Cavernotettix craggiensis

Craggy Island cricket

TASMANIAN THREATENED SPECIES LISTING STATEMENT

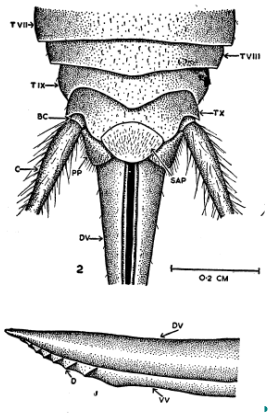

Image © Richards (1974)

Common name: Craggy Island cricket

Scientific name: ***Cavernotettix craggiensis*** Richards, 1974

Group: Invertebrate, Insecta, Orthoptera, Rhaphidophoridae

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**

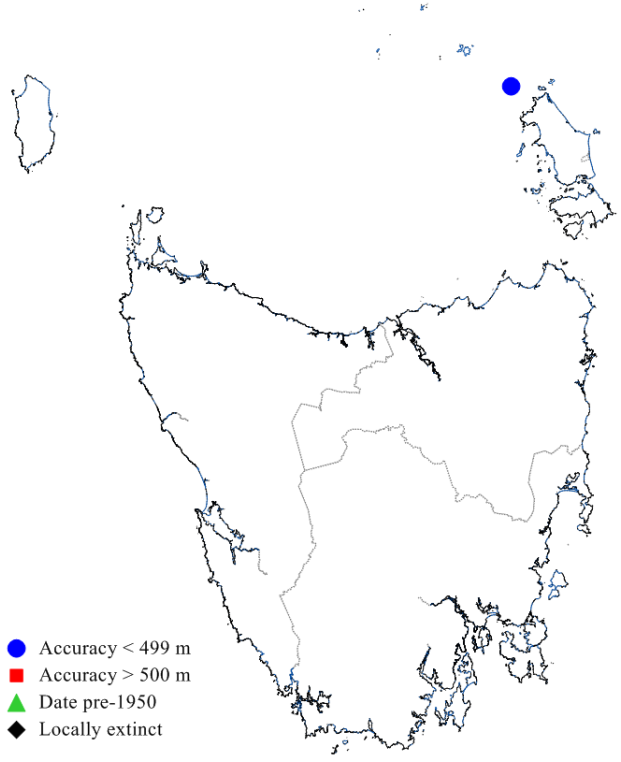

Figure 1. The distribution of the Craggy Island cricket, showing NRM regions

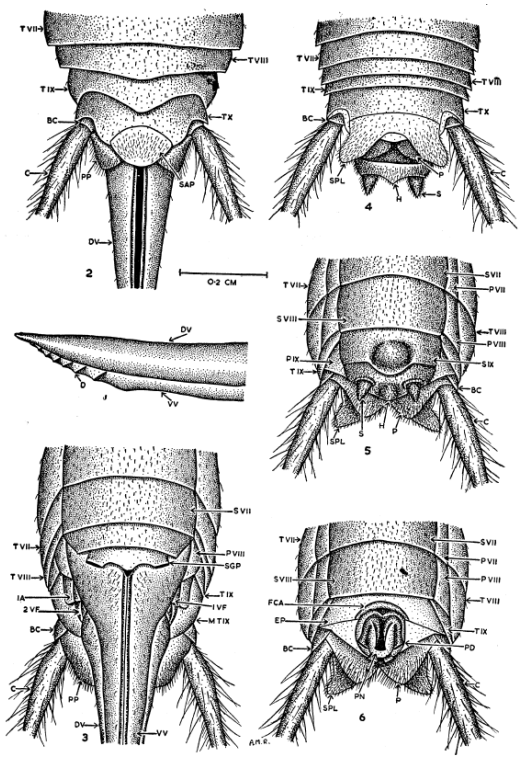

Plate 1. Craggy Island cricket (line drawing from Richards (1974))

SUMMARY: The Craggy Island cricket (*Cavernotettix craggiensis*) is a small terrestrial cricket that occurs at several sites under boulders and in burrows of breeding seabirds on Craggy Island, which is a small rocky island about 20 km northwest of the tip of Flinders Island in Bass Strait. The species is known only from collections made in 1972.

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

IDENTIFICATION AND ECOLOGY

The Craggy Island cricket belongs to the genus *Cavernotettix*, which is represented by 5 species, from southeastern Australia, including Tasmania (Richards 1974). Members of the genus inhabit limestone caves on the Southern Highlands of New South Wales, limestone caves almost at sea level in eastern Victoria, and limestone caves, wombat burrows and walls of old sheds on Flinders, Little Dog and Cape Barren islands (Richards 1974).

The genus *Cavernotettix* was erected by Richards (1966), separated from the closely related *Speleotettix*, the genera being similar in the apical spination of the legs but differing in the shape of the genitalia and the possession of a spine on the fore coxa (Richards 1974). Members of the genus *Cavernotettix* have bodies covered with short setae, have long slender legs and very long and tapering antennae, almost touching at their bases (Richards 1968).

The genus belongs to the family Rhaphidophoridae, which are wingless crickets, that are extremely sensitive to temperature changes, and require a very high relative humidity (Richards 1968). 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 (Richards 1970, 1971).

Richards (1974) notes that the Rhaphidophoridae appear to be well distributed throughout the Bass Strait region, and they have been found on all islands that have been searched. *Cavernotettix craggiensis* is more closely affiliated with mainland Australian species rather than *Cavernotettix flindersensis* (which occurs on the Furneaux islands, despite the fact that Craggy Island is closer to Flinders Island than mainland Australia). Richards (1974) suggests a mainland origin for *Cavernotettix*, followed by speciation on islands after isolation.

Virtually nothing is known of the ecology and biology of the Craggy Island cricket. The species has been detected under boulders and in the burrows of breeding seabirds (Richards 1974). It is assumed that the crickets live in the burrows during the day while the birds are absent, and forage for food at night, as is the case with certain rhaphidophorids in New Zealand (e.g. Richards 1958, 1974).

Description

The Craggy Island cricket (Plate 1) has a body length of 17 to 18 mm (males) and 17 to 19 mm (females).

The head is light brown mottled with ochreus and mid brown; the pronotum, mesonotum and metanotum are mid brown irregularly mottled with light brown and ochreous; the abdominal terga are light brown irregularly mottled with mid brown and ochreous; the femora and tibiae mottled or banded with dark light, mid brown and ochreous; all the tarsi are ochreous; the antennae light brown; and the ovipositor reddish brown.

The surface of the body is clothed with setae. The ovipositor is 0.7 the length of the body, with the ventral valves armed distally with 8 small teeth gradually decreasing in size towards the apex.

The fore and middle legs are sub equal in length, with the hind leg 1.9 times the length of the fore and middle legs. There is sexual dimorphism shown by the fore, middle and hind legs of the female being 0.7 as long as the male. All legs are thickly clothed with short setae. The hind femur, all tibiae and proximal 2 segments of the hind tarsus are armed with a variable number of linear spines.

The apical spines are constant in number, except for an occasional very small retrolateral spine on the hind femur. The ratio of the length of the legs to body length are: fore leg: male 1.7:1, female 1.4:1; middle leg: male 1.8:1, female 1.4:1; hind leg: male 3.4:1, female 2.7:1. [Description from Richards 1974]

Survey techniques

Richards (1974) reports that the Craggy Island cricket was attracted to oatmeal and yeast trails placed at the entrance and just inside several rock shelters. Collections have also been made by hand-searching.

Confusing species

The Craggy Island cricket is very closely related to *Cavernotettix wyanbenensis* and *Cavernotettix buchanensis* (both mainland Australian species and neither of which co-occur with the Craggy Island cricket) but is separated from them by several characteristics including: i) absence of a retrolateral spine on the fore coax, ii) linear spines on the hind femora intermediate between *C. buchanensis* and *C. wyanbenensis*, iii) greater number of teeth on the ventral valves of the ovipositor, iv) the shape of the subgenital plate of the female, v) development of prominent lateral lobes on the suranal plate of the male thickly clothed with setae, vi) the shape of the subgenital plate of the male, and vii) the shape of the pseudosternite, which is closest to that of *Cavernotettix flindersensis* (Richards 1974). While Richards (1974) provides a key to the species of *Cavernotettix*, specialist opinion should be sought to confirm identification of any specimens suspected of being the Craggy Island cricket.

DISTRIBUTION AND HABITAT

The Craggy Island cricket is endemic to Tasmania (Table 1, Figure 1) and restricted to several sites on Craggy Island. Craggy Island is about 19 km northwest of Flinders Island, comprises nearly 39 ha, and is part of the Bass Pyramid Group (Brothers et al. 2001). It is about 1.1 km long and 0.5 km wide and is uninhabited.

It consists of four large, eroded granite towers surrounded by talus slopes of rocks and boulders. Many of the large boulders form overhangs and rock shelters, and penguins, prions and petrels live in burrows beneath them (Richards 1974).

The Craggy Island cricket was described from specimens collected from under boulders and in burrows of breeding seabirds (Richards 1974).

POPULATION PARAMETERS

Apart from the original collections made in the early 1970s from several sites on Craggy Island, which are cited in the description of the species (Richards 1974), and comprise the type specimens of 4 males and 8 females held in the Australian National Insect Collection, the Australian Museum, and the Tasmanian Museum and Art Gallery, there are no other formal collections of the Craggy Island cricket reported.

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

RESERVATION STATUS

All of Craggy Island is protected within the Craggy Island Conservation Area.

CONSERVATION STATUS

The Craggy Island cricket was listed as rare on the Tasmanian *Threatened Species Protection Act 1995* in 2003, meeting criterion A (extent of occurrence estimated to be less than 2,000 km^2, area of occupancy less than 0.5 km^2, and small and localised populations with an area of occupancy less than 0.01 km^2).

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 Craggy Island cricket.

Table 1. Population summary for the Craggy Island cricket

	Location+	Tenure	NRM region*	1:25 000 mapsheet	Year last (first) recorded	Extent of subpopulation (ha)	Abundance
1	"Craggy Island. Under boulders, on northern, eastern and SE sides of island"	Conservation Area	North	-	1972	-	3 records

*NRM region = Natural Resource Management region; +description of localities taken from Richards (1974)

Predation: There is no evidence of introduced predators (such as rats or mice) on the island (Brothers et al. 2001). The native metallic skink (*Niveoscincus metallicus*) is the only terrestrial vertebrate reported from the island (Brothers et al. 2001). It is not known if the Craggy Island cricket forms a significant part of the diet of the skink, and whether changes to environmental conditions will change the predator-prey relations on the island. Several species of insectivorous birds have also been recorded (Brothers et al. 2001), but the frequency to which these feed on day inactive crickets living under boulders or in burrows is assumed to be low.

Disturbance: The Craggy Island cricket occurs in burrows of seabirds. Brothers et al. (2001) noted that the burrows of muttonbirds on the lower flats of the island were vulnerable to heavy rains—the degree of threat this poses to the cricket is not known.

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 Craggy Island cricket occurs at several sites on one small island. This disjunction of sites provides a small degree of security to the population as a whole. However, the threat of unpredictable events affecting any one particular isolated site remains present. 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 boulder-burrow habitat supporting the Craggy Island cricket, although it is difficult to predict the degree of threat this may pose.

MANAGEMENT STRATEGY

Management objectives

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

What is needed?

- To minimise the loss or degradation of subpopulations – manage the access to known sites to protect microhabitat conditions.
- 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 Craggy Island cricket.

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