Ellipsoptera nevadica tubensis (Tube Tiger Beetle)

No Photo Available

Taxonomy

- **Class**: INSECTA
- **Order**: COLEOPTERA
- **Family**: CARABIDAE
- **Genus**: Ellipsoptera
- **Scientific Name**: Ellipsoptera nevadica subsp. tubensis (Cazier, 1939)
- **Common Name**: Tube Tiger Beetle
- **Synonyms**:
- **Taxonomic Name Source**:C. Barry Knisley, Mark S. Romero, Robert E. Acciavatti. 2023. Tiger Beetles of New Mexico: Identification, Biology, and Conservation.

Agency Status

- **NMDGF**:
- **Federal Status**:
- **BLM Sensitive**:
- **USFS**:
- **IUCN Red List**: Not Evaluated
- **Nature Serve Global**: T3
- **NHNM State**: S1
- **NM Endemic**:NO

Description

From Tiger Beetles of New Mexico: (C. Barry Knisley, Mark S. Romero, Robert E. Acciavatti. 2023. Tiger Beetles of New Mexico: Identification, Biology, and Conservation.) "*Ellipsoptera nevadica tubensis* is distinguished by its reddish colored elytra and broad maculation".

Habitat and Ecology

The general habitats of the The Tube Tiger Beetle are in high deserts and grasslands in sandy river habitats or other sites where a water-edge can be found as a permanent source of water Knisley et al. 2014, Pearson et al. 2015). This subspecies shares much of its habitat preference with other nevadica subspecies including the same adult seasonal activity (Knisley at al. 2023). Nevadica subspecies are most commonly associated with inhabiting saline playas, salt deposits in water-edge habitats, inland salt marshes and will always be in the presence of sparse vegetation (Knisley et al. 2023, Montana Field Guide 2024). Across its range, nevadica tiger beetles have been found in alkaline soils and grasslands and prairies with adjacent water sources including: lakes, reservoirs, marshes, ponds, and rivers (Montana Field Guide 2024). Adults are gregarious, both diurnal and nocturnal, and are noted going in and out of mud cracks on moist alkali flats, often stopping to drink water on hot days (Montana Field Guide 2024). Life cycle is estimated to be two years with most nevadica subspecies' populations having a summer adult cycle (Knisely et al. 2023, Montana Field Guide 2024). In New Mexico, adult populations are commonly observed from June to July, but numerous individuals collected in mid-May, including a few records in August, suggest it emerges and disappears earlier than most other Southwestern summer tiger beetle species (Knisely et al. 2023).

Geographic Range:

The Tube Tiger Beetle has a weighted distribution toward the west end of the four corners area of the United States in northeastern Arizona, southeastern Utah, and northwestern New Mexico (Knisley et al. 2014, 2023; Pearson et al.

2015). Though it is rare range-wide, it is likely far more uncommon at its range limit in New Mexico where historically it has been at five sites between the counties of Rio Arriba and San Juan though as of 2021 it is currently only confirmed in one remaining extant site in San Juan county (Knisley et al. 2023, B.Knisley pers. comm. 2024). Though Tuba City, Arizona, the original type locality where this subspecies was collected and from where it gets its name, is now an extirpated site, there are probably additional sites across the range of Tube Tiger Beetles with suitable habitat that haven't been found or confirmed with systematic surveys (Knisley et al. 2014, 2023).

Conservation Considerations:

The Tube Tiger Beetle was listed under the New Mexico Chapter 17 status not being protected by the state of New Mexico over eight years ago (NMDGF 2006). Reevaluating this taxon and granting it status as a subspecies in need of conservation would be crucial in allowing necessary habitat protection. Because life histories for Tiger Beetles are so similar, Knisley (2020) outlined numerous conservation strategies which can be applied to most of this taxa: Long term management and monitoring of population size and distribution is one of, if not the most critical activity for assessing the status of rare or threatened tiger beetle species. (Knisley 2020). Biological studies have been able to determine life history, habitat requirements, population dynamics, threats, and guidance for site protection and key conservation strategies especially captive rearing, translocation, and habitat parameters for many species, which in turn provide direction on specific conservation goals (Knisley 2020). Acquisition of currently occupied sites and protection of the habitats within them are the most important strategies for combating habitat loss and deterioration which is the major threat to tiger beetles (Knisley 2020). Required of these sites would be active, annual, or semiannual management to ensure the coequal goal of maintaining sufficient habitat quality (Knisley 2020). Among the most significant and accomplishable of these management methods for habitat would be reducing vegetation to create necessary open space for Tiger Beetle foraging and feeding (Knisley 2020, Knisley et al. 2023). Many known historic sites for threatened tiger beetles have been lost or permanently impacted by development or other anthropogenic impacts; thus, captive rearing and translocation have demonstrated to be proven methods which can efficiently create populations for extirpated sites (Knisley 2020). A lack of unoccupied sites with suitable habitat can be a significant limitation with this approach as supplementing existing populations in decline without concurrent habitat improvement yields a reduced likelihood of success (Knisley 2020). However, due to a century of laboratory work in the study of life history, developmental effects, and physiology of tiger beetles, captive rearing has shown remarkable success and standardization, with few modifications on a species by species basis, to reintroduce rare species to extirpated sites as a preferred alternative to using beetles from an existing population because it mitigates developmental mortality and amplifies the breeding potential of individuals taken from the wild (Knisley 2020).

Threats:

Knisely et al. (2023) noted through personal communication with a colleague that the type locality of Tuba City, Arizona, where the subspecies was originally collected and from where it gets its name, has been destroyed because of construction to grade and channel stream margins (Knisely et al. 2014, 2023). Habitat degradation due to anthropogenic threats has been proven to be the leading basis for understanding dramatic tiger beetle declines especially in the arid conditions of the southwest (Knisely et al. 2023). The Tube Tiger Beetle's absence from historical sites in New Mexico has been observed to coordinate in response to the loss of river edge sites as an impact from agriculture and development with the most recent record only finding a few adults south of Farmington in 2021; this alone illustrates that this subspecies is, at the very least, of serious conservation concern in the state of New Mexico (Knisely et al. 2023). The Arizona and Utah sites have yet to be sufficiently surveyed in a threat-decline based context though it can be inferred, due to past evidence of similar habitats experiencing similar degradation leading to similar declines in tiger beetles, that those sites are likely hosting the same stressors impacting threatened subspecies like the Tube Tiger Beetle (Knisely et al. 2023). The lowering of water flows from irrigation, diversions, dams, development, and other disruptions on water-edge habitats reduce periodic sand deposition needed to sustain and create suitable substrates, resulting in increased vegetation growth that eliminates the open areas needed by tiger beetles (Knisely et

al. 2023). Lower floodplain damage due to trampling by cattle has also been observed (Knisely et al. 2023). These threats to water-edge habitats are pervasive and damaging enough to substantially affect even generalist species (Knisely et al. 2023). Water-edge species in the southwest are of particular threat as drier conditions driven by climate change increase the rate and length of droughts as well as facilitate reductions in soil moisture (Knisely et al. 2023). Lower groundwater levels mean that even saline habitats experience considerably decreased periods of time when the saline playas hold water (Knisely et al. 2023). Lack of water reduces adult activity time and can adversely affect food availability, oviposition, survival, and larval recruitment, all of these ultimately resulting in smaller populations with increased larval mortality, prolonged larval development, and reduced adult fecundity (Knisely et al. 2023). The catastrophic decline of the Coral Pink Sand Dunes Tiger Beetle (Cicindela albissima) of southwestern Utah is an important recent example for understanding the effects of drought on southwestern tiger beetles (Knisely et al. 2023). Adult members had increased in recent years to a peak around 3,000 in 2018 and 2019, then declined to less than 200 in 2021 after record low rainfall in summer of 2019 through the fall of 2020 (Knisely et al. 2023). When looking at the historical records, massive declines in the future as a result of climate change is to be expected, particularly for southwestern tiger beetles in states like New Mexico (Knisely et al. 2023).

Population:

The exact population is not known for this subspecies, however past studies with southwestern tiger beetles have found that population trends are mainly determined by rainfall (Knisley at al. 2023).

References:

- GBIF.org. 2025. GBIF Occurrence Download. https://doi.org/10.15468/dl.m47zfh
- U.S. Global Change Research Program (USGCRP). 2018. Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II. Washington, DC, USA : (1515).
- C Barry Knisley and Rodger Gwiazdowski. 2020. Conservation Strategies for Protecting Tiger Beetles and Their Habitats in the United States: Studies With Listed Species (Coleoptera: Carabidae: Cicindelidae). Annals of the Entomological Society of America114: (293-301). https://academic.oup.com/aesa/article/114/3/293/6024548
- Pearson, D. L., C. B. Knisley, D. P. Duran, and C. J. Kazilek. 2015. A Field Guide to the Tiger Beetles of the United States and Canada: Identification, Natural History, and Distribution of the Cicindelinae. Oxford University Press.
- C. Barry Knisley, Mike Kippenhan, and David Brzoska. 2014. Conservation status of United States tiger beetles. Terrestrial Arthropod Reviews7. https://brill.com/view/journals/tar/7/2-4/article-p93_3.xml?ebody=abstract%2Fexcerpt
- New Mexico Department of Game and Fish (NMDGF). 2006. Comprehensive Wildlife Conservation Strategy for New Mexico. New Mexico Department of Game and Fish, Sante Fe, New Mexico . https://bison-m.org/documents/47967_Comprehensive-Wildlife-Conservation-Strategy.pdf
- 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 Change.
- C. Barry Knisley, Mark S. Romero, Robert E. Acciavatti. 2023. Tiger Beetles of New Mexico: Identification, Biology, and Conservation. https://books.google.com/books/about/Tiger_Beetles_of_New_Mexico.html?id=3eW5zwEACAAJ
- Montana Natural Heritage Program. 2024. Nevada Tiger Beetle — Ellipsoptera nevadica. https://FieldGuide.mt.gov/speciesDetail.aspx?elcode=IICOL02170

More Information