

# *Echinodillo cavaticus*

Flinders Island cave slater

TASMANIAN THREATENED SPECIES LISTING STATEMENT

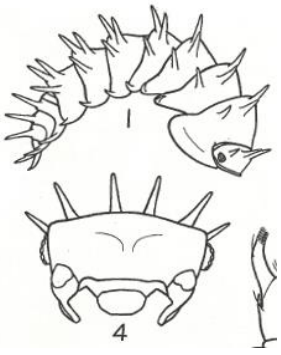


Image © Green (1963)

**Common name:** Flinders Island cave slater

**Scientific name:** *Echinodillo cavaticus* Green, 1963

**Group:** Invertebrate, Malacostraca, Isopoda, Armadillidae

**Status:** *Threatened Species Protection Act 1995:* **rare**

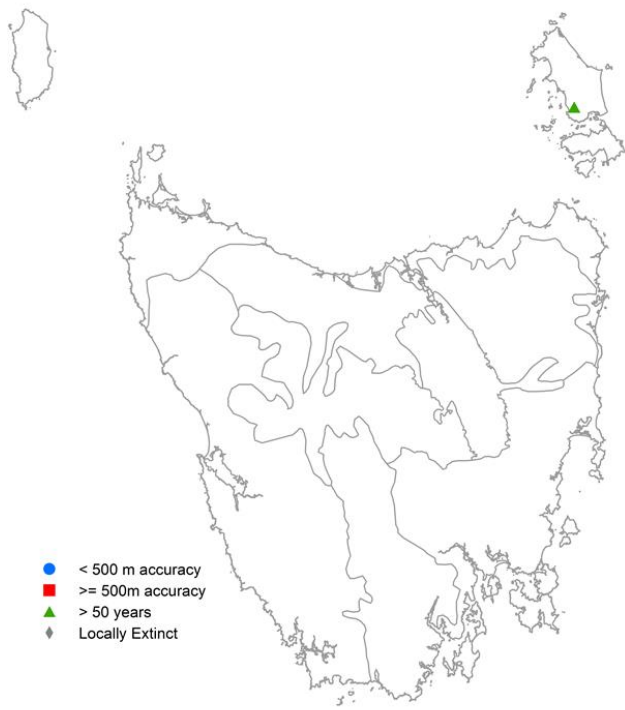
*Environment Protection and Biodiversity Conservation Act 1999:* **Not listed**

**Distribution:** Endemic status: **Endemic to Tasmania**

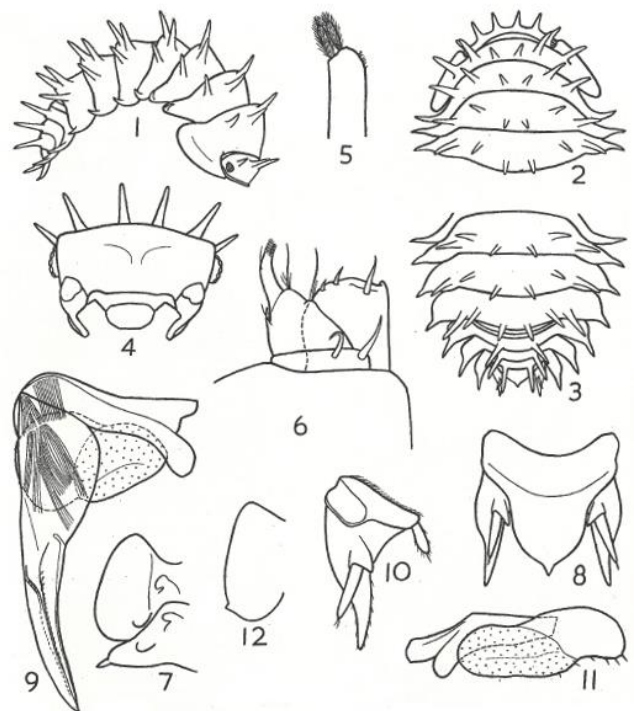
Tasmanian NRM Regions: **North**

IBRA Regions: **Furneaux**

*Echinodillo cavaticus*



**Figure 1.** The distribution of the Flinders Island cave slater, showing IBRA regions



**Plate 1.** Flinders Island cave slater (line drawing from Green (1963))

**SUMMARY:** The Flinders Island cave slater (*Echinodillo cavaticus*) is a small terrestrial crustacean that occurs in a single limestone cave near Ranga on the southwestern part of Flinders Island, collected only in the 1960s. The species is a cave-dweller, occurring in a small, not totally dark, cave developed in dune limestone.

There are no immediately identifiable threats to the species. However, factors such as illegal collection, possible competition with other invertebrates, predation by introduced rodents, climate change (and its impact on microclimate conditions), and stochastic events are all highlighted as possible threats.

### IDENTIFICATION AND ECOLOGY

The Flinders Island cave slater belongs to the genus *Echinodillo*, which is a member of the oniscid isopods, the superfamily that contains the common woodlice. Woodlice are crustaceans with a rigid, segmented exoskeleton and 14 jointed limbs. Woodlice usually occur in damp dark places as they rapidly lose moisture through excretion and through their cuticle. Most species live under rocks and logs but some are adapted for life in caves. Most species are nocturnal and are detritivores, feeding on dead plant matter.

The genus *Echinodillo* was erected by Jackson (1933) consisting of a single species. Green (1963) amended the generic description of the genus when the second species, *Echinodillo cavaticus* was described.

Virtually nothing is known of the ecology and biology of the Flinders Island cave slater. It is assumed to be a detritivore, feeding on dead plant and animal matter on the floor and wall of the cave, but whether the species emerges from the cave environment or spends its whole life within the cave is unknown.

### Description

Green (1963) provides a detailed description of the Flinders Island cave slater, which was based on a collection of 10 males and 13 females, including variation between the sexes and individuals.

The Flinders Island cave slater (Plate 1) has a maximum body length of up to 6.8 mm (male) and 8.7 mm (female), and maximum body breadth of 3.6 mm (male) and 4.4 mm (female). The body colour of specimens preserved in alcohol is dark grey, extensively mottled with irregular unpigmented patches.

The description of the Flinders Island cave slater is based on the presence, shape, size and direction of spines on the head and dorsal surface of the thorax and the setae and scales on the segments (Green 1963).

The head bears six posteriorly-oriented spines. The innermost pair of spines is nearest the posterior border, the outermost pair of spines furthest from the border. The innermost and intermediate pairs of spines are subequal in length, the outermost pair slightly shorter. The frontal line forms a posteriorly-directed ridge, with its middle third raised a little higher than the rest, and its lateral angles forming rounded right angles. The surface of the frons (fore-part of the head) is very shallowly impressed on each side. The eyes are composed of 12 to 16 ocelli.

The dorsal surface of each segment of the pereion (thorax comprising seven segments) bears six posteriorly-oriented spines. The spines on any one segment are subequal; the length of the spines on different segments increases slightly from the 1<sup>st</sup> to 7<sup>th</sup> segment. The tergites bear scattered setae and a covering of scales (rounded scales on general dorsal surface, triangular scales on spines). The dorsal surface of each of the 3<sup>rd</sup> to 5<sup>th</sup> segments of the pleon (abdomen) bears 2 backwardly-directed spines, all subequal in length. The tergites bear setae and scales like those on the pereion.

### Survey techniques

There is no information on survey techniques. It is assumed that the only collections were made by hand searching and collection.

### Confusing species

There are not known to be any similar species in Tasmania. While Green (1963) provides a key to the two species of *Echinodillo*, specialist opinion should be sought to confirm identification of any specimens suspected of being the Flinders Island cave slater.

## DISTRIBUTION AND HABITAT

The Flinders Island cave slater is endemic to Tasmania (Table 1, Figure 1) and is restricted to a single cave on Flinders Island. The exact location of this cave is uncertain.

Green (1963), in describing the species, simply noted that the description was “based on specimens collected by Mr. J.A. Thomson from a limestone cave near Whitemark, Flinders Is. (Furneaux Group, Bass Strait)”. The cave is also the type location for *Parvotettix rangaensis* (Ranga Cave cricket), described by Richards (1970).

The possibility of a range extension for the Flinders Island cave slater to other caves on the Furneaux islands is highlighted by the collection of the Ranga Cave cricket from the Modder River Cave on Cape Barren Island just one year after its initial collection in the Ranga Cave (Richards 1971).

## POPULATION PARAMETERS

There are no meaningful measures available of extent of occurrence, area of occupancy, or population abundance.

The original collections made in 1960 from the Ranga Cave site, cited in the description of the species (Green 1963), comprised the type specimens of 10 males and 13 females. Green (1963) noted that the type specimens were held in the Australian Museum, Western Australian Museum, and at the Department of Zoology, University of Tasmania. Clarke (2000) noted that 7 specimens collected in 1969 (identification confirmed by A. Green, 1972) are also held at the South Australian Museum. No other formal collections of the Flinders Island cave slater are reported.

## RESERVATION STATUS

The subpopulation of the Flinders Island cave slater on Flinders Island is most likely on private property, based on the description of the cave provided in Richards (1968b).

Although the *Strzelecki National Park Management Plan* (PWS 2000) indicates that the species occurs within the Strzelecki National Park.

## CONSERVATION STATUS

The Flinders Island cave slater is listed as rare on the Tasmanian *Threatened Species Protection Act 1995*, meeting criterion A (extent of occurrence estimated to be less than 2,000 km<sup>2</sup>, area of occupancy less than 0.5 km<sup>2</sup>, and small and localised populations with an area of occupancy less than 0.01 km<sup>2</sup>).

Please note that this assessment was conducted under the previous version of the *Guidelines for Listing under the Threatened Species Protection Act 1995*, which has since been superseded by a newer version endorsed by the Scientific Advisory Committee (Threatened Species) in March 2023.

## THREATS, LIMITING FACTORS & MANAGEMENT ISSUES

There are no immediately identifiable threats to the Flinders Island cave slater. The paucity of information relating to the location of the cave makes development of a management strategy difficult.

**Competition and predation:** The Flinders Island cave slater co-occurs with other invertebrates, including the scavenger cricket *Cavernotettix flindersensis* (Richards 1970). It is possible that potential changes to the conditions in the caves and surrounds could cause a competitive shift between invertebrates that prey on the Flinders Island cave slater. Introduced predators such as rats and mice may pose a risk to the species, especially if the abundance of such species were to increase.

**Illegal collection:** Illegal collection for purposes of selling or personal insect collections is a possibility, although there is no current evidence that this threat is present.

**Stochastic risk:** The Flinders Island cave slater occurs at just one site, exposing the population to extinction by stochastic events.

**Climate change:** A warmer climate and longer periods of drought may deleteriously impact on the microclimate of the cave habitat supporting the Flinders Island cave slater, although it is difficult to predict the degree of threat this may pose.

**Table 1.** Population summary for the Flinders Island cave slater

	Location <sup>+</sup>	Tenure	NRM region*	1:25 000 mapsheet	Year last (first) recorded	Extent of subpopulation (ha)	Abundance
1	"a limestone cave near Whitemark, Flinders Is. (Furneaux Group, Bass Strait)" "Ranga Cave (RA-X1)"	Private property	North	Whitemark	1969 (1960)	-	7 specimens 23 specimens

\*NRM region = Natural Resource Management region; <sup>+</sup>description of locality taken from Green (1963) and Clarke (2000)

## MANAGEMENT STRATEGY

### Management objectives

The main objective for the management of the Flinders Island cave slater is to decrease the risk of extinction by maintaining the integrity of habitat at the known site through appropriate land management.

### What is needed?

- To minimise the loss or degradation of subpopulations – undertake surveys to establish the location of the cave and then restrict access to the known site to protect microhabitat conditions.
- To improve the conservation status of the species – undertake extension surveys within the vicinity of the Ranga caves but also to similar limestone caves on the Furneaux group (e.g. Modder River caves on Cape Barren Island).
- To improve the reservation status of the species – consider developing an appropriate management agreement with the land managers on Flinders Island for the “Ranga” cave site.
- To improve knowledge of the species – undertake ecological research of the known population, with an emphasis on understanding demographics and threats.
- To better protect the species – provide information and extension support to relevant Natural Resource Management organisations, local councils, government agencies, the local community and development proponents on the locality, significance and management of known subpopulations and potential habitat of the Flinders Island cave slater.

## BIBLIOGRAPHY

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**View:** <http://www.nre.tas.gov.au/threatenedspecieslists>

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**Permit:** It is an offence under Tasmanian legislation to collect, catch, damage, injure, destroy, or kill a threatened species listed under the *Threatened Species Protection Act 1995*, without a permit.