Sclerobunus klomax (Klomax Spider)

No Photo Available

Taxonomy

- **Class**: ARACHNIDA
- **Order**: Opiliones
- **Family**: Paranonychidae
- **Genus**: Sclerobunus
- **Scientific Name**: Sclerobunus klomax Derkarabetian & Hedin, 2014
- **Common Name**: Klomax Spider
- **Synonyms**:
- **Taxonomic Name Source**:Derkarabetian, S. & Hedin, M. (2014) Integrative taxonomy and species delimitation in harvestmen: A revision of the western North American genus Sclerobunus (Opiliones: Laniatores: Travunioidea). PLoS One, 9(8), 1–25 (e104982). https://doi.org/10.1371/journal.pone.0104982

Agency Status

- **NMDGF**:
- **Federal Status**:
- **BLM Sensitive**:
- **USFS**:
- **IUCN Red List**: Not Evaluated
- **Nature Serve Global**:
- **NHNM State**: S1
- **NM Endemic**:YES

Description

Habitat and Ecology

This species is known from forested areas near mountain peaks in central New Mexico (Derkarabetian & Hedin, 2014). All records are from July 3rd to July 20th, but the emergence period isn't known (Derkarabetian & Hedin, 2014). The ecology of this spider is unknown, but as a Harvestmen spider in the genus Sclerobunus, it relies on microhabitats that are moist and dark (Derkarabetian & Hedin, 2014). They are typically found under logs and rocks in high-elevation forests or in caves (Derkarabetian & Hedin, 2014). The diet of this species isn't known (Derkarabetian & Hedin, 2014) but Harvestmen spiders are known to be omnivores. They scavenge and hunt for small invertebrates and opportunistically feed on decaying leaves or fungi (Halaj and Cady 2002). Mating rituals in this species are unknown and mating Harvestmen spiders is incredibly varied and often complex (Machado and Burns 2024). More research is needed on the ecology of this species.

Geographic Range:

The full scope of this spider's range is unknown. The species is known from one location (Derkarabetian & Hedin, 2014). The only location is a rock pile on forested talus slope along State Road 150, 7.7 miles from the junction of State Road 150 and State Road 230 near Taos Ski Valley in New Mexico. More research is needed into the range of this species.

Conservation Considerations:

There are no known active range-wide conservation actions in place for this spider. More research is needed into the ecology and range of this species.

Threats:

This spider's range includes the Southwestern United States. which 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) and droughts are projected to become more prolonged, severe, and common in the region under future climate change scenarios (USGCRP 2018). Drought conditions over the last few years have severely limited food and resources (Hughes 2020) and environmental stochasticity, especially variation in plant quantity, quality, and phenology in other arthropod groups (Ehrlich and Murphy 1987). As this spider likely relies on small insects for food, any insect declines will affect this species. Another threat facing this spider is catastrophic fire or lack of fire. The impacts of fire on this species may depend on the intensity and size of the fire, as well as seasonal timing (USFWS et al. 2004). With population numbers in small areas one fire, controlled or wild, could wipe out a large percentage of this species (Moretti et al. 2008). On the other hand, with no fire this habitat may grow senescent or be succeeded which will also drive the taxa towards potential extinction (Moretti et al. 2008). The impacts of land use on fire intensity and spread may also be consequential. Many arthopods respond to climate change by moving to higher elevations or latitudes however, this is not an option for this taxa where there are no higher elevation habitats to shift to and as a result just a small amount of warming could push this taxa into thin air driving it to extinction as seen in many butterflies (Forister et al. 2010, Holland 2010, Rödder et al. 2021, Forister et al. 2023). Inbreeding depression is likely also a major threat to this spider, as populations are small and isolated. Inbreeding depression results when slightly deleterious alleles accumulate in a small population, reducing the likelihood of population persistence (Bilde et al. 2007, Bonte 2009). A reduction in fitness resulting from the loss of genetic diversity significantly increases the risk of extinction when populations are subject to environmental stress. Saccheri et al. (1998) found that microclimatic conditions combined with inbreeding caused the extinction of a checkerspot butterfly population in Finland. This spider relied on dark and moist microhabitats such as logs and caves. Mammola et al. (2017) characterized the thermal conditions of caves in the western Alps, and related climate data to the occurrence of Troglohyphantes spiders. Using ecological niche modeling to predict habitat suitability both in the Pleistocene and under future global warming scenarios. These analyses pointed toward a future decline in habitat suitability for subterranean spiders and the potential extinction of the most restricted endemic species. When compared with other species that live in confined habitats such as islands and mountains, Mammola et al. (2017) expect cave species to be as much, if not more, vulnerable to climate change.

Population:

The population size and trend are not known for this species. Determination of population size and monitoring of population trends is necessary to ensure the population is stable.

References:

- Derkarabetian, S. & Hedin, M.. 2014. Integrative taxonomy and species delimitation in harvestmen: A revision of the western North American genus Sclerobunus (Opiliones: Laniatores: Travunioidea). PLoS One9: (1-25). https://doi.org/10.1371/journal.pone.0104982
- JURAJ HALAJ, ALAN B. CADY. 2000. Diet Composition and Significance of Earthworms as Food of Harvestmen (Arachnida: Opiliones). The American Midland Naturalist143: (487-491). https://bioone.org/journals/the-american-midland-naturalist/volume-143/issue-2/0003-0031_2000_143_0487_DCASOE_2.0.CO_2/Diet-Composition-and-Significance-of-Earthworms-as-Food-of-Harvestmen/10.1674/0003-0031(2000)143[0487:DCASOE]2.0.CO;2.full
- Glauco Machado, Mercedes Burns. 2024. Reproductive biology of harvestmen (Arachnida: Opiliones): a review

of a rapidly evolving research field. Current Zoology70: (115-135). https://academic.oup.com/cz/article/70/1/115/6960847
- U.S. Fish and Wildlife Service. 2004. Conservation Plan for the Sacramento Mountains Checkerspot Butterfly (Euphydryas anicia cloudcrofti).
- Williams, A.P., Cook, B.I. and Smerdon, J.E.. 2022. Rapid intensification of the emerging southwestern North American megadrought in 2020–2021. Nature Climate Change12: (232-234). https://www.nature.com/articles/s41558-022-01290-z
- Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.). 2018. Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II. USGCRP, Washington, DC 2: (1524). https://www.nrc.gov/docs/ML1900/ML19008A414.pdf
- Hughes, P.. 2020. Population status of the Sacramento Mountain Checkerspot Butterfly and current tactics to proposed to mitigate the probability of imminent extinction. Preliminary results.. U.S. Forest Service, Sacramento Ranger District, Cloudcroft, NM .
- Ehrlich, P.R. and Murphy, D.D.. 1987. Conservation lessons from long-term studies of checkerspot butterflies.. Conservation Biology1: (122-131). https://conbio.onlinelibrary.wiley.com/doi/abs/10.1111/j.1523-1739.1987.tb00021.x
- Marco Moretti, Francesco de Bello, Stuart P. M. Roberts, and Simon G. Potts. 2009. Taxonomical vs. functional responses of beecommunities to ?re in two contrasting climatic regions. Journal of Animal Ecology78: (98-108). https://besjournals.onlinelibrary.wiley.com/doi/epdf/10.1111/j.1365-2656.2008.01462.x
- Forister, Matthew & Mccall, Andrew & Sanders, Nathan & Fordyce, James & Thorne, James & O'Brien, Joshua & Waetjen, David & Shapiro, Arthur.. 2010. Compounded effects of climate change and habitat alteration shift patterns of butterfly diversity. Proceedings of the National Academy of Sciences107: (2088-2092). https://pubmed.ncbi.nlm.nih.gov/20133854/
- Holland, R.. 2007. SMCB Hollard Letter. Wild Earth Guardians, Albuquerque 2021. https://pdf.wildearthguardians.org/support_docs/letter_checkerspot-butterfly_10-16-07.pdf
- Rödder, D., Schmitt, T., Gros, P., Ulrich, W. and Habel, J.C.. 2021. Climate change drives mountain butterflies towards the summits. *Scientific Reports* 11: (45303).
- Forister, M.L., Grames, E.M., Halsch, C.A., Burls, K.J., Carroll, C.F., Bell, K.L., Jahner, J.P., Bradfod, T., Zhang, J., Cong, Q., Grishin, N.V., Glassberg, K., Shapiro, A.M. and Riecke. T.V.. 2023. Assessing risk for butterflies in the context of climate change, demographic uncertainty, and heterogenous data sources. *Ecological Monographs* 93: (e1584).
- T. Bilde, A. A. Maklakov, N. Schilling. 2007. Inbreeding avoidance in spiders: evidence for rescue effect in fecundity of female spiders with outbreeding opportunity. Journal of Evolutionary Biology20: (1237-1242). https://doi.org/10.1111/j.1420-9101.2006.01280.x
- D. Bonte. 2009. Inbreeding depresses short and long distance dispersal in three congeneric spiders. Journal of Evolutionary Biology22: (1429-1434). https://doi.org/10.1111/j.1420-9101.2009.01756.x
- Saccheri, I., Kuussaari, M., Kankare, M. et al.. 1998. Inbreeding and extinction in a butterfly metapopulation.. Nature392: (491-494). https://doi.org/10.1038/33136
- Mammola, S., Goodacre, S.L. and Isaia, M.. 2018. Climate change may drive cave spiders to extinction. Ecography41: (233-243). https://doi.org/10.1111/ecog.02902

More Information