

Northern Dune Tiger Beetle

Cicindela hybrida



They are easily identified, being quite large beetles up to 18mm long, with a red/brown appearance, three light coloured bands on each wing case and an iridescent green underside. They can potentially be mistaken for the closely related Dune Tiger Beetle (*Cicindela maritima*), the subtle difference being the width of the banding on the wing cases.



The Northern Dune Tiger Beetle is one of five Tiger Beetle species found in the UK. Tiger Beetles are some of the fastest insects in the world and are well adapted to life in sand dunes. They are highly specialised and only operate in a narrow temperature window. They emerge from small crescent shaped burrows when the temperature in the burrow entrance reaches 19°C; ideal ground temperature is between 35°C and 42°C. Their optimum body temperature is 35°C and they thermoregulate by raising and lowering themselves, a process known as stilting. If temperatures rise significantly they will seek shade provided by grasses and some take flight to cool down. If temperatures continue to rise, many will retreat to their burrows.



Their eyes are well-adapted for visual hunting in open, bright conditions and they are able to spot prey from long distances. The beetles chase prey in short, quick bursts and they travel so fast that they constantly need to stop to relocate the prey. They catch and crush their prey using their large mandibles.

Lifecycle

Northern Dune Tiger Beetles live for two years but are only observed as adults between April and October. There are two distinct population peaks, in May and August, representing two co-existing populations. The first population emerge as Adults in May and within the month, mate, lay their eggs and die. The eggs then hatch into larvae the same summer. The larvae spend the next two winters in their burrows, developing into adults in their second winter and emerging in May ready to start the cycle again. The adults observed in August mate, lay their eggs and die but these eggs do not hatch until the following summer. The larvae then remain underground over winter, pupating into

Top: Adult Northern Dune Tiger Beetle, Middle: Northern Dune Tiger Beetle larva, Bottom: Northern Dune Tiger Beetle larva in its burrow. ©Alex Hyde



Distribution of Northern Dune Tiger Beetle populations across Britain

adults in early July and emerging as adults in late July – August. Both populations spend just one summer as adults and there is little mixing of populations. This adaptation lowers the risk of extinction at a single site.

When looking for a mate, males will seek out females with similar behaviour to hunting for prey. He will grip the base of her thorax with his mandibles and remains there for 10-20 minutes until copulation has finished. Females then search for a suitable substrate to lay their eggs, individually, at a depth of around 5mm.

There are three larval instars. They live in vertical, cylindrical burrows and ambush any prey that falls in or walks past the entrance. They have flat heads which are used to excavate the burrows and which fit perfectly into the burrow entrance. When ambushing prey, they anchor themselves to the walls of their burrows using hooks on their backs. Burrows can be 20-30cm deep, with round entrances that are slightly countersunk.

Distribution

Northern Dune Tiger Beetles are widespread throughout Europe except for the extreme north and are found in open, sandy habitats that receive plenty of sun and high temperatures. In Britain, they are entirely coastal and found in only two locations, the coastal sand dunes of the Sefton coast, North Merseyside and Drigg, Cumbria.

Habitat

Open sandy dunes are their preferred habitat. Bare, sandy ground is important for burrowing, egg laying and hunting. Some sparse vegetation close by provides shade if required but is also often a source of prey. Varied topography offers shelter from winds that may cause cooling and southerly facing slopes provide greater levels of insolation and areas for adults to create their burrows. Flatter areas are used for egg laying as this reduces the risk of larval burrows collapsing from shifting sand.

Survey method

Surveys should be timed to coincide with the emergence of each population, the first in May and the second in August. For further guidance, see the 'Northern Dune Tiger Beetle - species survey guide'.

Reasons for decline

The coastal dunes are in serious decline and on the Sefton Coast, research shows 81% of bare sand has been lost since 1945. This shows a dramatic reduction in the area of suitable habitat for many dune specialist species including the Northern Dune Tiger Beetle.

The reduction in suitable habitat can be attributed to land use change resulting in less disturbance creating and maintaining areas of bare sand, the spread of invasive species such as Sea Buckthorn and Japanese Rose, the disappearance of natural grazers such as rabbits and natural successional changes taking place at an increased rate due to climate change.

Habitat management

Large areas of bare sand with some sparse vegetation such as Marram Grass should be created and maintained where possible. It is important to halt the invasion of scrub before it takes hold and over-stabilises the sand dune system. Northern Dune Tiger Beetles may also be at threat from over-disturbance due to human pressure. Some disturbance is hugely important to maintain open areas and sandy pathways, but excessive use could be damaging to larval habitat and so a fine balance needs to be achieved.