

Cuterebra mirabilis (A Botfly)

No Photo Available

Taxonomy

- **Class:** INSECTA
- **Order:** Diptera
- **Family:** Oestridae
- **Genus:** Cuterebra
- **Scientific Name:** Cuterebra mirabilis Sabrosky, 1986
- **Common Name:** A Botfly
- **Synonyms:**
- **Taxonomic Name Source:** ITIS. 2025. Integrated Taxonomic Information System. <https://www.itis.gov/>

Agency Status

- **NMDGF:**
- **Federal Status:**
- **BLM Sensitive:**
- **USFS:**
- **IUCN Red List:** [Not Evaluated](#)
- **Nature Serve Global:**
- **NHNM State:**
- **NM Endemic:** YES

Description

Habitat and Ecology

This botfly is associated with grassland habitats where its hosts, the Black-tailed jack rabbit (*Lepus californicus*), are abundant (Pfaffenberger and Valencia 1988). Larvae develop in the host before exiting to pupate in the soil (Pfaffenberger and Valencia 1988). Adult emergence is strongly seasonal, typically occurring in late summer to mid-fall, which corresponds to the period when adults have been observed (Pfaffenberger and Valencia 1988). Adults are short-lived and do not feed; mating generally takes place soon after emergence, often near emergence sites or host habitat (Pfaffenberger and Valencia 1988). Females do not lay eggs directly on the host but instead oviposit on vegetation, soil, or debris near burrow entrances, relying on host contact to trigger larval entry (Pfaffenberger and Valencia 1988). More research is needed on the ecology of this species.

Geographic Range:

The full scope of this botfly's range is unknown. The species is known from four locations (iNaturalist 2025). One is within Sevilleta National Wildlife Refuge. One is near the New Mexico/Texas border just north of Clovis in Ned Houk Memorial Park. One is found within Albuquerque metro area (iNaturalist 2025). And the fourth area is within Fort Sumner, New Mexico (Pfaffenberger and Valencia 1988). More research is needed in to the range of this species.

Conservation Considerations:

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

Threats:

This botfly'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 insect groups (Ehrlich and Murphy 1987). Another threat facing this botfly 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 as seen in other insect groups (Cary et al. 2004, Wasserman et al. 2023). On the other hand, with no fire this habitat may grow senescent or be succeeded which will also drive the taxa towards potential extinction (Cary et al. 2004, Wasserman et al. 2023). The impacts of land use on fire intensity and spread may also be consequential. For example, grazing may temper a fire, as grazed meadows carry less fuel load, but the presence of some invasive grasses which are more abundant in grazed areas, such as Cheatgrass (*Bromus tectorum*), may cause more frequent fires due to invasive grasses adding novel and continuous fuels (USFWS et al. 2004, Fusco et al. 2019). This botfly has likely been in slow decline, due to land use changes in the region, since the arrival of European settlers similar to other insect groups (Swengel et al. 2011). North American prairies have declined by an estimated 99% in the last few centuries, primarily due to conversion for agriculture (Samson and Knopf 1994). As a result, like in other groups, this botfly is now restricted to isolated remnants of fragmented prairie habitat (Selby 2005). These isolated patches remain threatened by habitat loss and degradation from urban development, intensive grazing regimes, pesticide use, silviculture, the invasion of non-native plants (Wright et al. 2003, Selby 2005). Under these current circumstances, this species is vulnerable to local extirpations, and given the distance between habitat patches, recolonizations are unlikely (Selby 2005). Intensive grazing has been shown to adversely impact other remnant prairie butterflies, likely due to loss of nectar sources, loss of larval host plants, changes in vegetative structure and trampling of larvae and eggs (Dana 1991). Invasive species such as Smooth Brome (*Bromus inermis*), Kentucky Bluegrass (*Poa pratensis*), Leafy Spurge (*Euphorbia esula*), and woodland invasion by both native and non-native plants also threatens prairie remnant habitats. Pesticide use is also problematic, as many prairie remnants are surrounded by rangeland and cropland (Selby 2005). Management with prescribed burns can also negatively impact prairie butterfly populations if carried out late in the spring or in the fall, over too large an area, or too frequently (Dana 1991). Being a grassland specialist, the botfly will face the same threats as grasslands such as grazing. Though some argue grazing has no impact on different species and may even be beneficial due to decreased fire potential (fuel loads), there is some evidence over grazing may be harmful. For some insects, including the Sacramento Mountains Checkerspot Butterfly, grazing also directly degrades the habitat by reducing the health and abundance of host plants (by as much as 60% in some studies) (McIntyre 2010), and promotes the spread of invasive species, which outcompete host plants and change the composition of vegetation communities (Souther et al. 2019). Grazing not only limits plant availability and degrades habitat but causes direct mortality of eggs as well as seen in other insect groups. For example, mortality of post-diapause larvae may be higher due to trampling; this has been observed in the Sacramento Mountains (Pittenger and Yori 2003).

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:

- [iNaturalist. 2025. iNaturalist Observations Dataset \(Cuterebra mirabilis\).](https://www.inaturalist.org/observations/dataset/Cuterebra_mirabilis)
<https://www.inaturalist.org/taxa/1403686-Cuterebra-mirabilis#map-tab>

- [Pfaffenberger, Gary S., and Viviana B. Valencia. 1988. Ectoparasites of Sympatric Cottontails \(*Sylvilagus Audubonii* Nelson\) and Jack Rabbits \(*Lepus Californicus* Mearns\) from the High Plains of Eastern New Mexico.. *The Journal of Parasitology*74: \(842-846\). <https://www.jstor.org/stable/3282264?seq=1>](#)
- [Sabrosky Curtis W.. 1986. North American Species of *Cuterebra*, the Rabbit and Rodent Bot Flies \(Diptera: *Cuterebridae*\). <https://bioone.org/ebooks/thomas-say-monographs/North-American-Species-of-Cuterebra-the-Rabbit-and-Rodent-Bot/7/Host-Parasite-Relationships/10.4182/YLTF4076.1986.28.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*12.
- 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 .

More Information

