

## Species Status Assessment

**Class:** Insecta  
**Family:** Cicindelidae  
**Scientific Name:** *Cicindela dorsalis dorsalis*  
**Common Name:** Northeastern Beach Tiger Beetle

### Species synopsis:

The northeastern beach tiger beetle was formerly common on coastal beaches from Massachusetts to New Jersey and along the Chesapeake Bay in Maryland and Virginia. It is currently confined to a few sites in Virginia and Maryland, and two sites in Massachusetts, having been extirpated from 90% of formerly occupied sites (Schlesinger 2010). It was listed as federally Threatened in 1990.

In New York, this tiger beetle was formerly distributed along many of Long Island's barrier beaches but it appears to have been extirpated entirely by around 1950 (Stamatov 1972). The potential for reintroduction on Long Island was studied by Simmons (2008) who found that although some beaches were intact structurally, nearly all were subject to substantive and pervasive vehicular traffic and were thus unsuitable. Ideal habitat for the adult beetles and their larvae are wide, dynamic, fine sand beaches with little human or vehicular activity.

This species was extirpated in NY around 1950 (SGCN Experts Meeting).

### I. Status

#### a. Current Legal Protected Status

i. Federal Threatened Candidate: No

ii. New York Threatened; SGCN

#### b. Natural Heritage Program Rank

i. Global G4T2

ii. New York SX Tracked by NYNHP? Yes

### Status Discussion:

Calculated rank: SX (extirpated from NY) (Schlesinger 2010).

**II. Abundance and Distribution Trends**

**a. North America**

**i. Abundance**

X  declining \_\_\_increasing \_\_\_stable \_\_\_unknown

**ii. Distribution:**

X  declining \_\_\_increasing \_\_\_stable \_\_\_unknown

**Time frame considered:** Total decline since early 1900s is about 99.9%

Severe decline

**b. Regional (e.g., Atlantic Flyway, USFWS Region 5 – Northeast, Watershed, Hydrologic Unit)**

**i. Abundance**

X  declining \_\_\_increasing \_\_\_stable \_\_\_unknown

**ii. Distribution:**

X  declining \_\_\_increasing \_\_\_stable \_\_\_unknown

**Regional Unit Considered:** Northeast

**Time Frame Considered:** since the early 1900s

Severe decline

**c. Adjacent States and Provinces**

ONTARIO                      Not Present     X                No data \_\_\_\_\_  
PENNSYLVANIA              Not Present     X                No data \_\_\_\_\_  
QUEBEC                      Not Present     X                No data \_\_\_\_\_  
VERMONT                      Not Present     X                No data \_\_\_\_\_

CONNECTICUT              Not Present   \_\_\_\_\_              No data \_\_\_\_\_

i. Abundance

  X   declining   \_\_\_\_\_increasing              \_\_\_\_\_stable              \_\_\_\_\_unknown

ii. Distribution:

  X   declining   \_\_\_\_\_increasing              \_\_\_\_\_stable              \_\_\_\_\_unknown

Time frame considered: \_\_\_\_\_ since the early 1900s \_\_\_\_\_

Listing Status: \_\_\_\_\_ Special Concern \_\_\_\_\_ SGCN?   Yes  

Moderate decline

MASSACHUSETTS              Not Present   \_\_\_\_\_              No data \_\_\_\_\_

i. Abundance

\_\_\_\_\_ declining   \_\_\_\_\_increasing                X   stable              \_\_\_\_\_unknown

ii. Distribution:

\_\_\_\_\_ declining   \_\_\_\_\_increasing                X   stable              \_\_\_\_\_unknown

Time frame considered: \_\_\_\_\_ Since 2006 \_\_\_\_\_

Listing Status: \_\_\_\_\_ Endangered \_\_\_\_\_ SGCN?   Yes

**NEW JERSEY**                      **Not Present** \_\_\_\_\_                      **No data** \_\_\_\_\_

**i. Abundance**

  X   declining    \_\_\_increasing                      \_\_\_stable                      \_\_\_unknown

**ii. Distribution:**

  X   declining    \_\_\_increasing                      \_\_\_stable                      \_\_\_unknown

**Time frame considered:** \_\_\_\_\_ since the early 1900s \_\_\_\_\_

**Listing Status:** \_\_\_\_\_ Endangered \_\_\_\_\_ SGCN?   Yes  

Moderate decline

**d. NEW YORK**                      **Not Present** \_\_\_\_\_                      **No data** \_\_\_\_\_

**i. Abundance**

  X   declining    \_\_\_increasing                      \_\_\_stable                      \_\_\_unknown

**ii. Distribution:**

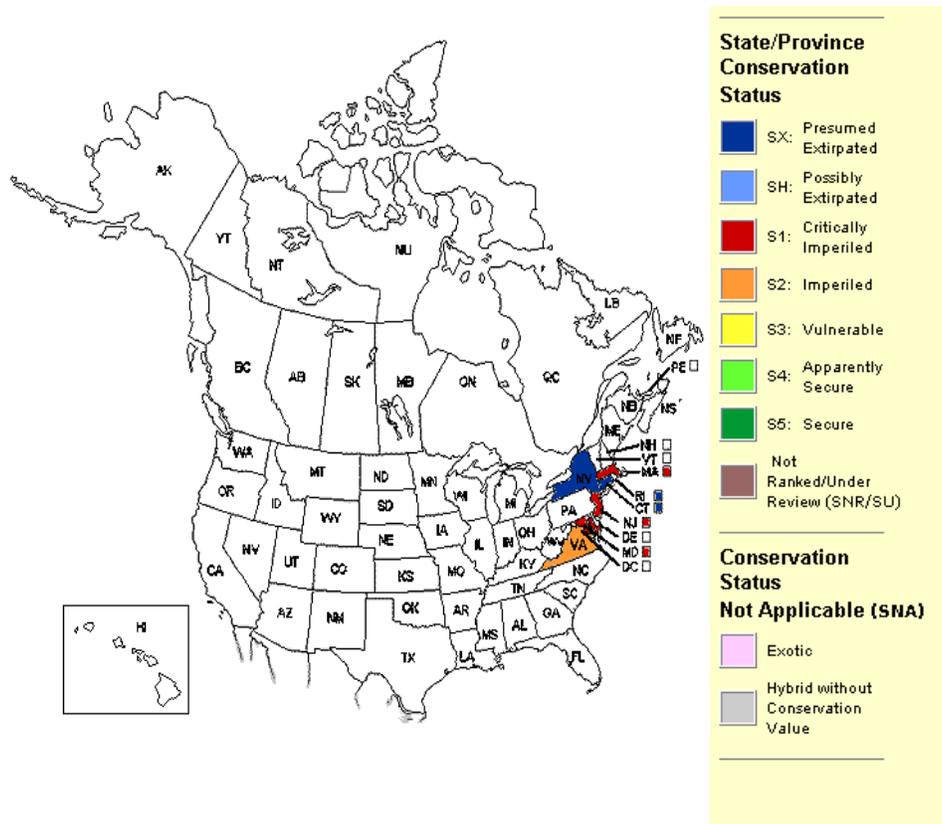
  X   declining    \_\_\_increasing                      \_\_\_stable                      \_\_\_unknown

**Time frame considered:** \_\_\_\_\_ since the early 1900s \_\_\_\_\_

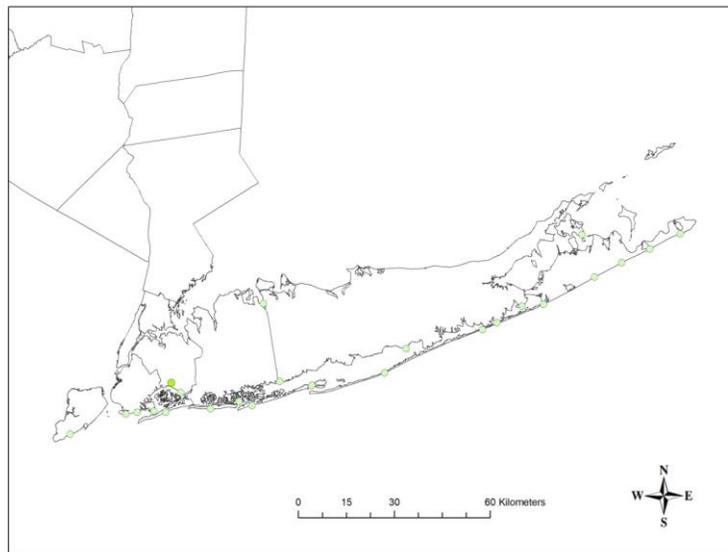
**Monitoring in New York.**

No regular surveys are being conducted for this species at this time and there are no known populations to monitor. Most potentially suitable beach areas on Long Island have been visited in recent years and found to be unsuitable (Simmons 2008, Schlesinger 2010).

**Trends Discussion:**



**Figure 1.** Conservation status of the northeastern beach tiger beetle (NatureServe 2011).



**Figure 2.** Former distribution of *Cicindela dorsalis dorsalis* on Long Island, New York. Light green dots represent approximate historical locations (Map from Schlesinger 2010).

**III. New York Rarity, if known:**

Historic (select one)	<u># of Animals</u>	<u># of Locations</u>	<u>% of State</u>
prior to 1970	_____	<u>24</u>	_____
prior to 1980	_____	_____	_____
prior to 1990	_____	_____	_____

**Details of historic occurrence:**

Most of these occurrences were recorded during the early 1900s, with the most recent being 1945 (Schlesinger 2010).

Current	<u># of Animals</u>	<u># of Locations</u>	<u>% of State</u>
	_____	<u>0</u>	_____

**Details of current occurrence:**

There are no current occurrence records for this species; it is presumed to be extirpated.

**New York's Contribution to Species North American Range:**

**Distribution** (percent of NY where species occurs)

- 0-5%
- 6-10%
- 11-25%
- 26-50%
- >50%

**Abundance** (within NY distribution)

- abundant
- common
- fairly common
- uncommon
- rare

**NY's Contribution to North American range**

- 0-5%
- 6-10%

11-25%  
 26-50%  
 >50%            certainty:

**Classification of New York Range**

**Core**  
 **Peripheral**  
 **Disjunct**

**Distance to nearest population:**

>60 miles to Martha's Vineyard, MA

**Rarity Discussion:**

Two extant populations are known in the Northeast. One occurs on Martha's Vineyard, an island off Cape Cod, Massachusetts. A population at Monomoy National Wildlife Refuge, also off Cape Cod, was established with individuals translocated from the Martha's Vineyard population. At least 26 populations are known along the Chesapeake Bay.



### **Species Demographics and Life History Discussion:**

Northeastern beach tiger beetles have a full, two-year life cycle. Adults emerge in late June, reach peak abundance by mid-July, and decline through early September. They feed, mate and bask at the water's edge on warm, sunny days. Some adults are also active on warm, calm evenings. High body heat is necessary for maximum predatory activity. Foraging occurs in the damp sand of the intertidal zone; prey species include lice, fleas, and flies. Adults also regularly scavenge dead crabs and fish.

Mating and egg-laying occur from late-June through August. Females deposit their eggs in the sand after mating, higher up the beach in the dunes. Eggs hatch and larvae appear in late July and August. Larvae experience three developmental stages or "instars." Most larvae reach the second instar by September and a few reach the third instar well into November, when larvae are still active.

Most overwinter as second instars. Next year, these same individuals overwinter again, this time as third instars. Overwintering occurs high up the beach; storms and wave activity are thus avoided. Both second and third instars emerge from winter inactivity in mid-March. Third instar larvae emerge, pupate in the bottom of their burrows, and re-emerge as winged adults in June, two full years after the eggs were laid.

Larvae live in vertical burrows located in the upper intertidal to high drift zone, where prey is most abundant. Larvae forage from their burrows, preying on passing insects. Their primary food sources are beach fleas, lice, flies and ants. Larvae are regularly covered during high tide; sand moisture is important. Larvae lack a hard shell and are subject to desiccation. They avoid hot, dry conditions. During the summer months they are inactive, going through a period of aestivation. With each successive stage of development, larvae grow in size and burrow deeper, going from 4 to 6-7 to 9-14 inches into the sand.

Populations of tiger beetles normally experience very high larval mortality and dramatic year-to-year, two to three fold fluctuations in abundance, sometimes resulting in local extinction. Weather factors such as flood tides, hurricanes, erosion and winter storms, mortality due to predators and parasites, and recreational beach use all contribute to the population declines. Natural enemies of adults include robber flies (Asilidae), birds and spiders. Larvae are preyed upon by parasitic, wingless wasps (Methocha), which lay their eggs on the tiger beetle larvae. The larval wasps develop by eating the larval tiger beetles. Mark-recapture study results have shown the beetles capable of traveling 5-12 miles from their original capture site.

### **VI. Threats:**

Threats to this tiger beetle include changes to its shoreline habitat such as construction of groins and bulkheads, shoreline hardening through installation of rip rap, human use (especially vehicles), sand backfill/deposition, pesticides, oil spills, storms, sea level rise, invasive species, erosion, and disruption of sand sources (USFWS 2009).

Hurricanes can have a significant effect on tiger beetle populations. Hurricane Ernesto in 1996 and Hurricane Isabel in 2003 reduced populations in Virginia and the Chesapeake Bay respectively

(USFWS 2009). Sea level rise due to climate change is expected to eventually inundate habitat on Long Island that is potentially suitable for reintroduction.

**Are there regulatory mechanisms that protect the species or its habitat in New York?**

No       Unknown

Yes

The northeastern beach tiger beetle is listed as a threatened species in New York and is protected by Environmental Conservation Law (ECL) section 11-0535 and the New York Code of Rules and Regulations (6 NYCRR Part 182). A permit is required for any proposed project that may result in a take of a species listed as Threatened or Endangered, including, but not limited to, actions that may kill or harm individual animals or result in the adverse modification, degradation or destruction of habitat occupied by the listed species. It is also protected as a federally-listed Threatened species.

**Knowledge of management/conservation actions that are needed for recovery/conservation, or to eliminate, minimize, or compensate for the identified threats:**

From Schlesinger (2010):

Nearly all historical locations for *C. d. dorsalis* have now been surveyed. Even though some of the few remaining sites are remote islands, it is highly unlikely that this species will be discovered again in New York. Recent surveys have strengthened the notion that not only is the species extirpated from New York, but that unless management of ocean beaches changes, it will never return. Beach stabilization, the primary agent of habitat destruction for *C. d. dorsalis* (Stamatov 1972, Nothnagle & Simmons 1990, Hill & Knisley 1993a, Knisley et al. 2005, Blanchard 2006, U.S.Fish and Wildlife Service 2009) would be a huge restoration effort and politically very challenging to reverse. Not all beaches have been stabilized, but even on those where natural processes of wave action and erosion are allowed to continue, there are other threats. Nearly all beaches surveyed had significant vehicle traffic, which most experts (Stamatov 1972, Nothnagle & Simmons 1990, Hill & Knisley 1993a, Knisley et al. 2005, Blanchard 2006, U.S.Fish and Wildlife Service 2009) agree is another chief cause of decline for this species and beach tiger beetles more generally. If managers of beaches are willing to restrict some destructive forms of recreation, and treat some beaches as wilderness, then certain beaches with intact structure and natural processes might once again be suitable habitat for *C. d. dorsalis*. Admittedly, it is hard to offer too much encouragement regarding reintroduction. The one attempt at reintroduction of this species (Knisley 2005) has apparently failed (USFWS 2009). In addition, with global climate change threatening coastal ecosystems (Parry et al. 2007), it might be a difficult restoration project to sell to land managers and the public—if the beaches themselves could disappear in 50 years, why attempt to reintroduce the native fauna? These questions, nonetheless, deserve serious discussion in State Parks master planning and management of federal lands like Gateway National Recreation Area and Fire Island National Seashore, as the majority of potentially suitable habitat remaining falls under their jurisdiction.

Schlesinger (2010) recommends that this species be listed as Endangered in New York.

The Comprehensive Wildlife Conservation Strategy (NYSDEC 2005) includes recommendations for the following actions for the beach tiger beetles, and for the northeastern beach tiger beetle in particular.

**Habitat research:**

— Beaches on Long Island where the Northeastern beach tiger beetle formerly occurred or could occur should be examined to determine if any support large populations of an associated species (*Cicindela hirticollis*) or have other factors (such as a long stretch of beach where vehicle and heavy foot traffic is restricted) suggesting that they may be capable of supporting a population of Northeastern beach tiger beetle. Coordinate with Northeastern beach tiger beetle Recovery Team.

**Other management plan:**

— Information from surveys should be provided to the USFWS recovery teams for Northeastern beach tiger beetle and Puritan tiger beetle.

**Relocation/reintroduction:**

— An assessment as to the feasibility of a New York reintroduction site for Northeastern beach tiger beetle should be given consideration in conjunction with USFWS Northeastern beach tiger beetle Recovery Team planning. Introductions took place in New Jersey in 1994, 1995, and 1997 and the beetles were still present as of 2003 (USFWS 2004).

**Statewide baseline survey:**

— Status surveys should be conducted to definitively determine if Northeastern beach tiger beetle is extirpated from the state. In at least one case, access to private lands will be essential.

— Compile a complete list of all beaches searched for Northeastern beach tiger beetle in recent years as part of NY Natural Heritage Program surveys of NYS

**VII. References**

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