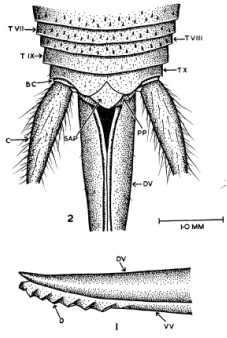


Parvotettix rangaensis

Ranga cave cricket

TASMANIAN THREATENED SPECIES LISTING STATEMENT



Richards © (1970)

Common name: Ranga cave cricket

Scientific name: *Parvotettix rangaensis* Richards, 1970

Group: Invertebrate, Insecta, Orthoptera, Rhaphidophoridae

Status: *Threatened Species Protection Act 1995:* rare

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

IUCN Red List: **Not listed**

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

Tasmanian NRM Regions: **North**

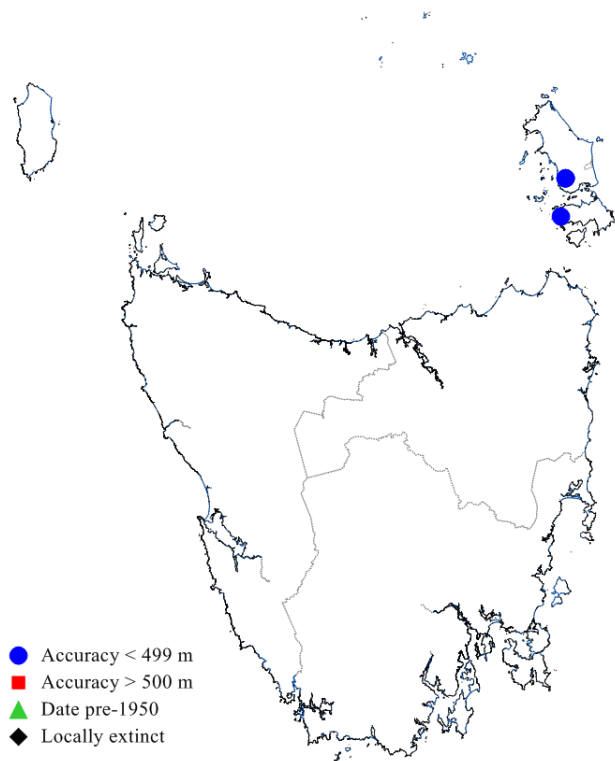


Figure 1. The distribution of the Ranga cave cricket, showing NRM regions

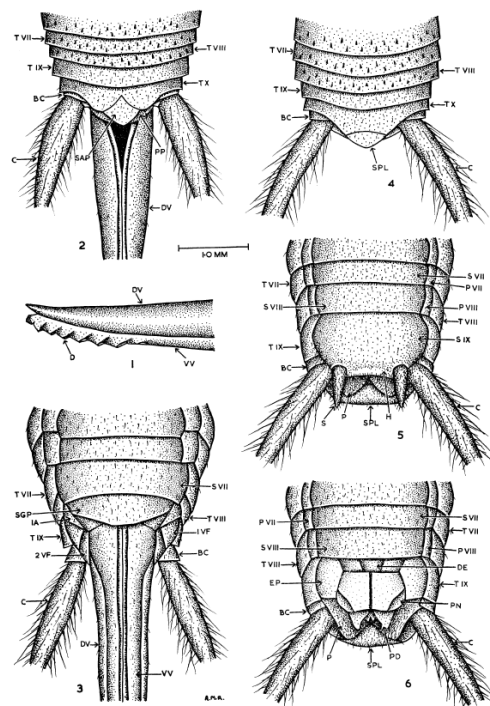


Plate 1. Ranga cave cricket (line drawing from Richards (1970))

SUMMARY

The Ranga cave cricket (*Parvotettix rangaensis*) is a small terrestrial cricket that occurs in a single limestone cave near Ranga on the south-western part of Flinders Island, and another limestone cave on Cape Barren Island, reported on in the late 1960s and early 1970s. The species is a cave-dweller, occurring in small, not totally dark caves 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 Ranga cave cricket belongs to the genus *Parvotettix*, which is represented by six species, all from Tasmania (Richards 1974). Members of the genus inhabit cool, moist and dark habitats including caves and mines, animal burrows, under logs and boulders, occasionally on the surface in rainforest, and inside houses (Richards 1974).

Parvotettix was erected by Richards (1968a) as a monotypic genus, at the time the only species being *Parvotettix goedei*, thought to be restricted to Little Trimmer Cave near Mole Creek but now known to be more widespread (Richards 1970). The genus belongs to the family Rhabdophoridae, which are wingless insects, extremely sensitive to temperature changes, and requiring a very high relative humidity (Richards 1968a). Their normal habitat is in caves or tunnels, or in the bush hidden under stones or bark, or in rotten logs (Richards 1968a). These requirements would form a barrier to their being carried passively across Bass Strait by strong winds. *Parvotettix* may have reached Tasmania via the land bridge which extended from Flinders Island to Wilsons Promontory during the Pleistocene, and until as recently as about 10,000 years ago. However, the genus does not show any close affinity with southeastern Australian genera, and it is suggested that they either migrated to Tasmania before the Pleistocene, or that they have evolved independently on the island.

Members of the genus *Parvotettix* have bodies covered with short setae, long slender legs, and very long and tapering antennae, almost touching at their bases (Richards 1968a).

Little is known of the ecology or biology of the Ranga cave cricket. As with other rhabdophorid crickets, the species is probably a scavenger, sheltering during the day and emerging at night to feed (Richards 1974). Species of *Parvotettix* normally occur as solitary individuals. In caves they may be found in the twilight zone or in total darkness (Richards 1970). They can share this habitat with other rhabdophorid crickets: the Ranga cave cricket co-occurs with *Cavernotettix flindersensis* (Richards 1970, 1971). The two species occur in different parts of the cave with the Ranga cave cricket being further from the entrance (Richards 1970).

Description

The Ranga cave cricket (Plate 1) has a body length of 8 to 10 mm (both sexes similar) but usually 9 mm. The head, and thorax are dark brown sparsely mottled with light brown; the abdominal terga are mottled with dark brown, light brown and ochreous; the femora and tibiae mottled or banded with dark brown, light brown and ochreous; all the tarsi are light brown; the antennae mid brown; and the ovipositor light reddish brown.

The first 8 abdominal terga bear prominent proximally directed dark brown setae. The ovipositor is 0.5 the length of the body, with the ventral valves armed distally with 8 well-developed teeth.

Both sexes are of similar size. The fore and middle legs are subequal in length, with the hind leg 1.6x the length of the fore and middle legs. All legs are thickly clothed with short setae. The hind tibiae and proximal segment of the hind tarsus are armed with a variable number of linear spines. There are no linear spines on the fore, middle and hind femora, or fore and middle tibiae and tarsi. The apical spines are constant in number. The length of the proximal segment of the hind tarsus is subequal with the other 3 segments together. The ratio of the length of the legs to body length are: fore leg 1.3:1; middle

leg 1.2:1; hind leg 2.1:1. [Description from Richards 1970]

Survey techniques

Surveys for the Ranga cave cricket can be conducted either by hand-searching or using oatmeal trails (as is the case for other species (Richards 1974)).

Confusing species

The Ranga cave cricket is very closely related to *Parvotettix goedei* and *Parvotettix domesticus* (neither of which co-occur with the Ranga cave cricket on Flinders Island) but is separated from them by the size and shape of several anatomical characters (Richards 1970). While Richards (1974) provides a key to the species of *Parvotettix*, specialist expertise should be sought to confirm identification of any specimens suspected of being the Ranga cave cricket.

DISTRIBUTION AND HABITAT

The Ranga cave cricket is endemic to Tasmania (Table 1, Figure 1), restricted to a single cave on each of Flinders and Cape Barren islands in the Furneaux Group. The precise location of the cave near Ranga on Flinders Island from which the species has been collected is unclear.

The cave in which the species was collected is quite small, and there is no zone of total darkness (Richards 1970). On Cape Barren Island, the species occurs in a limestone cave on the west of the island (Richards 1971).

POPULATION PARAMETERS

Apart from the original collections made in the late 1960s from the Ranga cave site, which are cited in the description of the species (Richards 1970) and comprise the type specimens of three males and three females, held in the Australian National Insect Collection and the Australian Museum, there has been only one additional collection of the species in the early 1970s (from Cape Barren Island). There are no other collections of the Ranga cave cricket reported.

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

RESERVATION STATUS

The subpopulation of the Ranga cave cricket 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 Ranga cave cricket 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 km², area of occupancy less than 0.5 km², and small and localised populations with an area of occupancy less than 0.01 km²).

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 Ranga cave cricket, although the poor database information makes development of a management strategy difficult.

Competition and predation: The Ranga cave cricket co-occurs with the markedly larger *Cavernotettix flindersensis* (Richards 1970, 1971). It is possible that a change to the conditions in the caves and surrounds could cause a competitive shift between the species. 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 Ranga cave cricket occurs in two sites on two islands: this disjunction provides a small degree of security to the population as a whole. However, the threat of unpredictable events affecting any one isolated site remains present.

Table 1. Population summary for the Ranga cave cricket

	Location ⁺	Tenure	NRM region*	1:25 000 mapsheet	Year last seen	Extent of subpopulation (ha)	Abundance
1	"in cave near Ranga ", Flinders Island	Private property	North	Whitemark	1969	-	3 records
2	"In Modder River Cave at western end of island", Cape Barren Island	Unclear	North	Barretts	1970	-	1 record

*NRM region = Natural Resource Management region; ⁺description of localities taken from Richards (1970, 1971)

Whether the species is able to recolonise a site from which the species has been eliminated is unknown.

Climate change: A warmer climate and longer periods of drought may deleteriously impact on the microclimate of the cave habitat supporting the Ranga cave cricket, although the degree of threat is difficult to predict.

MANAGEMENT STRATEGY

Management objectives

The main objective for the management of the Ranga cave cricket is to decrease the risk of extinction by maintaining the integrity of habitat at the known sites through appropriate land management.

What is needed?

- To minimise the loss or degradation of subpopulations – manage access to known sites to protect microhabitat conditions.
- To improve the conservation status of the species – undertake extension surveys within the vicinity of the Ranga and Modder River caves, and any other similar karst habitats on Flinders and Cape Barren islands.
- To improve the reservation status of the species – consider developing an appropriate land management agreement with the land managers on Flinders Island for the “Ranga” cave site and on Cape Barren Island for the Modder River cave site.
- To improve knowledge of the species – undertake ecological research of the known

subpopulations, 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 Ranga cave cricket.

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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.