

THE REDISCOVERY OF A GIANT WETA, *DEINACRIDA HETERACANTHA*, ON THE NORTH ISLAND MAINLAND

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ABSTRACT

A population of *Deinacrida heteracantha* White, 1842 (Orthoptera; Gryllacridoidea; Hemicidae) has been discovered at Mahoenui, west of Te Kuiti, New Zealand. This is outside the recorded range of the species, which was generally believed to have been extinct on the mainland for many years. Observations on the biology of Mahoenui individuals in nature and in captivity are recorded.

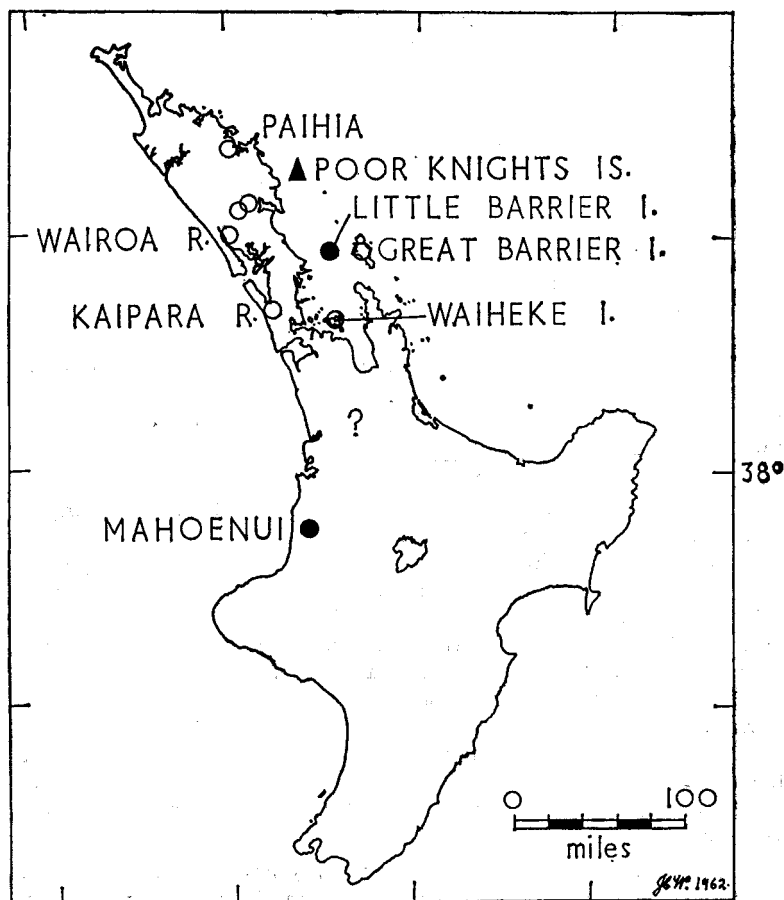
INTRODUCTION

Deinacrida heteracantha White is New Zealand's largest insect, and has thus attracted interest over the years. Colenso (1881), in his description of *Hemideina gigantea* (a synonym of *D. heteracantha*), records his specimen from Paihia, where it was collected "in a small low wood" in 1839. This specimen is now in the collection of the Auckland Museum. Buller (1871) records specimens from "a pine forest near the Kaipara River" (about 1858); "a low belt of wood near the Wairoa" and "the Whangarei District". He also states (Buller, 1894) that Dieffenbach (1843) records a large female found "on the marsh-pine in Waiheke, in the Firth of Thames". Another was collected by Buller in about 1850 at Tangiteroria and a pair was found near Whangarei a few years later.

Buller also states (1894) "For many years this fine insect has been looked upon as extinct, and it certainly is extremely rare . . . Formerly it was very abundant in all the woods at the far north; but I never heard of its being found south of the Waikato district".

Hutton (1896) gives its distribution as: "the northern part of the North Island and the Great Barrier Island". To this, Salmon (1950) adds Little Barrier Island. These localities are shown in figure 1.

D. heteracantha has not been recorded from the North Island mainland since Buller's (1894) paper. Until very recently it was considered to be extinct except on Little Barrier Island. In April, 1962, a dead female specimen of *D. heteracantha* was sent to the Auckland Museum from Mahoenui, west of Te Kuiti by Mr I. G. Barnes of Mahoenui School.



- *D. heteracantha*, living population.
- " " , probably extinct population.
- ▲ *D. fallai*.

Fig. 1—North Island, New Zealand, showing recorded distribution of *Deinacrida heteracantha* and *D. fallai*.

The writer visited Mahoenui on 11-12 May 1962, when three juvenile living specimens, a male and two females, were collected. These were established in an insectary. One of the females was lost in October 1962 and, since no remains were found, she was presumed to have escaped. The surviving pair were kept alive until January 1963.

SYSTEMATICS

The original *Mahoenui* specimen was compared carefully with specimens of *D. heteracantha* in the Auckland Museum collection and with Salmon's (1950) description. The writer considers it to be conspecific with *D. heteracantha* from North Auckland and Little Barrier Island, although it differs from them as follows:

1. The sculpture is stronger, particularly on head, thoracic nota, abdominal tergites and dorsal surfaces of the legs. Punctures are deeper and more distinct, interstices more even and micro-sculpture is stronger.
2. The subgenital plate resembles Salmon's description and photograph, but differs from those of Auckland Museum specimens (Colenso's type and a female from Little Barrier Island), in being truncate apically and notched. (The subgenital plate of the Auckland Museum specimens is rounded apically and not notched.)
3. The *Mahoenui* specimen is smaller than adult females from elsewhere.

The spines of the hind tibiae are typical, and are quite unlike those of other species, including the related *D. fallai* (which is endemic to the Poor Knights Islands). The superior retrolateral spines of the hind tibia, when viewed from their distal ends, are arranged in a distinct spiral, while with *D. fallai* they are almost in a single plane. The specimen runs through Salmon's key readily to *D. heteracantha*.

A few differences from northern *D. heteracantha* hardly justify the specific separation of the *Mahoenui* population, although more material may show sufficiently constant differences to require sub-specific separation.

During eight months captivity the *Mahoenui* wetas considerably increased in size, and may have been mature when killed in January, as they were previously observed (November) in a position indicating that attempts to copulate were being made. When dissected the female contained 139 eggs within the abdominal cavity.

Assuming that the captive wetas were mature when last measured, it follows that the *Mahoenui* individuals do not reach the great size of Little Barrier and Northland specimens. This size difference is probably inherited, as insectary conditions at Auckland are not likely to differ greatly from natural conditions on Little Barrier Island. This hypothesis requires to be tested by

rearing Mahoenui and Little Barrier specimens under identical conditions. The systematic relationships of the two populations might be determined at the same time by giving them the opportunity to inter-breed.

Location of specimens from Mahoenui:

Auckland Museum—♂ coll. T. Weteri, April 1962: Plant Diseases Division, Mt Albert o B, coll. May 1962: Auckland University, Zoology Dept o A, coll. May 1962.

BIOLOGY

The dried specimen in the Auckland Museum was collected alive by Mr T. Weteri on the ground amongst a patch of gorse (*Ulex europaeus* L.) on Mahoenui Station while gorse-cutting operations were in progress. Mr I. G. Barnes and the writer collected 3 living examples in the same area during May. One was found in a cavity in a rotten tawhera (*Weinmannia silciola* Sol.) stump amongst gorse, another in a hole in a branch of a gorse bush and the third in a hollow punga (*Cyathea dealbata* (Forst.)) stump in a small patch of native forest near the gorse.

A search of other patches of gorse and native forest in the vicinity failed to disclose any further specimens of *D. heteracantha*. A number of *Hemideina thoracica* were found in gorse branches, but not in the area inhabited by *D. heteracantha*.

The living giant wetas were kept in a 2 ft cube wooden cage covered with galvanised wire gauze, in the terrarium of the Zoology Department, University of Auckland. They were fed mainly with apple cores and occasionally with green vegetables such as lettuce. A branch of pohutukawa (*Metrosideros excelsa*) in a jar of water was kept in the cage, largely to provide moisture. The cage was sprayed with a fine spray of water twice a week.

The insects were normally completely inactive during daylight, hiding themselves in the upper corners of the cage or under a small piece of rotten wood. They were observed feeding on apple cores after dark. During the day they became active only when persistently disturbed. They exhibit 2 types of reaction. The first is to run away from the disturbing influence as quickly as possible, while the second is to extend the hind legs, raising and lowering them rapidly in the characteristic defensive movement of wetas (cf. Salmon, 1950: 121). The male was more readily "annoyed" than the females which were usually quite docile.

On 26 November 1962, at about 4 p.m., Messrs J. D. Fawcett and E. K. Saul observed the remaining male and female in a position which suggested that they were copulating, or attempting

to copulate. They were hanging from the roof of the cage, the female above (ventral morphologically) and the male below (dorsal). The writer was absent from Auckland at the time, and unfortunately no notes of observations were recorded.

CONCLUSIONS

It is surprising that a population of such large insects should have remained unknown for so long. It is no less surprising to find them in such a completely exotic habitat as gorse. This raises the problem of whether the species is really extinct in North Auckland, and if so why it became extinct there. It may be predicted confidently that other populations of *D. heteracantha* exist near Mahoenui, probably in extensive areas of scarcely modified native bush to the north west. It is hoped that the present paper will stimulate interest in this unique native insect and lead to the discovery of additional facts concerning its present distribution and ecology.

ACKNOWLEDGMENTS

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