Ellipsoptera nevadica playa (Playa Tiger Beetle)

No Photo Available

Taxonomy

- **Class**: INSECTA
- **Order**: COLEOPTERA
- **Family**: CARABIDAE
- **Genus**: Ellipsoptera
- **Scientific Name**: Ellipsoptera nevadica playa (Acciavatti and Knisley, 2022)
- **Common Name**: Playa 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**: TNR
- **NHNM State**: SNR
- **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 playa* is distinguished from the other subspecies in New Mexico by its wider maculation that may be confluent especially on the posterior half of the elytra and may cover much of its surface in some specimens, and its brown or greenish dorsal color."

Habitat and Ecology

Saline habitats such as playas, water-edge salt deposits and inland salt marshes with sparse vegetation are the areas in which E. n. playa is an obligate inhabitant of. (Pearson et al. 2015, Knisley et al. 2023). It is typically found with other saline species including Cicindela willistoni, C. fulgida, Eunota togata, and E. circumpicta (Knisley et al. 2023). More adults are generally found when saline playas are wetter a few days after rain. Past studies with southwestern tiger beetles have found that population trends are largely driven by rainfall and thus more adults generally emerge when saline playas are wetter following rains (Knisley et al. 2023). Larvae burrow at depths of 22-35cm among vegetation near grass hummocks, margins of sloping banks, and salt flats (Pearson et al. 2015). Adult records span from June 30 to the middle of August (Knisley et al. 2023).

Geographic Range:

This Tiger Beetle occurs in the saline playas of two major regions of New Mexico: the Estancia Basin and the Tularosa Valley, and in the Salt Basin along the margins of the southern New Mexico border into the Salt Basin of west Texas, that latter being the third major region of occurrence for this subspecies. The specific counties in New Mexico with confirmed records are Doña Ana, Otero, Sierra, and Torrance. The records occurring in Torrance are mainly attributed to the Laguna del Perro complex in the Estancia Basin, with rare records confirmed in smaller playas nearby also in Torrance. There are well documented occurrence records in the Tularosa valley primarily in the playas on the margins

of White Sands National Park though there are records both inside the National Park and from White Sands Missile Range. (Knisely et al. 2023) This region probably has the highest population of E. n. playa, with many other sites, such as those within White Sands Missile Range, still unaccounted for but likely having stable populations as well. In both the Salt Basin of west Texas and in far southeastern Otero County at the edge of the New Mexico state line, Knisley et al. (2023) found records of this tiger beetle at most sites.

Conservation Considerations:

Because life histories for tiger beetles are so similar, Knisley et al. (2020) outlined numerous conservation strategies which can be applied to most of the 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. 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. 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. Required of these sites would be active, annual, or semiannual management to ensure the coequal goal of maintaining sufficient habitat quality. Among the most significant and accomplishable of these management methods for habitat would be reducing vegetation, where encroachment is an issue, to create necessary open space that are necessary for foraging, oviposition, and larval development. (Knisley and Gwiazdowski 2021). Many known historic sites for common and 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. 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. However, 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. It is important to recognize that translocations to increase population size will only be a temporary solution if the habitat conditions are not suitable. Tiger beetles will rapidly increase their population size to match the carrying capacity of a site, so the key to maintaining or creating a viable population is management to improve habitat quality.

Threats:

Although this New Mexico subspecies has a limited range and occurs only in relatively few sites, it is well-established in the Estancia and Tularosa basins of New Mexico and in the Salt Flat Basin of west Texas, while additional populations from the Tularosa Basin likely occur within the White Sands Missile Range with some level of protection from disturbance-related threats as a result of the highly restricted access to that U.S. Military facility (Knisley et al. 2023). As for the Estancia Basin, it is mostly private and unprotected. This means that the majority surface land use of it, cattle grazing, is widespread and unregulated. It is highly probable that some existing sites along rangelands in the area are impacted by extensive trampling from cattle which either disrupts larval activity or destroys their burrows (Knisley et al. 2023). However, the more pressing threat to this habitat might be the permanent drying of surface soils from a lowered water table caused by increased well drilling and irrigation pumping. (Knisley et al. 2023). It is known that areas of intense irrigation damage tiger beetles habitats by lowering the water table which dessicates both the critical surface and near surface soil moisture needed for larvae (Knislely 2011). This is known to have already caused the extirpation of the Willcox Playa population (Knisley B. Pers. Comm. 2025). On top of irrigation related threats to saline habitats, projections of increased droughts in the Southwest, largely due to human caused climate change which will make droughts more prolonged, severe, and common, present a major continuing and future threat to most of and potentially all the New Mexico tiger beetle fauna (USGCRP 2018, Knisley et al. 2023). Increased evaporation due to

warmer surface temperatures and decreased precipitation will drive significant reductions in soil moisture depth which is projected to average 3cm/year in the Southwest (Knisley et al. 2023). Lack of water reduces adult activity time and fecundity while also adversely affecting food availability, oviposition, survival and larval recruitment, all of these ultimately resulting in smaller populations within any given habitat (Knisely 2011, Knisley et al. 2023). There are already species thought to have declined as a direct result of these impacts such as: Cicindela tranquebarica joaquinensis in the San Joaquin Valley of California, C. praetextata along the lower Colorado and Virgin Rivers, C. oregona maricopa in Arizona, and C. willistoni sulfontis and Ellipsoptera nevadica citata in the Sulphur Springs Valley of Arizona (Knisely 2011). The current habitat health of the three major regions, where the Playa Tiger Beetle is endemic, is variable but all are trending at different rates towards habitat degradation. Extensive research has been done on groundwater availability of the Estancia Basin. Researchers have shown that since the development of groundwater resources, beginning in the 1950s, groundwater levels throughout the Estancia Basin have demonstrated a steady decline (Newton et al. 2020). Groundwater accounts for more than 99 percent of the total withdrawals in the region, most of which are for irrigated agriculture, and the rest of the withdrawals go toward domestic and commercial uses. (Estancia Basin Regional Water Plan 2016). As groundwater levels decline, discharge to the playa lakes decline as well, resulting in a decrease in evaporation (Estancia Basin Regional Water Plan 2016). With continued groundwater discharge rates being greater than estimated recharge rates, current management of water resources in the Estancia Basin with no net depletion of the resource is not possible (Newton et al. 2020). Under current conditions in the Estancia Basin, groundwater is effectively a finite resource that is being mined, with the life expectancy for these resources being 81 to 117 years (Newton et al. 2020). The White Sands dune field is an ecosystem at risk of instability due to extensive groundwater extraction on the eastern edge of the Tularosa Basin. Hydrologic modeling has shown that increased groundwater pumping in response to increased temperatures and drought conditions will lead to water level decreases up to 1.5 meters. The dune field only exists as a permanent landscape feature because the gypsum sands are held in place at the base by water weight wicked up from the ground, so a decrease in water resources could result in increased sand motility, and therefore instability of the interdune habitats where herbivorous insects, many of which are prey for tiger beetles, occur (Bourret 2015). This will also reduce the water tables for saline playas on the margins of White Sands further putting strain on tiger beetle populations. In a region of normally low rainfall and high evaporation, groundwater is a vital resource to municipalities, industries, and landowners in the Salt Basin of west Texas. Because the city of El Paso, to the west of the Salt Basin, is facing serious water shortages in the next 20 to 30 years, city and regional planners are looking, in part, to extract water resources from the Salt Basin. Water levels have already been declining in response to pumping, although the rate of decline has slowed because of decreases in irrigation. Recent studies suggest however, that producing large amounts of water from these areas may not be economically feasible anyway.” (Angle 2001) There is concern of increased drought conditions in the Salt Basin affecting the ability of crops and livestock, and thus the need to start increasing irrigation pumping. (Angle 2001, Ashworth et al. 2016). On top of that, increased aquifers are planned to be drilled in response to mining water supply shortages including planned increases in the mining of sulfur and other extraction activities related to oil and gas (Ashworth et al. 2016). Given the previously mentioned threats, there is some evidence of a decline or complete loss of some of the saline habitat species of the Estancia and Tularosa Basin and other saline sites. Knisley et al. (2023) describe experiences over several decades of visiting saline playa sites combined with contacting other collectors and colleagues where saline playa inhabiting Tiger Beetle species are found less frequently and in lower numbers in recent years than had been found in previous decades. Some of those subspecies include: C. w. estancia, C. fulgida rumpii, and E. n. playa (Knisley et al. 2023). These species are typically found only when the playa has water, and this has been less frequent in recent years. Although Knisely et al. (2023) did not consider this subspecies of current conservation concern, there is reason to believe that, given the present state of their habitats and the alarming projections of degradation in the future, it is expected this Tiger Beetle will be eligible for a threatened status in the near future.

Population:

Recently this tiger beetle was found to have extirpated from its only site in the area of the Willcox Playa in Arizona due to lowering water levels (Knisley B. Pers. Comm. 2025). This may indicate that the Playa Tiger Beetle is declining

seeing we know at least one population is lost and it faces many of the same threats elsewhere. Past studies with southwestern tiger beetles have also found that population trends are mainly determined by rainfall (Knisley et al. 2023). This is concerning as 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) and droughts are projected to become more prolonged, severe, and common in the region under future climate change scenarios (USGCRP 2018). This may be resulting in population declines however, more information is needed on the subject.

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More Information