Trechisibus antarcticus **System:** Terrestrial

Kingdom	Phylum	Class	Order	Family
Animalia	Arthropoda	Insecta	Coleoptera	Carabidae

Common name

Synonym

Similar species

Summary

Detailed studies completed on *Trechisibus antarcticus*, on South Georgia indicate that a major consequence of its introductions to the Sub-Antarctic and Antarctic region, includes the considerable reduction in populations of endemic herbivorous perimylopid beetles, whose larvae form a major prey item. Carabids are thought to be restricted by the low temperatures of their habitats and are likely to be sensitive to any increase in availability of thermal energy brought about by climate warming.

view this species on IUCN Red List

Species Description

Trechisibus antarcticus is a flightless ground beetle up to 0.5 cm long and 10 mg live weight (Todd 1997).

Notes

The introductions of predatory carabid beetles such as *Trechisibus antarcticus* to South Georgia may provide an illustration of the potentially rapid ecosystem changes caused by the introduction of foreign species. They also provide a form of natural experiment testing ecological theories about the consequences of introducing new trophic levels into natural ecosystems which would otherwise be impossible (Convey *et al*. 2006a).

Habitat Description

In South Georgia, sub-Antarctica, *Trechisibus antarcticus* is invading the coastal lowland areas and building up local high densities in the dominant tussock-forming grass *Parodiochloa flabellata* (Ernsting *et al*. 1999). Together with an ample food supply in the form of small arthropods and beetle larvae and a vacant niche for arthropod predators, the benign microclimate of the tussock vegetation may explain the success of this and similar predator beetle introductions in South Georgia (Brandjes Block & Ernsting 1999). Compared with other habitats, tussock provides a buffered and stable thermal regime that will facilitate the spread of *T. antarcticus* throughout the lowland areas (Brandjes Block & Ernsting 1999).

Nutrition

Laboratory experiments have shown that the carnivorous *Trechisibus antarcticus* is a voracious predator, feeding on beetle larvae and other soil arthropods (Ernsting *et al*. 1999). *T. antarcticus* feeds on various mites and springtails the larvae of the herbivorous beetle *Hydromedion sparsutum* on South Georgia (Todd 1997).

General Impacts
In the same coastal areas in South Georgia where *Trechisibus antarcticus* has colonised, lives an endemic detritivorous beetle known as *Hydromedion sparsutum* (Perimylopidae). It is common especially in and beneath the tussock grass. The first three larval instars (stages) of *H. sparsutum* are easily taken prey by the carabid *T. antarcticus*. On sites colonised by the carabid, total abundances of larval and adult *H. sparsutum* are far lower (Ernsting *et al*. 1999).

Principal source:

Compiler: IUCN SSC Invasive Species Specialist Group (ISSG) with support from the EU-funded South Atlantic Invasive Species project, coordinated by the Royal Society for the Protection of Birds (RSPB)

Review:

Pubblication date: 2009-04-27

ALIEN RANGE

[1] SOUTH GEORGIA AND THE SOUTH SANDWICH ISLANDS

BIBLIOGRAPHY
10 references found for **Trechisibus antarcticus**

Managment information

General information
Australian Antarctic Data Centre (AADC). Undated. Biodiversity - SCAR EBA program: Bioregions by Taxa: List of bioregions for *Trechisibus antarcticus* (Beetle) (profile)
Summary: Available from: http://data.aad.gov.au/aadc/biodiversity/bioRegion_By_Taxa.cfm?taxon_id=102059 [Accsessed 28 August 2008]
Bergstrom, Dana M. and Steven L. Chown. 1999. Life at the front: history, ecology and change on southern ocean islands. TREE 14 (12)
Brandjes, G.J., W. Block and G. Ernsting. 1999. Spatial dynamics of two introduced species of carabid beetles on the sub-Antarctic island of South Georgia, Polar Biol 21: 326-334.
Convey, P., S.L. Chown, J. Wasley and D.M. Bergstrom 2006b. 6. Life History Traits. In: Bergstrom *et al*. (eds.) *Trends in Antarctic Terrestrial and Limnetic Ecosystems*: 101-127.
Convey, P., Y. Frenot, N. Gremmen and D.M. Bergstrom. 2006a. 10. Biological Invasions. D.M. In: Bergstrom *et al*. (eds.), Trends in Antarctic Terrestrial and Limnetic Ecosystems: 193-220.
Ernsting, Ger, Wil van Ginkel & Steph B.J. Menken. 1995. Genetical population structure of *Trechisibus antarcticus* (Coleoptera; Carabidae) on South Georgia and on the Falkland islands. *Polar Biol 15*: 523-525
Ernsting, G., G. J. Brandjes, W. Block, J. A. Isaaks. 1999. Life-history consequences of predation for a subantarctic beetle: evaluating the contribution of direct and indirect effects. Journal of Animal Ecology 68 (4): 741-752
Ernsting, G., W. Block, H. MacAlister & C. Todd. 1995. The invasion of the carnivorous carabid beetle *Trechisibus antarcticus* on South Georgia (sub-Antarctic) and its effect on the endemic herbivorous beetle *Hydromedion spasutum*. Oecologia 103
Frenot, Y., Chown, S.L., Whinam, J., Selkirk, P., Convey, P., Skotnicki, M., & Bergstrom, D. 2005. Biological invasions in the Antarctic: extent, impacts and implications. Bio. Rev, 80, 45-72.
Summary: Article de synth�se sur les invasions biologiques (plantes, invert�br�s et vert�br�s) en antarctique.
Available from: http://www.anta.canterbury.ac.nz/resources/non-native%20species%20in%20the%20antarctic/Talk%202%20Frenot.pdf [Accessed 4 April 2008]
Todd, C.M. 1997. Respiratory metabolism in two species of carabid beetle from the sub-Antarctic island of South Georgia, Polar Biol 18: 166-171.