

Microphotus octarthrus (Chihuahuan Pink Glow-worm)



Mike Quinn, 2015



Jason Wilder, 2014

Taxonomy

- **Class:** Insecta
- **Order:** Coleoptera
- **Family:** Lampyridae
- **Genus:** Microphotus
- **Scientific Name:** *Microphotus octarthrus* Fall, 1912
- **Common Name:** Chihuahuan Pink Glow-worm
- **Synonyms:** *Microphotus abbreviatus* E. Olivier, 1912 E. Olivier, 1912
- **Taxonomic Name Source:** Green, J.W. 1959. Revision of the species of *Microphotus*, with an Emendation of the Lampyrini (Lampyridae). The Coleopterists Bulletin 13(3): 80-96.

Agency Status

- **NMDGF:**
- **Federal Status:**
- **BLM Sensitive:**
- **USFS:**
- **IUCN Red List:** [Data Deficient](#)
- **Nature Serve Global:** [GU](#)
- **NHNM State:** S1
- **NM Endemic:** NO

Description

Like other species of *Microphotus*, *M. octarthrus* males are small, fragile beetles with very large eyes and barely visible, reduced mouthparts between the eyes. The antennae are shorter than the pronotum, have less than eleven segments, and have a small bead-like process, called a tuberculiform appendix, on the tip of the terminal segment. They have short, pale legs (femora do not extend beyond the margin of the body), and simple tarsal claws. Females are larviform without elytra or hindwings. They have small, elongate, retractable heads, with simple eyes, called lateral ocelli or stemmata. The antenna is similar to that of the male yet has fewer segments. In *M. octarthrus* specifically, the elytra are less than three times as long as the pronotum (averaging about 2.5 times as long), the antennae have eight segments, the eyes beneath are broadly contiguous posteriorly, and the pronotum is truncate at the base. The median longitudinal line on the pronotum is not impressed. This species is also relatively small (4.25-6.25 mm) and the elytra is pale brown with darker tips (Green 1959).

Habitat and Ecology

Microphotus octarthrus is a desert-dwelling nocturnal firefly with flightless females (Usener and Cognato 2006). It is typically found in oak-pine transition zones, at least in southeastern Arizona (J. Cicero pers. comm. 2020). Populations in central and northern Arizona have different ecological niches that are uncharacterized. In New Mexico, the species can be found in the lower elevations of montane areas, such as the Sandia and Gila Mountains, in pinyon, oak, and juniper dominated shrublands and woodlands (Walker 2024). Like other fireflies, larvae in this genus have been observed feeding on snails, and may also feed on slugs, earthworms, and other soft bodied invertebrates. This species has been documented from several mountain ranges up to 6,000 feet in elevation (Green 1959). Collection records indicate that this species is active from April through September (Green 1959), depending on location.

Geographic Range:

Microphotus octarthrus has been reported from southwest Utah, Arizona, New Mexico, and western Texas, and from Chihuahua and Coahuila, Mexico (Fig. 41) (Green 1959, Zaragoza-Caballero et al. 2023, GBIF.org 2023, BugGuide 2023).

Conservation Considerations:

No conservation actions are currently in place for this species. However, historic localities appear to occur in a number of protected areas, including the Zion Wilderness in UT, Saguaro National Park in AZ, Middle Cherry Canyon Macrosite and Big Bend Proposed Wilderness in TX, and Reserva de la Biósfera in Chihuahua (Protected Planet 2020). Very few details are available regarding this species' life history or habitat associations, so basic ecological research would be beneficial. Surveys at historic sites throughout this species' range, as well as other citizen science efforts, would be helpful in determining the current range and distribution of this species. Adults appear to come readily to UV lights (BugGuide 2020), which could be useful for surveys.

Threats:

Specific threats to this species are not well studied. However, it is likely that climate change-related drought is a major threat. Fireflies typically need moisture to complete their life cycles; it prevents desiccation of vulnerable immature stages, and ensures the persistence of the soft-bodied invertebrates that are the preferred food source for the larvae. Other threats to this species include ground disturbances such as trampling by livestock, habitat alterations, roadside runoff and pollution, and impacts from off-road vehicle (ORV) use (J. Cicero pers. comm. 2019). Because females of this species are flightless with poor dispersal capabilities, they are especially vulnerable to these threats. Chemical pollution and flooding are also concerns. *Microphotus octarthrus* females have been observed climbing up the steep faces of road cuts to signal to males, while their larvae live down below in vegetation that accumulates along the road margin (J. Cicero pers. comm. 2019). Due to these roadside locations, individuals in these areas are subject to contamination from vehicles and flooding due to rain run-off (J. Cicero pers. comm. 2019). Specific threats to this species are not well studied. However, it is likely that climate change-related drought is a major threat to this species. Fireflies need moisture to complete their life cycles; it prevents desiccation of vulnerable immature stages, and it ensures the persistence of the soft-bodied invertebrates that are the larvae's preferred foods. More generally, fireflies are threatened by habitat degradation, light pollution, and pesticide use (Lewis *et al.* 2020), all of which could impact this species. Light pollution can interfere with the bioluminescent courtship signals used by this species (Owens and Lewis 2018), which may have cascading effects on population size and health.

Population:

Detailed data on population size and abundance are not available for this species.

References:

- [Protected Planet. 2020. Protected Planet The World Database on Protected Areas \(WDPA\). IUCN and UNEP-WCMC, Cambridge, UK . www.protectedplanet.net](http://www.protectedplanet.net)
- [Buschman, L. 2016. Field Guide to Western North American Fireflies . Draft. http://entomology.k-state.edu/doc/WesternFireflies%20March%202016a.pdf](http://entomology.k-state.edu/doc/WesternFireflies%20March%202016a.pdf)
- Lewis, S., Wong, C.H., Owens, A., Fallon, C., Jepsen, S., Thancharoen, A., Wu, C., De Cock, R., Novak, M., Lopez-Palafox, T., Khoo, V. and Reed, J.M. . 2020. A global perspective on firefly extinction threats. *BioScience* 70: (157-167).
- Owens, A.C.S. and Lewis, S.M.. 2018. The impact of artificial light at night on nocturnal insects A review and synthesis. *Ecology and Evolution* 8: (11337-11358).
- [National Park Service \(NPS\). 2018. Natural Resources Monitoring at Chiricahua National Monument \(U.S. National Park Service\). 2019. https://www.nps.gov/im/sodn/chir.htm](https://www.nps.gov/im/sodn/chir.htm)
- Reed, J.M., Nguyen, A., Owens, A.C.S. and Lewis, S.M.. 2019. Linking the seven forms of rarity to extinction threats and risk factors An assessment of North American fireflies. *Biodiversity and Conservation* 29: (57-75).
- Green, J.W.. 1959. Revision of the species of *Microphotus*, with an Emendation of the *Lampyrini* (Lampyridae). *The Coleopterists Bulletin* 13: (80-96).
- Usener, J.L. and A.I. Cognato. 2006. Phylogenetic review of desert firefly taxonomic characters (Coleoptera Lampyridae *Microphotus*). *Insect Systematics and Evolution* 37: (71-80).
- [IUCN. 2021. The IUCN Red List of Threatened Species. Version 2021-1. www.iucnredlist.org](http://www.iucnredlist.org)
- Cicero, J.M.. 1981. Evolution of the glow-signal system in *Microphotus* (Coleoptera, Lampyridae). University of Arizona: (27).
- [\[GBIF\] Global Biodiversity Information Center. 2020. GBIF Occurrence Download *Microphotus octarthrus*. https://www.gbif.org/species/1162843](https://www.gbif.org/species/1162843)
- [BugGuide. 2020. Species *Microphotus octarthrus*. Iowa State University Entomology, Ames, IA . https://bugguide.net/node/view/1219646](https://bugguide.net/node/view/1219646)
- Usener, J.L.. 2004. Phylogenetic revision of desert fireflies (Coleoptera Lampyridae *Microphotus*). *Unpublished M.S. Thesis, Texas A&M University* .
- Usener, J.L. and A.I. Cognato. 2005. Patterns of mitochondrial diversity among desert firefly populations (*Lampyridae Microphotus octarthrus*). *The Coleopterists Bulletin* 58: (361-367).
- [ITIS. 2019. Integrated Taxonomic Information System \(ITIS\). 2019. https://www.itis.gov/](https://www.itis.gov/)

More Information

