Great Sand Dunes

National Park Service
U.S. Department of the Interior

Great Sand Dunes
National Park and Preserve

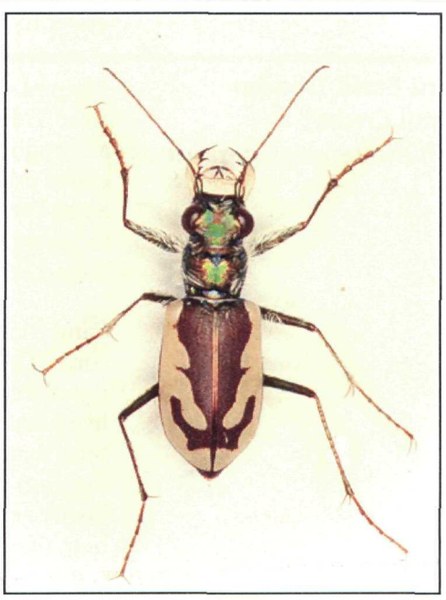
Endemic Insects of the Great Sand Dunes

Endemic species are those that exist at only one location or area on Earth. They tend to be more numerous in habitats that are distinctly different from the surrounding areas. The Great Sand Dunes harbor at least seven endemic species of insects. Many of the insects here are 'sand obligates', meaning that they are adapted uniquely for sandy habitats. Currently, just over 1,000 different kinds of arthropods (insects and spiders) are known to live at the Great Sand Dunes. However, this may represent only about 25% of the total number of arthropods that may exist here.

Great Sand Dunes Tiger Beetle *Cicindela theatina*

The Tiger Beetle is a predatory beetle which is encountered in sparsely vegetated sandy habitats which are beginning to stabilize as successional species like blowout grass (*Redfieldia flexuosa*) and scurf pea (*Psoralea lanceolatum*) become established. Both the adults and larvae are predatory; the adults are active foragers on the sand, while the larvae are sedentary ambush predators. Both larvae and adults will prey on a variety of arthropods including ants, other small beetles, and mites crawling on the sand surface. They will even scavenge on dead insects, as long as they are not dried out.

Tiger Beetles are about 3/4" (13mm) long and are named for their distinctive coloring.



Darkling or Circus Beetle *Eleodes hirtipennis*

Circus beetles are 1/2"- 3/4" (1-2 cm) long. They are scavengers in sandy habitats with sparse vegetation. Look carefully, however; another species of *Eleodes* lives here which looks similar and is more widespread.

The endemic Circus beetle's specific name, *hirtipennis*, means "hairy wings". If you find a beetle that appears to be the endemic one, look carefully at its back. If there is 'fuzz' on its back, you're observing one of endemic circus beetles.

Circus beetles are named for the posture they adopt when feeling threatened. If attacked, a circus beetle lifts its abdomen so that it appears to be standing on its head, and releases a smelly chemical in the intruder's face. Some people call them 'stink beetles'.

Werner's Ant-like Flower Beetle *Amblyderus werneri*

Triplehorn's Ant-like Flower Beetle *Amblyderus triplehorni*

This very tiny, light yellowish-brown beetle is truly minute--it's not much larger than the period at the end of this sentence. It is a scavenger, and prefers the same type of sandy, lightly vegetated habitat that the tiger beetle and the circus beetle do. Although this very small creature is not well understood, its method of foraging is curious. Ant-like flower beetles apparently feed on dead insect parts which have been blown into small depressions in the sand. The beetle allows itself to be blown into the depressions and actively forages on the debris.

Triplehorn's Ant-like Flower Beetle, *Amblyderus triplehorni,* is also a very tiny beetle which looks similar to the Werner's ant-like flower beetle, but is slightly larger. It prefers only the most barren dunes. It is also a scavenger, and its method of foraging is similar to that of Werner's. It is easily observed on the bare dune ridges as one approaches the high dunes.

Hister Beetle *Hypocaccus (undescribed species)*

Tiny, shining black, and globe-shaped, hister beetles are found in the grassy margins of the sand dunes. The adults are scavengers, while the larvae (caterpillars) are predatory, probably preying on weevils (Curculionidae), scarab beetles (Scarab-aeidae), and fly larvae that they find feeding on decaying grasses and other non-woody plants.

Noctuid Moth
Copablepharon (undescribed species)

Not much is known about this particular moth. Although it is a noctuid moth, it lacks the rather drab grey-brown appearance of its cousins, the "Miller Moths" or "Cutworm Moths". Rather, this species of noctuid moth is a soft, very pale yellow color. Its wingspan measures about 1.5" (3.5 cm). Adults can be found in the sparsely vegetated and grassy margins of the dunes during the daytime, and will come to lights at night.

Robber Fly
Proctacanthus (undescribed species)

This insect has been found in the Great Sand Dunes and surrounding habitat. It is one of the largest insects documented from the area, measuring nearly 1" (2.5 cm) in length. Robber Flies do not seem to have a preference for a particular type of sandy habitat; they have been encountered in sand/grass, sand/shrub, and even bare sand environments. Robber flies are often observed foraging on other flying insects (wasps, bees, and flies) during the heat of the day, after all crawling insects have taken cover from the extreme heat of the sand.

Giant Sand Treader Camel Cricket
Daihinibaenetes giganteus

Perhaps Great Sand Dunes' best known insect, the Giant Sand Treader Camel Cricket is *not* endemic to the dunes, although it was originally thought to be. The sand treader camel cricket was originally described from the Great Sand Dunes National Monument in 1962, but recently was found to inhabit other sandy ecosystems in eastern Colorado, New Mexico, and Utah. It is about 1.5" (4 cm) long.

Sand treader camel crickets are omnivorous. They begin foraging at dusk and have been observed to feed on dead and live plant material, insects, and mammal fecal material. They are fossorial (burrow-digging) insects. Their large hind legs sport horny growths called 'sand baskets' that help them to push sand out of burrows. Males may build a burrow in the evening, and are known to have 'harems' of females. The male's burrow will be visited by several females over the course of the night, and the male, too, will visit other burrows during the course of an evening.

Insects and Arthropods

Insects are part of a larger group of animals called arthropods. Spiders, centipedes, and crustaceans are among other types of arthropods . Common characteristics include an exoskeleton, segmented bodies, and many jointed legs.

Although mostly unnoticed, insects and arthropods can be found in every habitat type on Earth, including the arctic and antarctic areas--even associated with floating mats of algae in the sea! Entomologists (scientists who study insects and arthropods) estimate there are 3 to 30 million different species of insects on the planet, although only about 1 million have been described. In Colorado, about three formerly unknown species are discovered each year.

Insects and arthropods play a critical role in maintaining our planet as good habitat for all plants and animals, including humans.

What do they give us, beside the occasional bite or sting? Here's a sampling: many fruit, vegetable, and flower crops are pollinated by insects, including alfalfa, which is very important in the production of beef, pork, mutton, and wool. Silk, honey, and beeswax are direct products of insects, and our most fertile soils are constantly tilled and fertilized by arthropods of many types. Waste products ranging from banana peels to wood scraps are gradually broken down and returned to the earth--by insects. They are critical food sources for many fish, birds, reptiles, amphibians, and mammals, including humans in some places. Insects have aided scientists in researching problems of heredity, evolution, sociology, and stream pollution. Engineers have used insect behavior, structure, and bioproducts like pheromones, webbing, venoms, toxins, and hives in engineering agricultural services. They even have aesthetic value for artists, collectors, and designers.