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Cicindela denikei Brown, 1934

Laurentian Tiger Beetle

MN Status:

threatened

Federal Status:

none

CITES:

none

USFS:

yes

Group:

insect

Class:

Insecta

Order:

Coleoptera

Family:

Cicindelidae

Habitats:

Fire Dependent

Forest



Basis for Listing

The Laurentian tiger beetle is known only from Ontario, Manitoba, and Minnesota, and is apparently found only north of the Laurentian Divide in Minnesota. This species was first discovered in Minnesota in Lake County in 1958. By 1979, it was known from five locations, four of them in St. Louis County. Concerted survey efforts since 2000 have discovered the species in an additional 50 or more locations in Lake, St. Louis, Koochiching, and Lake of the Woods counties (Steffens 2000, 2001; R. Huber, pers. comm.). Given its restricted distribution in the state, the Laurentian tiger beetle was listed as a threatened species in Minnesota in 1996.

Description

Adult Laurentian tiger beetles are bright metallic green. They average 13-15 mm (0.51-0.59 in.) long, and have quick escape flight capabilities. There are no other tiger beetles that live in this species' northern Minnesota habitat that resemble it.



Map Interpretation



Map Interpretation

Tiger beetle larvae are mostly white and somewhat grub-like (Pearson et al. 2006). The portions of their bodies that are exposed in their burrow entrances are usually the same color and texture as the surrounding soil surface, allowing them to blend in with the soil (Pearson et al. 2006; R. Dana, Minnesota DNR, pers. comm.). Tiger beetle larvae have eyes with dense photoreceptors that give them detailed focusing ability and three-dimensional visual perception (Pearson et al. 2006).

Habitat

The Laurentian tiger beetle prefers openings in northern coniferous forest, more specifically in abandoned gravel and sand pits, undisturbed corners of active gravel and sand pits, sand and gravel roads, and sparsely vegetated rock outcrops.

Biology / Life History

Adult Laurentian tiger beetles emerge in early summer (sometimes as early as late May) and begin hunting, mating, and laying eggs. By mid-summer (late July, sometimes mid-August) the adults begin to die-off. Tiger beetles prey on small insects and other arthropods and are visual hunters. Adults will either chase their prey or wait in a shaded area and ambush prey as it wanders by (Pearson et al. 2006). They often chase their prey in fast, short bursts with brief stops in between runs. These stops are necessary for orientation as tiger beetles can run so fast that they cannot see the prey they are pursuing.

Adults have hind wings that are transparent and they are folded under the elytra (hard front wings) when at rest. When disturbed, tiger beetles may take short, low flights to escape. These escape flights and the ability to run quickly are their main defenses against predators. Tiger beetles are also usually well camouflaged in their environment.

Tiger beetle larvae dig burrows in which they live and secure prey. They are ambush predators that lie in wait in the top of their burrows with their jaws open and their heads and thorax flush with the ground surface, essentially filling the burrow entrance and disguising their presence (Pearson et al. 2006). When prey is within reach, the larvae anchor themselves to the sides of the burrow by two pairs of hooks on their lower backs, and quickly leap out and grab the prey with their mandibles. The struggling prey is then pulled back into the bottom of the burrow and eaten. When they are done eating, the larvae carry the indigestible portions of the prey to the top of their burrow and throw it backwards away from the burrow entrance. The larvae also use their burrow for protection, and will retreat into it when they sense danger. Larvae primarily use vision to detect danger, but may also sense vibrations in the ground created by large predators (Pearson et al. 2006). It is not

known how deep the larvae burrow to overwinter.

Conservation / Management

Given that limited disturbance may actually create habitat for the Laurentian tiger beetle, the only threat to this species may be clearcutting large areas. Constant vehicular traffic along roads that act as corridors for this species may reduce local populations (dead, crushed adults have been found along such roads).

Conservation Efforts in Minnesota

At present, the Laurentian tiger beetle is still under initial survey. When a better understanding of the species' total range in Minnesota has been determined, it may be possible to develop management plans, if deemed necessary.

References

- Pearson, D. L., C. B. Knisley, and C. J. Kazilek. 2006. A field guide to the tiger beetles of the United States and Canada: identification, natural history, and distribution of the Cicindelidae. Oxford University Press, New York. 227 pp. + plates.
- Steffens, W. P. 2000. Status surveys for the sensitive species *Cicindela denikei* and other tiger beetles of the Superior National Forest. Report to Superior National Forest, Duluth, Minnesota. 24 pp.
- Steffens, W. P. 2001. Status surveys for the sensitive species *Cicindela denikei* and other tiger beetles of the Superior National Forest. Report to Superior National Forest, Duluth, Minnesota. 13 pp. + figures.