
- Carril, O.M. and Wilson, J.S.. 2023. Common Bees of Western North America. Princeton University Press, Princeton, NJ .
- Kazenel, M.R., Wright, K.W., Griswold, T., Whitney, K.D. and Rudgers, J.A.. 2024. Heat desiccation tolerances predict bee abundance under climate change. *Nature* 628: (342-362).
- [Wright, K.W., Kazenel, M.R., Bettinelli, J., Griswold, T.L., McLellan, J., Whitney, K.D. and Rudgers, J.A.. 2023. Bee species abundance and composition in three ecosystem types at the Sevilleta National Wildlife Refuge, New Mexico, USA ver 7. Environmental Data Initiative. 2024. <https://doi.org/10.6073/pasta/5a007cc78cf32244cb8a812f5be2ef60>](https://doi.org/10.6073/pasta/5a007cc78cf32244cb8a812f5be2ef60)
- 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).
- Auerbach, E.S., Johnson, W.P., Smith, J.R. and McIntyre, N.E.. 2019. Wildlife Refuges support high bee diversity on the Southern Great Plains. *Environmental Entomology* 48: (968-976).

More Information

