

September 23, 1994

Mr. Paul B. Cole, III, Superintendent
National Park Service
Gateway National Recreation Area
Sandy Hook Unit
P.O. Box 530
Fort Hancock, New Jersey 07732

Dear Mr. Cole:

This responds to your September 6, 1994 letter to the U.S. Fish and Wildlife Service (Service) supporting reintroduction of the northeastern beach tiger beetle (*Cicindela dorsalis dorsalis*), a federally-listed threatened species, within the natural areas of the Sandy Hook Unit, Gateway National Recreation Area, Monmouth County, New Jersey, and serving as a request for formal consultation pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*). This letter constitutes the Service's Biological Opinion as required by Section 7(b) of the Endangered Species Act.

I. BACKGROUND INFORMATION

A. Description of the Proposed Action

The National Park Service (NPS) proposes to permit the reintroduction of the northeastern beach tiger beetle into a portion of its historic range at the northern natural beach of the Sandy Hook Unit, Gateway National Recreation Area. Approximately 1,000 larvae of the northeastern beach tiger beetle will be collected in late September or early October 1994, from suitable source populations within the Chesapeake Bay of Virginia, by tiger beetle researcher C. Barry Knisley of Randolph-Macon College, Ashland, Virginia. These larval beetles will then be released at the northern natural beach of the Sandy Hook Unit in coordination with the NPS, the Service, and the New Jersey Division of Fish, Game and Wildlife (Endangered and Nongame Species Program).

B. Status and Distribution of the Northeastern Beach Tiger Beetle

Although the northeastern beach tiger beetle was once found in great numbers along the Atlantic coast from Massachusetts to central New Jersey and within

the Chesapeake Bay, it is now found only within the Chesapeake Bay at an Atlantic coastal location at Martha's Vineyard, Massachusetts (U.S. Fish and Wildlife Service, 1993), and at an additional newly discovered area within Massachusetts (Jacobs, pers. comm., 1994). Though extirpated from New Jersey, the northeastern beach tiger beetle was historically found along New Jersey's undeveloped Atlantic coastal beaches from Sandy Hook to Holgate.

In 1993, historical and currently undeveloped coastal sites within New Jersey were evaluated for suitability to support the northeastern beach tiger beetle and as potential repatriation sites. Three areas within New Jersey were found to be suitable: the northern tip of Sandy Hook, Gateway National Recreation Area / U.S. Coast Guard, Station Sandy Hook; the Northern Natural Area, Island Beach State Park; and, the southern portion of the Holgate peninsula, Edwin B. Forsythe National Wildlife Refuge (Hill and Knisley, 1993). Although these three sites appear suitable for the northeastern beach tiger beetle, the distance between these sites and areas colonized by extant occurrences of the beetle preclude the possibility of natural dispersion taking place.

C. Species Biology

The northeastern beach tiger beetle, a terrestrial beetle of the family Cicindelidae, measures 13 to 15.5 millimeters (mm) in total length, and has white to tan elytra (wing covers), often with fine dark lines, and a bronze-green head and thorax. The northeastern beach tiger beetle is a diurnal, predatory insect that captures its prey in a "tiger-like" manner (U.S. Fish and Wildlife Service, 1990), using long sickle-like mandibles to capture and process prey. Primary prey items are small amphipods, flies, and other beach arthropods. Adults have been observed scavenging on dead amphipods, crabs, and fish. Adult northeastern beach tiger beetles emerge beginning in mid-June, reach peak abundance in July, and begin to decline through August. The adults are active on warm, sunny days along the water's edge, where they are commonly seen feeding, mating or basking. Mating and egg-laying occur from late June through August (U.S. Fish and Wildlife Service, 1993).

Tiger beetle larvae are "sit-and-wait predators," which dig vertical burrows in the sand and wait at the burrow mouth, rapidly extending from their burrows to seize small prey passing nearby. Larvae occur over a relatively narrow band of the upper intertidal to high drift zone, thus many larvae are regularly covered during high tide. In response to the rising tide, larvae plug the burrow mouth with sand, re-opening the burrow as water levels recede. Larvae are known to relocate their burrows in response to variations in tide levels, soil moisture, or sand accretion or erosion patterns and thus are occasionally found crawling on the beach (U.S. Fish and Wildlife Service, 1993). On Martha's Vineyard, the larvae move 20-50 meters to higher ground to overwinter (Nothnagle and Simmons, 1990). Northeastern beach tiger beetle larvae pass through three developmental stages or instars during a full two-year life cycle, over-wintering twice as larvae, pupating at the bottom of their burrows, and emerging as winged adults during their third summer (U.S. Fish and Wildlife Service, 1990).

D. Evaluation of Project Impacts

If successful, reintroduction of northeastern beach tiger beetle larvae at the Sandy Hook Unit, Gateway National Recreation Area will result in the re-establishment of this species within a portion of its historic Atlantic coastal range and will significantly contribute to the recovery of this federally-listed threatened species. Although care will be taken during collection, transportation, and release of beetle larvae, it is possible that some beetles will not survive the translocation, thus resulting in the incidental take of an undetermined number of northeastern beach tiger beetle larvae.

The proposed reintroduction site is located to the north of the NPS's heavily utilized public bathing beaches and adjacent to beach property owned by the U.S. Coast Guard. Although a portion of the NPS northern natural beach is closed to all public use to protect the federally-listed threatened piping plover (*Charadrius melodus*) during its nesting season, NPS staff patrol the ocean beach of the reintroduction site on foot and by off-road vehicle (ORV) on a daily basis. Those areas outside of the plover nesting area, and all areas of the northern natural beach during the non-nesting season, experience light use by surf fishermen (30-40 on a busy day). The northern natural beach is not currently open to the public for ORV use. During an evaluation of the northern natural area of the Sandy Hook Unit as a potential repatriation area for the northeastern beach tiger beetle, taking into consideration the current level of public use, researcher C. Barry Knisley determined that the northern natural area was suitable as a reintroduction site (Knisley, pers. comm., 1993). The project, as proposed, does not impose additional restrictions on public use at the Sandy Hook Unit, Gateway National Recreation Area, but instead attempts to re-establish the northeastern beach tiger beetle within those areas that have been set aside by the NPS for protection of natural resources.

Initially, larval burrows will be established in well-defined study plots within the northern natural beach; however, as the beetle larvae relocate their burrows in response to changes in their environment, the larval burrows will become dispersed throughout the northern natural beach. These burrows would be difficult or impossible to identify by the untrained eye; therefore, some incidental take of northeastern beach tiger beetle larvae may occur as a result of trampling by surf fishermen or NPS staff on foot and ORV patrol. Additionally, trampling of larvae that disperse outside of areas set aside for the protection of natural resources and onto the heavily utilized public recreational areas may also result in the incidental take of an undetermined number of northeastern beach tiger beetle adults and larvae. The current level of public use at the adjacent NPS recreational beaches is likely to preclude survival of beetles that may disperse onto these heavily utilized areas.

The degree of tidal fluctuation, wave energy, and erosional and storm activity is much greater along the Atlantic coastal beach at Sandy Hook than within the Chesapeake Bay. This more dynamic coastal beach, often exposed to direct

ocean waves, undergoes annual cyclical changes in profile and position and may be subjected to violent winter storms. Beetles that have evolved on the less dynamic Chesapeake Bay beaches may be unable to adapt to the Atlantic coastal environment; thus, the proposed action may result in the incidental take of all 1,000 relocated northeastern beach tiger beetle larvae.

II. BIOLOGICAL OPINION

The proposed project provides a unique opportunity to determine whether northeastern beach tiger beetle larvae taken from the Chesapeake Bay will adapt to an Atlantic coastal environment, survive to emerge as adult beetles, and successfully reproduce to establish a viable population. The proposed source populations of the northeastern beach tiger beetle within the Chesapeake Bay of Virginia are of sufficient size to allow for the removal of the specified number of larvae (1,000) (Jacobs, pers. comm., 1994; Knisley, pers. comm., 1994).

Following an evaluation of the proposed reintroduction site in August 1993, researcher C. Barry Knisley determined that sufficient suitable habitat occurred at the northern natural beach of the Sandy Hook Unit to sustain a viable population of the northeastern beach tiger beetle within the confines of the natural beach, provided access by the public and NPS staff was maintained at or below the current level of use (Knisley, pers. comm., 1993). Although, some incidental take may occur as a result of the proposed project activities and from the continuance of the current public and staff use of the reintroduction area and adjacent public recreational area, the overall conservation of the species may benefit through knowledge gained during the reintroduction attempt. Furthermore, the project may result in the re-establishment of the northeastern beach tiger beetle in a portion of its historic range. Therefore, it is the Service's biological opinion that the proposed project is not likely to jeopardize the continued existence of the northeastern beach tiger beetle.

III. INCIDENTAL TAKE

A. Definition and Prohibitions

The Endangered Species Act defines "take" to mean harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or to attempt to engage in such conduct. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.

Section 9 of the Endangered Species Act prohibits any taking of listed species without a special exemption. Under the terms of Section 7(b)(4) and Section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered taking within the bounds of the Act provided, that such taking is in compliance with the incidental take statement.

B. Description of Take Associated With This Project

Northeastern beach tiger beetle larvae translocated from the Chesapeake Bay to the Atlantic coast may not survive the collection, transportation, and release procedures, may not adapt to the Atlantic coastal environment, or may not survive coastal storms. Failure of the reintroduction attempt may result in the take of 1,000 northeastern beach tiger beetle larvae.

The public and NPS staff may inadvertently trample larval northeastern beach tiger beetles during the course of authorized activities within the reintroduction area, resulting in death or injury of beetle larvae. Additionally, beetle larvae that disperse outside of the northern natural beach, or other areas set aside for management of natural resources, onto heavily utilized public recreation areas may be trampled, resulting in death or injury of beetle larvae. Furthermore, adult beetles that disperse onto heavily utilized public recreation areas may be harmed or killed.

C. Amount or Extent of Incidental Take

In the event that the reintroduction attempt is a partial or total failure, the Service anticipates take of up to 1,000 northeastern beach tiger beetle larvae.

Since the dispersal patterns of northeastern beach tiger beetles within the reintroduction area cannot be pre-determined, should the reintroduction attempt be partially or totally successful, the amount of anticipated take will depend upon the location and the extent of the habitat occupied by the beetles. Within the northern natural area, the Service anticipates take of 25 larvae per year through accidental trampling by authorized public and NPS staff access. Further, the Service anticipates take of all tiger beetle adults and / or larvae that disperse outside of the northern natural beach or other areas managed by the NPS for natural resources protection, into areas zoned for public recreational use.

D. Reasonable and Prudent Measures to Minimize Take

Section 9 of the Endangered Species Act prohibits the taking of listed species without a special exemption. In order to be exempt from the prohibitions of Section 9 of the Act, compliance with the following reasonable and prudent measures is necessary and appropriate to minimize the take:

1. Confine NPS foot and ORV patrol to areas outside of the upper intertidal to high drift zone to avoid the area most likely to be inhabited by northeastern beach tiger beetle larvae.
2. Maintain current or reduced levels of public access within the northern natural beach.

IV. REINITIATION OF FORMAL CONSULTATION

Issuance of this biological opinion concludes formal consultation on this project. Reinitiation of formal consultation will be required if new information reveals that the action may affect the northeastern beach tiger beetle or any other currently listed species, newly listed species, or critical habitat in a manner or to an extent not considered in this opinion.

Thank you for your cooperation in the recovery and conservation of the northeastern beach tiger beetle. Please contact Annette Scherer of my staff if you have any questions regarding this biological opinion or require further assistance regarding federally-listed threatened or endangered species.

Sincerely,

Clifford G. Day
Supervisor

References

- Hill, J.M. and C.B. Knisley. 1994. Current and Historic Status of the Tiger Beetles, *Cicindela d. dorsalis* and *Cicindela d. media* in New Jersey, with site evaluations and procedures for repatriation. A report to the U.S. Fish and Wildlife Service, Pleasantville, New Jersey. Randolph-Macon College, Ashland, Virginia. 45 pp.
- Nothnagle, P. and T. Simmons. 1990. Ecology of the northeastern beach tiger beetle (*Cicindela dorsalis*) In southeastern Massachusetts. Final report to Massachusetts Natural Heritage Program.
- U.S. Fish and Wildlife Service. 1990. Endangered and threatened wildlife and plants; determination of the threatened status for the Puritan tiger beetle and the northeastern beach tiger beetle. Federal Register 55 (152): 32088-32094.
- U.S. Fish and Wildlife Service. 1993. Northeastern Beach Tiger Beetle (*Cicindela dorsalis dorsalis* Say) Recovery Plan. Agency Draft. Hadley, Massachusetts. 50 pp.

