

Successful translocation of Middle Island tusked weta



The Middle Island tusked weta is the largest of three species found in New Zealand. It occurs naturally only on Middle Island in the Mercury Island group and survived because rats never got there. This weta probably lived on other islands in the Mercury group before rats invaded them (there was a single large island about 6000 years ago when the sea level was lower). The New Zealand Department of Conservation had exterminated introduced mammals from most of these islands by 1992, and decided to re-introduce tusked weta to the other islands in case rodents reached Middle Island or a fire occurred there. Here we summarise the investigation into how to translocate this insect.

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The insect—*Motuweta isolata* (Orthoptera: Anostomatidae)

- Only males have tusks (adult and last instar juveniles).
- Nocturnal: emerge only on warm, humid, moonless nights.
- Eat other insects.
- Dig underground cavities, and completely seal themselves in.
- Grow through 10–11 moults with a lifespan of up to 950 days in captivity.



Middle Island habitat: nesting sea bird burrows



Middle Island, Stanley Island behind on the left



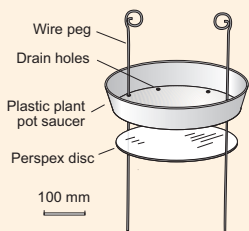
The problem—protection from extinction

- Range restricted: occurs naturally only on Middle Island, a small island (13 ha) in the Mercury Islands group off northern New Zealand.
 - Rare: only 4 tusked wetas were found during 64 nights of searching on Middle Island (1998–2003).
 - Vulnerable: this weta would become extinct if rats accidentally got onto Middle Island.
- This weta species survived on the Island because introduced mammal predators never got there. Middle Island does have natural predators such as tuatara, large skinks and geckos, and giant centipedes.

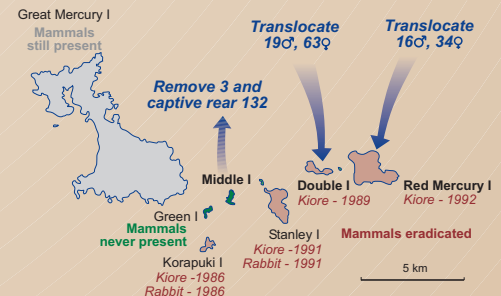
The solution—translocation to nearby islands where introduced mammals had been eradicated

- Too few wetas were found on Middle Island to successfully translocate them directly, therefore:
- Three wetas were removed from Middle Island (two females in 1993 and 1994—kept cold to extend longevity—and one male in 1998) for captive-breeding.
 - 132 wetas were produced by captive-breeding.
 - These were released onto Double Island and Red Mercury Island between April 2000 and April 2001.

Translocation method



Wetas were released under perspex discs covered with plant pot saucers: individually because they will eat each other.



The Mercury Islands group, years indicate when mammals were eradicated



Daytime searching

Monitoring method

— the translocated wetas (2000–2001)

- Many wetas were found under the release saucers when these were checked later.
- Harmonic radar transponders or transmitters were attached to adults taken from captivity (anything attached to juveniles is lost when they moult). These 'Judah' wetas then led us to other adult tusked wetas.

— the first island-bred tusked wetas (2003)

- Searching at night using lights.
- Systematically removing the top 1 cm layer of soil to expose the underground cavities.



Nighttime searching



Weta, with harmonic radar transponder, being measured



Transmitter on harmonic radar transponder

Successful results to date

- Juvenile tusked wetas (last instars) were found on both Double Island and Red Mercury Island one year after the translocated wetas died.

| Island searched | Night | Day |
|-----------------|--------|--------|
| Red Mercury I. | 3♂, 3♀ | 4♂, 3♀ |
| Double I. | 1♂, 1♀ | 1♂, 1♀ |

Numbers of wetas found in April 2003

- We still need to confirm that the populations on both islands are self-sustaining in the future.
- We still need to increase the genetic diversity on these islands by additional translocations.

Conclusions

We have developed methods for successfully translocating these rare tusked wetas and for subsequently monitoring them.

The Department of Conservation now plans to establish them on other islands in the Mercury Islands group where introduced mammalian predators have been exterminated.