



Natural Heritage & Endangered Species Program

Massachusetts Division of Fisheries & Wildlife

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Northeastern Beach Tiger Beetle

Cicindela dorsalis dorsalis

State Status: **Endangered**

Federal Status: **Threatened**

Description: The Northeastern Beach Tiger Beetle is an active coastal predator, 13-15 mm in length, with a bronze head and thorax, long slender legs, and white to tan elytra (wing covers) with finely imprinted bronze lines. Tiger beetles are so named because of their “tiger-like” behavior of chasing down and capturing prey with their long mandibles.

The Northeastern Beach Tiger Beetle is one of four subspecies of *Cicindela dorsalis*; however, none of the other three subspecies occur in Massachusetts. *Cicindela hirticollis* is found on coastal beaches, including those inhabited by the Northeastern Beach Tiger; however, its elytra are much darker and differently patterned.

Cicindela lepida more closely resembles the Northeastern Beach Tiger due to its white elytra, but its body is more slender and much smaller in size; furthermore, this species has not been documented in the state in over 75 years.

The grub-like larva of the Northeastern Beach Tiger Beetle has a long, pale white, segmented abdomen, an iridescent bronze and green pronotum (“neck”) covered with setae, and one pair of antennae on the head.

Habitat: In general, the Northeastern Beach Tiger Beetle requires large, highly exposed beaches with fine sand particles and a low intensity of human disturbance. The largest population in Massachusetts inhabits an offshore barrier beach, ranging in width from 16 to 34 meters, with a well-defined and dynamic dune system. The part of the beach inhabited by the Northeastern Beach Tiger shifts with changing beach morphology. The predominant vegetation on the dunes and upper beach is beach grass (*Ammophila breviligulata*). The beach is relatively pristine and undisturbed by human activity, and there is very little off-road vehicle traffic.

Life History: Adult Northeastern Beach Tiger Beetles emerge from mid-June to mid-August, usually peaking in mid-July. The adult beetles forage in the intertidal zone, preying on small invertebrates and scavenging dead fish. They are primarily diurnal, but are occasionally active at night from mid-July to late August. Mating occurs from mid-July to early August, and the females lay their eggs in the intertidal zone. By September most, if not all, of the adult beetles have died.



Photo by M.W. Nelson

Adult Activity Period in Massachusetts

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Northeastern Beach Tiger Beetles have a two-year life cycle. The overwintering, older larvae (second and third instars) first appear in late May and June, while younger (first instar) larvae appear in mid-August. The larvae dig vertical burrows in the sand. The location of the burrows changes over the course of the year. In late spring, the burrows of overwintering larvae are located well up the beach near or beyond the edge of vegetation. In midsummer, the burrows of young, recently-hatched larvae are within a few meters of the high tide line; by autumn, these larvae have moved their burrows to the upper beach. The change in larval burrow location parallels the erosion/accretion cycle of the beach, which widens in the summer as sand is deposited, and narrows in the fall and winter as it is eroded by stronger winds and waves. The depth of the larval burrows increases with each successive instar.

Older larvae are dormant through much of the summer, but the young larvae are extremely voracious. Their sensory organs detect vibrations made by small invertebrate prey; when the prey is close enough, the larval tiger beetle lunges out of its burrow and captures its victim with strong, serrated jaws, then dragging its prey into the burrow and devouring it. Larvae develop through three

instars and overwinter twice before emerging as adult beetles. The primary food of larvae is “sand fleas” (amphipods), which are often abundant in wet sand around the sea-wrack.

Range: Historically the Northeastern Beach Tiger Beetle could be found along the Atlantic coast from Massachusetts to Virginia. It is currently only found at the extremities of its former range, in the Chesapeake Bay of Maryland and Virginia, and at two beaches in Massachusetts. A third Massachusetts population is the result of translocations by the US Fish & Wildlife Service and the Massachusetts Division of Fisheries and Wildlife.

Population Status and Threats: The Northeastern Beach Tiger Beetle is an Endangered species in Massachusetts, and is also federally listed as Threatened. There are only two naturally occurring populations remaining. This species formerly inhabited several other beaches on outer Cape Cod and the offshore islands, but it has not been found at any of these sites for many years. Increased intensity of recreation on these beaches, particularly increased off-road vehicle traffic, is responsible for the disappearance of these populations, as well as many others along the Atlantic coast. Off-road vehicles kill adults and larvae by crushing them, and also damage larval burrows. As a result the larvae must reduce their feeding time and expend a considerable amount of energy repairing their burrows.

The proximity of the larval burrows to the high-tide line in mid-summer increases their chance of being washed away. A severe summer storm or early-season hurricane could potentially wipe out the entire state population, making the likelihood of extinction very high.

