

THE CAVE WETAS OF NEW ZEALANDB Y

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Cave-wetas are among the most common insects to be encountered in the course of cave exploration in New Zealand. The first authentic record of these insects occurs in Walker's "Catalogue of *Dermaptera Saltatoria Blattariae Supplement in British Museum*" published in 1869. Here he describes several specimens collected from caves in New Zealand by H. Drew Esq., who reported some of them as living "half a mile within." In 1881 Colenso, one of our early naturalists, published a description of another species collected "in dark underground caves near the head of the Manawatu River, in the 'Forty mile bush'." He amusingly described the insects as hopping and springing about like shrimps, with "such excessively long and fine horns and legs, it is a very difficult matter to secure a perfect specimen." Since then several scientific expeditions have visited New Zealand, and cave-wetas have been collected and deposited in many of the large museums throughout the world. It is therefore surprising that very little was known about them until the last two or three years, when more definite information has been obtained.

Characterised by small bodies with very long hind legs and feelers, these insects are closely related to tree and ground wetas and are quite harmless. They are nocturnal in their habits, and in daytime are motionless, being usually found on the walls or ceiling of caves hanging head downwards. When a bright light is directed onto a group of them, the insects may remain stationary waving their long, sensitive feelers (antennae), or they may quickly scuttle away. If touched, however, or if they feel the slightest air current caused by breathing or an approaching hand, they jump wildly away, sometimes covering distances of three or four feet in one jump. Such acrobatics are often successful in effecting escape, and if they land in water they use their long hind legs to swim rapidly through it back to the wall.

Unlike the common tree weta, the cave-weta's mouth parts are small and its bite is harmless. Cave-wetas are primarily scavengers living on an omnivorous diet of leaves, flowers, moss, grass, bark of trees, fungus, fresh water algae, rat faeces, small insects and decaying plant and animal material. At night they wander about the caves in search of food, and many of them make short sorties into the surrounding bush.

Cave-wetas are silent creatures with neither sound-producing nor hearing organs, so that in the darkness of the caves they must rely on the senses of touch and smell for most of their activities.

Although often living together in large colonies, there is no social life, cave-wetas being solitary in their habits and behaviour except during the mating season, the duration of which varies from species to species. Mating can take place many times during the life of a single insect. The female is easily distinguished from the male by having a long scimitar-like ovipositor projecting from its abdomen. The eggs are laid inside the caves and hatch into miniature replicas of the adult wetas. They grow to adult size through a series of moults, or complete shedding of the outside skin, the average life span being a little over two years.

Cannibalism is quite common among cave-wetas. Although it can occur at any time of the year, it happens most frequently during and at the end of the mating season when the remains of adults may often be found strewn round the floors of caves. Cave-wetas are also vulnerable to cannibalism just after moulting, before the new skin has had time to harden. In the laboratory unless the sexes were segregated cannibalism always occurred during the night. On one occasion when four males and four females shared the same container, two of the females were killed and eaten except for the legs, ovipositors, and part of one head. On some occasions when alone with a plentiful supply of food these insects have even broken off and eaten their own hind legs.

Environmental conditions of almost complete darkness, cool temperature, and high humidity, are

required by cave-wetas. They are usually found fairly near the entrance of caves, often hidden in groups behind out-jutting rocks or in crevices. Usually the young congregate nearer to the mouth of the cave than the adults.

Cave-wetas are found throughout the whole country, especially in limestone regions, although they also occur in large numbers in greywacke tunnels and native bush where they live in rotten logs and under bark and stones. Many inhabit the old, damp, unused burrows of petrels and tuataras on several of the islands off the coast of New Zealand. In Wellington they have even been found in the basements of some of the houses. Because of their variety of habitats it is assumed that they were originally bush dwelling insects which sought protection in any damp, dark place that was convenient, and were not influenced by the actual material of their home.

This group of insects has world-wide distribution, but is especially well represented in New Zealand. In North America they are known as cave crickets. They are considered to be representatives of a very primitive group of insects which have changed but little during the long intervening period since they arose. They have a long fossil history, their earliest known relatives occurring in the Triassic in Queensland 190 million years ago, and it is interesting to note that two European members of the family are the only survivors of an ancient subtropical fauna of European Orthoptera dating

from the Tertiary. An incising of a cave cricket on a fragment of a bison's bone found in the "Trois Freres" cave at Ariege in the French Pyrenees is the most ancient evidence we have of real cave fauna. The fact that New Zealand has been isolated from the rest of the world geologically speaking for many millions of years probably accounts for the large number of endemic species distributed throughout the country.

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Note : Miss Richards is a young lady who for the past four years has been making a study of cave wetas as a thesis for her Ph.D. degree. This includes determining the number of different species and their distribution. She would appreciate receiving as many specimens as possible, preferably the larger adults because they have more distinguished features. Just use a bit of methylated spirits to preserve them during postage. Her address is c/o Zoology Department, Victoria University College, P.O.Box 196, Wellington.

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