# SALT CREEK TIGER BEETLE (*Cicindela nevadica lincolniana)*

***Description***

The Salt Creek tiger beetle (*Cincidela nevadica lincolniana*) is a member of the tiger beetle family Cicindelidae. Tiger beetles are metallic colored, ground-dwelling, predaceous insects. The Salt Creek tiger beetle is one of thirty-two species and subspecies of tiger beetles that have been recorded in Nebraska. It is a small-to-medium size beetle approximately one-half inch in length. It can be distinguished from other tiger beetles by its distinctive form and color pattern. Wing covers are metallic brown or dark olive green and the pronotum (body segment behind head) is dark brown, tending to green. Ventral surfaces are dark green and reflective.

The burrow dwelling larvae of the Salt Creek tiger beetle have three instars (developmental stages) prior to pupation and emergence as adults. They are approximately three-quarters of an inch long and one-sixteenth of an inch in diameter. They have 3 hooks on the dorsum of the 5th abdominal segment which act as anchors to keep them from being pulled out of their burrows by larger prey.

***Distribution***

The Salt Creek tiger beetle has one of the most restricted ranges of any insect in the United States. This sub-species is endemic to Lancaster County, Nebraska, being found only in the northern third of the county. The Salt Creek tiger beetle occupies an extremely limited habitat type, eastern Nebraska saline wetlands and their associated streams. The Salt Creek tiger beetle is often associated with three other tiger beetles that inhabit saline environments, *C. fulgida, C. togata,* and *C. circumpicta*. However, these three species have much broader ranges, being found elsewhere in Nebraska and the Great Plains.

***Habitat***

The entire life cycle of the Salt Creek tiger beetle is linked to exposed mud flats of saline wetlands and mud banks of streams that drain these wetland complexes. The species is adapted to periods of high water and highly saline conditions. Adults are confined to the wetter muddy areas within a few yards of wetland and stream edges. Larval burrows occur within a few inches of the water's edge. Larvae will plug their burrows and retreat inside during periods of high water, very hot weather, or very dry conditions. For the most part larvae remain active until cold weather, when they plug their burrows and hibernate. Both the adult and larvae of the Salt Creek tiger beetle are voracious predators. They will eat almost any other insect of similar or smaller size.

***Status***

Global: T1-Critically Imperiled. Federally Endangered. State Endangered. Nebraska: S1-Critically Imperiled. The Salt Creek tiger beetle is one of the rarest insects in the world. The earliest collections of the Salt Creek tiger beetle date back to 1900. Although there is no documentation regarding the size of early populations of the beetle, the large number of museum specimens indicates that this beetle was once abundant in the Lincoln vicinity. Annual monitoring has shown that the population of the Salt Creek tiger beetle fluctuates on a yearly basis. The 1991 survey observed 229 individuals while in 1992 only 114 were found. The highest total population numbers observed was 623 individuals counted in 1996. The number declined to fewer than 565 in 1997 and only 311 were found in 1998. The Capitol Beach area, once a haven for the beetle, had a high population count of 12 in 1992, but only 1 in 1996 and 4 in 1998. At one site, beetles have not been observed for over three years. most restricted and imperiled plant community types in the state: eastern Nebraska saline wetlands. The estimated original acreage of eastern saline wetlands was about 16,000 acres. An inventory of saline wetlands in 1990 found that over 90% of these wetlands have been destroyed since European settlement of the region through commercial, residential, and agricultural development. Most remaining eastern Nebraska saline wetlands have undergone extensive degradation through drainage, diking, filling, farming, overgrazing, stream channelization, and head cutting of Salt Creek and its tributaries.

Commercial and residential development pressure on the wetlands and streams continue to increase as the city of Lincoln expands to the north and west. A 1992 stream bank stabilization project on Little Salt Creek destroyed approximately one-half of the then remaining prime Salt Creek tiger beetle habitat. The population of the Salt Creek tiger beetle at this location was down from 115 individuals in 1991 to 54 individuals in 1992. One potential catastrophic event is the spraying of insecticides in areas occupied by the beetle. This could result in the loss of

local populations or the entire subspecies by contact directly with the spray or through insecticide carried by runoff. Insecticides may also impact the Salt Creek tiger beetle indirectly. Since Tiger beetles are predaceous, the use of insecticides may reduce the prey base needed to support viable populations of the beetle. In addition, insects that have been sprayed with an insecticide may be consumed by the beetle resulting in the death of the Salt Creek tiger beetle. Pollution could also impact this beetle. Incidents of pollution impacts in other areas of the country have proven highly detrimental to insect populations within the impacted area.

***Management***

Protection and restoration of eastern saline wetlands are perhaps one of the most important practices for conserving the beetle. Maintaining and establishing croplands within the watershed to grassland, especial those adjacent to wetlands and streams may reduce excessive sedimentation and flooding. Although stream bank stabilization and stream channelization activities have harmed populations, stabilization of down cutting streams in northern Lancaster county and southern Saunders County can protect and in some cases restore habitat. Maintaining adequate butters around wetlands and streams coupled with proper use of pesticides should minimize pesticide risk.

***More Information***

http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=I0QR