



TRANSLOCATION OF PACIFIC GECKO (*Hoplodactylus pacificus*) AND COMMON GECKO (*Hoplodactylus maculatus*) FROM PUPUHA, MURIWHENUA AND WAREWARE ISLANDS TO MATAKOHE-LIMESTONE ISLAND (NOVEMBER/DECEMBER 2009)

Report prepared by Cathy and Peter Mitchell
for the Friends of Matakohē-Limestone Island, January 2010.

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ABSTRACT

Fifty Pacific gecko (*Hoplodactylus pacificus*) and thirty common gecko (*Hoplodactylus maculatus*) were captured at Muriwhenua, Wareware, Pupuha and Middle Stack Islands in the Chickens/Marotere Group in mid-November 2009 for translocation to Matakohē-Limestone Island as part of the island restoration project. The geckos were selected for a female biased population of 1:2.

The geckos were held in quarantine at Massey University, Albany Campus, while disease screening was carried out. The sex, snout-vent lengths (SVL) and weights for each animal were recorded. Faecal swabs were taken for *Salmonella* culture, and faecal samples were collected for *Cryptosporidia* testing. During transport and quarantine the geckos were held in individual containers and fed meal-worms raised at Massey University.

Two Pacific geckos were *Cryptosporidia* positive on direct microscopy. One of these subsequently tested negative on immunofluorescent antibody testing and was thus cleared for translocation. The second positive animal (an immunofluorescent antibody test was not carried out on this animal) was returned to its capture location on Wareware Island. All Pacific geckos were *Salmonella* negative. One Pacific female did not eat or produce a faecal sample during 2 weeks of quarantine and was returned to its capture location on Pupuha Island and replaced with another captured on Muriwhenua Island.

All common geckos tested were *Salmonella* and *Cryptosporidia* negative.

On December 4th 2009, 47 Pacific geckos and 28 common geckos were released onto Matakohē-Limestone Island. The Pacific geckos were released at the Edge House ruin and the common geckos were released at the Cement works ruins. Three additional Pacific gecko and two additional common geckos were released on December 24th 2009. In total 50 Pacific geckos (19 male and 31 female), and 30 common geckos (10 male and 20 female) were translocated to Matakohē-Limestone Island.

INTRODUCTION / BACKGROUND

The Pacific gecko (*Hoplodactylus pacificus*) is a native gecko of the *Hoplodactylus* genus, and is mainly grey or brown with irregular markings. The gecko is widespread throughout the North Island and offshore islands, often reaching great abundance on these islands. It inhabits trees in forest and shrublands, creviced clay banks and rock bluffs, rock outcrops and associated scrubby vegetation, and along coastlines among driftwood, rocks and scrub. It is nocturnal, though may sun-bask at refuge entrances, usually retreating before they can be observed. Mating occurs in March to May, and live young are born in February/March.

The common gecko (*Hoplodactylus maculatus*) is also a native gecko of the *Hoplodactylus* genus and grey or brown in colour, though is often less brightly marked than the Pacific gecko. The gecko is widespread in the North (especially coastal areas) and South Islands. It occupies similar habitats to the Pacific gecko, but is less arboreal and will often be found closer to the high tide mark. The common gecko is nocturnal, but will often sun-bask at refuge entrances. May form aggregations in large retreat sites. Mating occurs in April/May and live young are born in February to May.

Matakohe-Limestone Island is a 40 ha (approx.) island located in the upper Whangarei Harbour. The island is a designated Scenic Reserve managed by a voluntary community incorporated society, Friends of Matakohe-Limestone Island (FOMLI), formed in 1991. A full-time ranger is resident on the island. A large scale restoration programme is underway with species introductions carried out (both assisted and unassisted) as habitat and food source increase. The island is predator-free, with the possible exception of a very small number of mice (less than 1% tracking over the last three years). It is highly likely that many species of lizard, including Pacific and common geckos, originally inhabited Matakohe-Limestone Island. There is a resident population of the native copper skink (*Cyclodina aenea*) still present on the island.

The herpetofauna of the Marotere Group of Islands has been studied over many years. In March 1997 a translocation of Pacific geckos was undertaken from Pupuha Island to Lady Alice Island. A hand search of Pupuha Island resulted in the sighting of 49 Pacific geckos, 36 of which were captured, in 1.5 hours. It was felt that the Pacific gecko population on Pupuha Island would have recovered sufficiently in the intervening 12 years to support another translocation.

Hand searching of Muriwhenua Island resulted in the capture of common geckos (numbers not given), but no Pacific geckos were captured (Townes and Parrish 1997). Pacific geckos have since been confirmed as present on Muriwhenua Island (Whitaker and Parrish 1999). Pacific geckos had also been recorded on Middle Stack Island. Gecko densities had not been measured on Muriwhenua, Wareware or Middle Stack Islands. However gecko densities have generally been found to be high in locations such as these where no mammalian predators are present. Populations in this situation would also be expected to recover from a translocation harvest relatively quickly. These three islands were therefore considered suitable as source locations for the common geckos and additional Pacific geckos if required.

The purpose of the translocation is to establish a new population of Pacific and common geckos on Matakohe-Limestone Island, as identified in the Matakohe-Limestone Restoration Plan, (J Ritchie 2000). This is primarily a species restoration exercise, but will additionally provide valuable advocacy opportunities. The translocation of these two gecko species are the third and fourth of up to eight species of lizard planned to be translocated to Matakohe-Limestone Island over the next three – five years. (Shore skink were translocated in 2007 and ornate skink were translocated in 2008 – see earlier reports).

METHODS / RESULTS

Preliminary Disease Screen of Resident Skinks

A preliminary disease screen of the resident copper skinks was carried out in October 2007, prior to the shore skink translocation. Thirty skinks were screened for *Salmonella* and *Cryptosporidia* – all samples were negative (Mitchell C & P, 2008).

Collection Trip, Marotere Islands November 2009

On Monday November 16th 2009 a team of five people travelled by boat to Lady Alice Island and set up camp in the hut. The team included Richard Parrish (ex DoC, with extensive knowledge of the Hen and Chickens Group and in particular the resident herpetofauna) and Marleen Baling (ecologist and herpetologist, Massey University, Albany). A smaller boat and outboard were also transported to Lady Alice, so that the team could travel by boat to the collection locations each day.

Capture of the geckos commenced on the first afternoon. The team landed on the southern side of Pupuha Island. Hand searching was carried out in the loose rocks and rubble under puka trees and other low sparse vegetation. Two of the team were kept busy processing captured geckos, the remaining three team members captured 22 adult Pacific geckos for translocation in 50 minutes of searching. Juvenile geckos and adults lacking tails were released.

The team then moved to Muriwhenua and Wareware Islands. Three searchers captured four common geckos in Wareware Island gap in 20 minutes. In 60 minutes three to four searchers captured six Pacific geckos (one was incorrectly labelled as a common) and ten common geckos for translocation on the beach

and northern sides of Muriwhenua Island. Areas searched included the rocky beaches, areas of low vegetative cover and the loose rocks and crevices on the open rock faces on the lower slopes of Muriwhenua Island. The upper slopes of the island were not searched due to the risk of damaging sea bird burrows located there.

On Tuesday 17th hand searching was carried out on Middle Stack Island. In 30 minutes five searchers captured eight adult Pacific geckos, in habitat which was mostly rocky with some areas of low vegetation.

The search then moved back to Muriwhenua Island, commencing at the southern gut. In 45 minutes five searchers captured four Pacific and three common geckos. Wareware Island ridge was searched next with four searchers capturing three Pacific and one common gecko in 30 minutes. Another search of Wareware Island gap, this time including the ridges either side, was carried out. Approximately four searchers captured five Pacific and seven common geckos in 45 minutes. The areas searched were mostly bare rocks with small rocks closely adherent to them, and areas of low vegetation over rubble rocks.

In the afternoon the team returned to Muriwhenua Island. Two people captured one common gecko for translocation in 45 minutes of searching on Muriwhenua Island ridge. One person searched Muriwhenua Island rock and captured 3 common geckos for translocation in 25 minutes. The northern side of Pupuha Island was searched. Four people captured the final three male Pacific geckos needed to meet the quota for translocation in 35 minutes.

Detailed capture data, including other species caught, is given in Appendix 3.

The remaining two days of the trip were spent by the team on Lady Alice Island, trialling minnow traps as a capture method for moko skinks. Translocation of moko skinks was carried out in December 2009 – see separate report. In one trap night eight moko skinks were captured. These animals were retained and held in quarantine until they could be translocated with the remainder of the moko skinks in late December.

The two gecko species and moko skinks for translocation were transported by boat on the morning of November 20th from Lady Alice Island to Marsden Cove, Ruakaka. The lizards were then transported by car to the Ecology and Conservation Group at the Massey University Albany Campus, arriving on the afternoon of November 20th.

The translocated geckos were selected for a female-biased sex ratio of 1:2. Many of the females were gravid.

Quarantine at Massey University

Disease testing was undertaken on the geckos to ensure they did not carry any pathogens which could present a threat to the fauna already present on Matakohe-Limestone Island. During this period they were held at the quarantine facility at the Ecology and Conservation Group, Massey University, Albany. The geckos were held in individual containers, checked every day for any obvious symptoms of potential sickness, provided with fresh water and periodically fed meal-worms grown at the facility. The geckos were held at this facility for a period of almost two weeks, until the final disease testing results became available.

All geckos were weighed and snout-vent lengths (SVL) and vent-tail lengths (VTL) were measured (see Appendices 4 & 5). Faecal samples were collected for disease screening by placing the geckos in individual cleaned and disinfected ice cream containers. Trigene spray was used to disinfect the containers, which were then allowed to air dry before use. Paper towels were used as 'clean' refuges while the geckos were in the containers and water was provided.

Once faeces were obtained, geckos were placed back into their individual boxes and the faecal samples were swabbed with paediatric transport media swabs for *Salmonella* testing. (Note: It was a permit requirement that faecal swabs, rather than cloacal swabs, were used for this test). The rest of the faecal sample was then collected for *Cryptosporidia* testing. These samples were all sent to New Zealand Veterinary Pathology (NZ Vet Path), Hamilton for testing.

December 2009 trip

On December 7th a second trip to the Marotere group of islands was undertaken with the primary purpose of capturing moko skinks for translocation to Matakohe-Limestone Island (see separate report). On this trip three of the geckos captured in November were returned to their capture locations and three replacement geckos were captured. The returned geckos are detailed below. Samples had already been collected and tested from two of these geckos before their return to their capture locations.

P46: One of the geckos, C12, had been incorrectly labelled at the time of capture and was in fact a Pacific not a common gecko. In order to have the correct number of each gecko species, a Pacific gecko needed to be returned and exchanged for a common gecko. P46 was chosen for return as it was positive for *Cryptosporidia* on direct microscopy, and returning it meant that further testing did not need to be carried out. A female common gecko, C30, was captured from Wareware ridge as a replacement.

P10: This gecko did not eat or produce a useable faecal sample during the 2 weeks of quarantine. The gecko did not appear to be ill. On arrival in quarantine on November 20th it weighed 11.37 gm and weighed 10.67 gm 14 days later. It was decided to release the gecko on the December trip. A replacement female, P51, was captured from Muriwhenua beach.

C27: At the time of capture this gecko had been incorrectly identified as a female when it was actually a male. The opportunity was taken in December to return the gecko. A female common gecko, C31, was captured from Wareware ridge as a replacement.

The replacement geckos were captured by hand searching in areas, which had previously yielded good numbers of geckos. Initially on December 8th Muriwhenua beach and the northern slopes of the island were searched. One Pacific gecko was captured. Wareware gap was also searched. No common geckos were found in any of these locations, in approximately 1.5 hours of searching. The following day the team returned and were able to capture the two female common geckos needed on Wareware ridge. The time spent searching for the three replacement animals was not accurately recorded, but significantly fewer geckos of both species were found than had been located on the first trip in November.

Pacific gecko disease test results

All of the 51 Pacific geckos disease screened for *Salmonella* were negative. Two of the 51 geckos had a positive test result for *Cryptosporidia* by direct microscopy. A sample from one of these geckos (P15) was sent to Massey University, Palmerston North for further testing. The more specific IFA (immunofluorescent antibody) test was *Cryptosporidia* negative and this gecko was given clearance for release to Matakohe-Limestone Island. The second positive gecko (P46) was returned to its capture location – see above – and replaced with another which returned negative results for both *Salmonella* and *Cryptosporidia*.

Common gecko disease results

All 31 common geckos tested were negative for *Salmonella* and *Cryptosporidia*.

Pacific and common gecko release

On the morning of December 4th 2009, 47 Pacific geckos and 28 common geckos travelled by car in individual containers to Onerahi. (Note: two Pacific geckos from the November collection had not yet received clearance from the disease screening and the replacement geckos had not yet been captured.) The 75 geckos for release were then transferred to the island barge and transported to the pontoon landing at Matakohe-Limestone Island.

On arrival at Matakohe-Limestone Island, the geckos were welcomed and blessed. Te Warahi Heteraka of *Ngatiwai* and Freddie Tito of *Te Parawhau* led the welcome and handing over of the geckos. Those present included many members of the FOMLI Committee and members of the general public, approximately 25 people in total.

The Pacific geckos were released at the previously identified site at the Edge House ruins. The concrete ruins provide daytime refuges with the vegetation growing over providing habitat for prey species. In addition muehlenbechia and astelias had been planted in the surrounding drier areas in an attempt to provide cover and a food source. All the geckos were released within a 5-metre radius of each other.

The common geckos were released at the Cement Works ruins adjacent to the large concrete tank. This area provides cover in the form of rubble ruins and the coprosma trees growing in amongst them will help provide a food source.

The five geckos still in quarantine (including the replacement geckos captured in December, see above) were confirmed to be *Salmonella* and *Cryptosporidia* negative. On the morning of December 24th these five geckos (three Pacific geckos and two common geckos) travelled up to Onerahi by car and were transferred to the island by the barge. The geckos were welcomed and blessed by Te Warahi Heteraka and Freddie Tito as the first group had been. They were then were released onto Matakohe-Limestone Island. Three Pacific geckos were released at the Edge House ruins and two common geckos were released at the Cement Works ruins where the previous releases had taken place. In total 50 Pacific geckos (19 male and 31 female) and 30 common geckos (10 male and 20 female) were released onto Matakohe-Limestone Island.

DISCUSSION

Species distribution

Both Pacific and common geckos were found to be present in reasonable numbers on Muriwhenua and Wareware Islands (at low tide the islands are connected and so are effectively one island). No common geckos were found on Pupuha or Middle Stack Islands, whereas Pacific geckos were captured in both locations. This species distribution is in agreement with that reported previously (Whitaker and Parrish, February 1999).

Pacific and common gecko capture

Hand searching proved to be very effective as a method of capturing both Pacific and common geckos. The islands selected for collection appeared to have very good gecko densities. The 80 geckos for translocation were captured on four islands over 1.5 days. Altogether, 120 geckos were captured in 21.4 hours of searching, giving an overall capture rate of 5.6 geckos/person/hour. The best capture rate was achieved on Muriwhenua Rock where one searcher captured 10 geckos in 25 minutes, achieving a capture rate of 24 geckos/person/hour. The lowest capture rate was achieved on Wareware ridge, where three searchers captured four geckos in 30 minutes, giving a capture rate of 2.6 geckos/person/hour.

The majority of the geckos were located underneath small rock refuges. Many of these refuges were rock fragments closely adherent to bare coastal rocks. Other refuges were part of the rubble rock and scree higher up on the island flanks. See photographs in Appendix 2. On the islands where both species occurred there did not appear to be any particular species habitat preference.

Towns and Parrish, March 1997, reported the capture of 36 Pacific geckos on Pupuha Island in 90 minutes. The number of searchers was not specified. On the current trip searching on Pupuha Island was undertaken on two occasions. Over these two searches a capture rate of 8.9 geckos/person/hour was achieved, with 38 geckos captured in total (capture rate on 16th was 10.8 g/p/h and on the 17th was 6.3 g/p/h). This would tend to indicate that numbers have recovered well from the previous harvest for translocation undertaken in 1997.

December 2009 trip

On the return trip in December 2009, three geckos were returned to their capture locations, with three geckos needing to be captured as replacements. Capturing the replacement geckos proved to be more difficult than was expected given the capture rates on the first trip. Three people searched Wareware gap and the main beach and northern aspects of Muriwhenua on the afternoon of December 17th. The search time was not recorded but was at least 60 minutes duration. Very few geckos were located despite a relatively large area being covered. One Pacific gecko was captured for translocation in areas that yielded at least 17 geckos on the first trip. The two common geckos needed were captured the following morning on Wareware ridge in approximately 30 minutes of searching.

There a number of possibilities for this lower catch rate. One is that most of the geckos occupying these areas had been captured on the first trip and there had been insufficient time for new animals to move into the refuges. The habitat disturbance resulting from the first trip may have made the rock refuges less attractive as they were less firmly attached to the base rock. On the December trip the daytime temperatures were higher and the areas searched were drier than they had been in November. It is possible that the geckos present had moved into cooler, damper refuges beneath the nearby vegetation. The vegetated areas were too difficult to effectively hand search so it was not possible to determine the number of geckos located there.

Disease screening and health of geckos

The copper skinks collected on Matakohe-Limestone Island in October 2007, were negative for both *Salmonella* and *Cryptosporidia*. This is the first recorded disease screen for the island, and the result suggests a viable copper skink population not only in numbers but also health. All skinks caught were in good condition and had no obvious signs or symptoms of sickness.

All the Pacific geckos tested negative for *Salmonella*. Two out of 51 were positive for *Cryptosporidia* on direct microscopy, using carbylfuschin staining. However further testing of one of these two geckos (P15) with the more specific immunofluorescent antibody test was negative, so this gecko could also be safely translocated. The other positive gecko (P46) was released and a common gecko was captured as a replacement (see above).

One Pacific gecko (P10) did not eat or produce a faecal sample whilst in quarantine. It lost weight during the 14 days it was held in captivity. At no time did the gecko appear to be unwell. It was noted that the Pacific geckos were generally more 'flighty' than the common geckos and did not relax during the quarantine period (Manuela Barry *pers com*). Tony Jewell notes '*uniquely timid – even long-term captive specimens retain a strong nervous disposition*' in his book (Jewell 2008). It is possible that the failure of this individual to eat was due to the stress of captivity rather than any disease process. It was decided to release the animal back to its capture location and capture a replacement on the December 2009 trip.

All the 31 common geckos tested negative for *Salmonella* and *Cryptosporidia*.

Monitoring

Post-translocation monitoring of the Pacific and common geckos will be undertaken as detailed in the Translocation Proposal. Monitoring will be undertaken one, two, three, five, ten and 15 years following release, to determine survival of translocated individuals, evidence of breeding and eventually establishment of a self-sustaining population (more new than transferred individuals).

ACKNOWLEDGEMENTS

This project can be considered a success, and we would like to thank the following people who made it so:

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- Manuela Barry, Ecology and Conservation Group, Massey University, Albany Campus, for her care of the geckos and organisation of the sampling during their time in quarantine.
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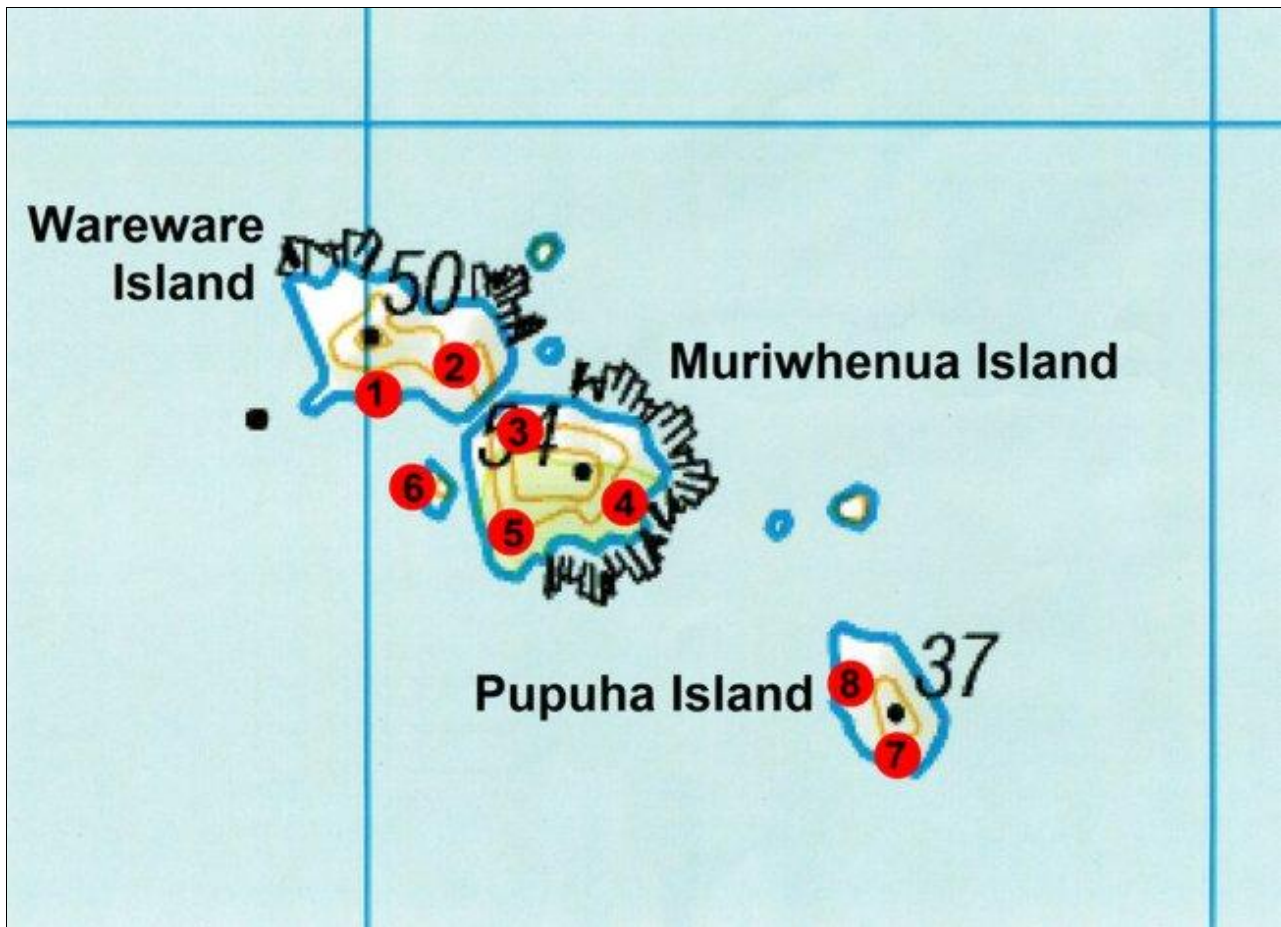
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APPENDICES

- Appendix 1: Map of Pupuha, Muriwhenua and Wareware Islands showing sites where hand searching was undertaken between 6th and 7th November 2009.
- Appendix 2: Photographs showing typical habitats where geckos were captured November 16th and 17th 2009.
- Appendix 3: Hand capture data by site, including by-catch, for gecko collection trip undertaken between 6th and 7th November 2009.
- Appendix 4: Pacific gecko data recorded at Massey University (Albany Campus) during quarantine between November 20th and December 24th 2009.
- Appendix 5: Common gecko data recorded at Massey University (Albany Campus) during quarantine between November 20th and December 24th 2009.

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Appendix 1: Map of Pupuha, Muriwhenua and Wareware Islands showing sites where hand searching was undertaken between 6th and 7th November 2009.



- Key
1. Wareware Island ridge
 2. Wareware Island gap
 3. Muriwhenua Island beach and northern aspect
 4. Muriwhenua Island gap
 5. Muriwhenua Island ridge
 6. Muriwhenua Island rock
 7. Pupuha Island south
 8. Pupuha Island north

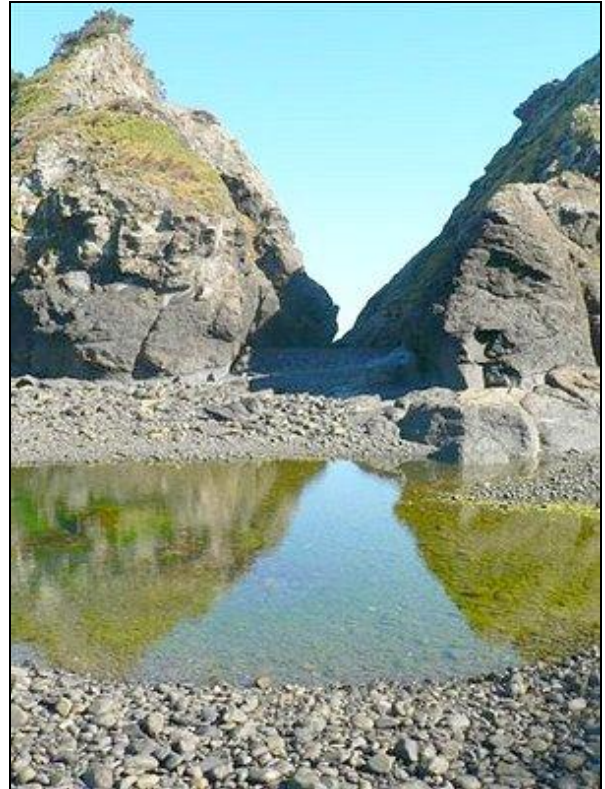
All areas of Middle Stack Island, which were safe to access, were searched.

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Appendix 2: Photographs showing typical habitats where geckos were captured November 16th and 17th 2009.



▲ Pupuha Island, southern side. Many Pacific geckos were located under the loose rubble rocks on the side of the island.



▲ Wareware Island gap. Common geckos were found under the loose rocks and boulders in the floor of the gap.



◀ Muriwhenua Island gap. This area is typical of many of the search areas. Geckos were located under small stones and larger boulders closely adherent to the shoreline rocks. Geckos were also found under rocks and stones beneath low shoreline vegetation, such as the coprosmas in this photograph, but were harder to capture in these locations.

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Appendix 3: Hand capture data by site, including by-catch, for gecko collection trip undertaken between 6th and 7th November 2009.

Source Island	Location	Date	Number of searchers	Search time (min)	<i>H.pacificus</i> numbers	<i>H.maculatus</i> numbers	Capture Rate (g/p/h)	Number translocated	Other species captured
Pupuha		16/11/09	3	50	27	0	10.8	22 x <i>H.pacificus</i>	1 x <i>C.townsi</i>
		17/11/09	3	35	11	0	6.2	3 x <i>H.pacificus</i>	
Wareware	Gap	16/11/09	3	20	1	4	5.0	4 x <i>H.maculatus</i>	7 x <i>O.suteri</i>
	Ridge	17/11/09	3	30	3	1	2.6	3 x <i>H.pacificus</i> 1 x <i>H.maculatus</i>	
	Gap and surrounds	17/11/09	4	45	5	8	4.3	5 x <i>H.pacificus</i> 7 x <i>H.maculatus</i>	6 x <i>O.suteri</i>
Muriwhenua	Main beach and northern aspect	16/11/09	4	60	6	10	4.0	6 x <i>H.pacificus</i> 10 x <i>H.maculatus</i>	3 x <i>O.suteri</i> 2 x <i>H.duvauceli</i>
	Gut	17/11/09	4	45	7	3	3.3	4 x <i>H.pacificus</i> 3 x <i>H.maculatus</i>	2 x <i>C.townsi</i> 1 x <i>H.duvauceli</i> 1 poss <i>O.smithi</i>
	Ridge	17/11/09	2	45	12	2	9.3	1 x <i>H.maculatus</i>	1 x <i>C.townsi</i> 2 x <i>H.duvauceli</i>
	Rock	17/11/09	1	25	2	8	24	3 x <i>H.maculatus</i>	1 x <i>C.townsi</i>
Middle Stack		17/11/09	4	30	10	0	5	8 x <i>H.pacificus</i>	

Note: The number of searchers has been adjusted down where appropriate to allow for the time taken to process captured geckos.

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Appendix 4: Pacific gecko (*H. pacificus*) data recorded at Massey University (Albany Campus) during quarantine between November 20th and December 24th 2009.

ID	Source island	Sex	Date in	Date out	Total days	Start weight (g)	End weight (g)	SVL (mm)	Diagnostic tests	Test results
P1	Pupuha Island	f	20/11/09	04/12/09	14	7.80	8.02	69	SAL, Crypto	negative
P2	Pupuha Island	f	20/11/09	04/12/09	14	8.16	7.65	70	SAL, Crypto	negative
P3	Pupuha Island	m	20/11/09	24/12/09	34	7.49	7.90	68	SAL, Crypto	negative
P4	Pupuha Island	f	20/11/09	04/12/09	14	10.60	10.44	73	SAL, Crypto	negative
P5	Pupuha Island	m	20/11/09	04/12/09	14	9.37	8.84	68	SAL, Crypto	negative
P6	Pupuha Island	f	20/11/09	04/12/09	14	9.88	10.90	75	SAL, Crypto	negative
P7	Pupuha Island	m	20/11/09	04/12/09	14	11.17	10.47	74	SAL, Crypto	negative
P8	Pupuha Island	m	20/11/09	04/12/09	14	10.27	9.65	73	SAL, Crypto	negative
P9	Pupuha Island	m	20/11/09	04/12/09	14	9.88	9.47	73	SAL, Crypto	negative
P10	Pupuha Island	f	20/11/09	04/12/09	14	11.37	10.67	76	no tests, animal did not eat -> no faecal samples	
P11	Pupuha Island	f	20/11/09	04/12/09	14	9.30	8.90	68	SAL, Crypto	negative
P12	Pupuha Island	m	20/11/09	04/12/09	14	11.44	11.20	75	SAL, Crypto	negative
P13	Pupuha Island	f	20/11/09	04/12/09	14	8.75	8.68	72	SAL, Crypto	negative
P14	Pupuha Island	f	20/11/09	04/12/09	14	11.27	10.90	75	SAL, Crypto	negative
P15	Pupuha Island	m	20/11/09	04/12/09	14	8.05	7.60	69	SAL, Crypto	negative
P16	Pupuha Island	m	20/11/09	04/12/09	14	9.55	8.71	71	SAL, Crypto	negative
P17	Pupuha Island	f	20/11/09	04/12/09	14	8.25	7.72	67	SAL, Crypto	negative
P18	Pupuha Island	m	20/11/09	04/12/09	14	10.72	9.94	77	SAL, Crypto	negative
P19	Pupuha Island	m	20/11/09	04/12/09	14	10.46	9.70	74	SAL, Crypto	negative
P20	Pupuha Island	m	20/11/09	04/12/09	14	8.73	8.03	72	SAL, Crypto	negative
P21	Pupuha Island	m	20/11/09	04/12/09	14	9.75	9.03	75	SAL, Crypto	negative
P22	Pupuha Island	f	20/11/09	04/12/09	14	11.38	11.41	76	SAL, Crypto	negative
P23	Muriwhenua Is.	f	20/11/09	04/12/09	14	12.61	11.17	82	SAL, Crypto	negative
P24	Muriwhenua Is.	f	20/11/09	04/12/09	14	11.02	10.70	75	SAL, Crypto	negative
P25	Muriwhenua Is.	f	20/11/09	04/12/09	14	10.25	9.96	75	SAL, Crypto	negative
P26	Muriwhenua Is.	f	20/11/09	04/12/09	14	13.00	12.66	78	SAL, Crypto	negative
P27	Muriwhenua Is.	f	20/11/09	04/12/09	14	10.04	9.77	74	SAL, Crypto	negative
P28	Middle Stack Is.	f	20/11/09	04/12/09	14	missing	4.83	58	SAL, Crypto	negative
P29	Middle Stack Is.	f	20/11/09	04/12/09	14	8.80	8.28	66	SAL, Crypto	negative
P30	Middle Stack Is.	f	20/11/09	04/12/09	14	10.91	9.99	71	SAL, Crypto	negative
P31	Middle Stack Is.	f	20/11/09	04/12/09	14	11.10	11.36	73	SAL, Crypto	negative
P32	Middle Stack Is.	f	20/11/09	04/12/09	14	11.26	11.32	74	SAL, Crypto	negative
P33	Middle Stack Is.	f	20/11/09	04/12/09	14	5.83	6.00	59	SAL, Crypto	negative
P34	Middle Stack Is.	f	20/11/09	04/12/09	14	5.51	5.85	58	SAL, Crypto	negative
P35	Middle Stack Is.	f	20/11/09	04/12/09	14	8.28	7.89	66	SAL, Crypto	negative
P36	Muriwhenua Is.	f	20/11/09	04/12/09	14	11.41	10.67	74	SAL, Crypto	negative
P37	Muriwhenua Is.	m	20/11/09	04/12/09	14	12.21	11.60	73	SAL, Crypto	negative
P38	Muriwhenua Is.	m	20/11/09	04/12/09	14	11.15	11.15	74	SAL, Crypto	negative
P39	Muriwhenua Is.	m	20/11/09	04/12/09	14	11.44	11.51	76	SAL, Crypto	negative
P40	Wareware Island	m	20/11/09	04/12/09	14	7.70	7.30	71	SAL, Crypto	negative
P41	Wareware Island	f	20/11/09	04/12/09	14	9.09	8.90	72	SAL, Crypto	negative
P42	Wareware Island	f	20/11/09	04/12/09	14	10.71	10.74	76	SAL, Crypto	negative
P43	Wareware Island	f	20/11/09	04/12/09	14	8.18	7.83	72	SAL, Crypto	negative
P44	Wareware Island	f	20/11/09	04/12/09	14	12.30	11.66	76	SAL, Crypto	negative
P45	Wareware Island	f	20/11/09	24/12/09	34	7.66	8.10	75	SAL, Crypto	negative
P46	Wareware Island	f	20/11/09	04/12/09	14	10.66	10.27	74	SAL, Crypto	Crypto positive
P47	Wareware Island	f	20/11/09	04/12/09	14	11.06	10.70	75	SAL, Crypto	negative
P48	Pupuha Island	m	20/11/09	04/12/09	14	9.86	9.40	76	SAL, Crypto	negative
P49	Pupuha Island	m	20/11/09	04/12/09	14	7.60	7.10	71	SAL, Crypto	negative
P50	Pupuha Island	m	20/11/09	04/12/09	14	9.40	8.90	71	SAL, Crypto	negative
P51	Muriwhenua Is.	f	11/12/09	24/12/09	13	12.08	11.90		SAL, Crypto	negative
C12	Muriwhenua Is.	f	20/11/09	04/12/09	14	9.00	8.80	75	SAL, Crypto	negative

Appendix 5: Common gecko (*H. maculatus*) data recorded at Massey University (Albany Campus) during quarantine between November 20th and December 24th 2009.

ID	Source island	Sex	Date in	Date out	Total days	Start weight (g)	End weight (g)	SVL (mm)	VTL (mm)	Tail condition	Gravid ?	Diagnostic tests	Test results
C1	Wareware	f	20/11/09	04/12/09	14	4.80	4.50	59	54	regen= 9mm		SAL, Crypto	negative
C2	Wareware	m	20/11/09	04/12/09	14	7.00	7.00	64	57	regen= 38mm		SAL, Crypto	negative
C3	Wareware	f	20/11/09	04/12/09	14	5.10	4.80	60	61	regen= 14mm		SAL, Crypto	negative
C4	Wareware	m	20/11/09	04/12/09	14	7.70	7.30	64	54	full regen		SAL, Crypto	negative
C5	Muriwhenua	f	20/11/09	04/12/09	14	9.90	10.20	71	58	regen= 54mm	yes	SAL, Crypto	negative
C6	Muriwhenua	m	20/11/09	04/12/09	14	8.20	8.10	68	70	regen= 27mm		SAL, Crypto	negative
C7	Muriwhenua	f	20/11/09	04/12/09	14	5.90	5.70	63	13	regen= 4mm	yes	SAL, Crypto	negative
C8	Muriwhenua	m	20/11/09	04/12/09	14	8.20	8.00	68	54	regen= 46mm		SAL, Crypto	negative
C9	Muriwhenua	f	20/11/09	04/12/09	14	7.30	7.00	67	48	regen= 36mm	yes	SAL, Crypto	negative
C10	Muriwhenua	f	20/11/09	04/12/09	14	5.70	5.40	63	55	regen= 41mm		SAL, Crypto	negative
C11	Muriwhenua	f	20/11/09	04/12/09	14	7.30	7.00	68	38	regen= 32mm	yes	SAL, Crypto	negative
C13	Muriwhenua	m	20/11/09	04/12/09	14	5.50	5.30	63	50	regen= 24mm		SAL, Crypto	negative
C14	Muriwhenua	f	20/11/09	04/12/09	14	6.20	6.20	62	58	regen= 23mm	yes	SAL, Crypto	negative
C15	Muriwhenua	f	20/11/09	04/12/09	14	7.90	7.40	68	56	regen= 52mm	yes	SAL, Crypto	negative
C16	Muriwhenua	f	20/11/09	04/12/09	14	9.60	9.30	60	58	regen= 50mm	yes	SAL, Crypto	negative
C17	Muriwhenua	m	20/11/09	04/12/09	14	7.60	7.00	68	11	regen= 4mm		SAL, Crypto	negative
C17a	Muriwhenua	m	20/11/09	04/12/09	14	7.00	6.40	65	28	regen= 14mm		SAL, Crypto	negative
C18	Wareware	m	20/11/09	04/12/09	14	6.10	5.90	61	59	regen= 27mm		SAL, Crypto	negative
C19	Wareware	m	20/11/09	04/12/09	14	7.20	6.60	67	52	regen= 43mm		SAL, Crypto	negative
C20	Wareware	f	20/11/09	04/12/09	14	7.90	7.70	65	52	regen= 45mm	yes	SAL, Crypto	negative
C21	Wareware	f	20/11/09	04/12/09	14	6.70	6.50	65	52	regen= 17mm	yes	SAL, Crypto	negative
C22	Wareware	f	20/11/09	04/12/09	14	4.80	4.70	58	60	regen= 60mm		SAL, Crypto	negative
C23	Wareware	f	20/11/09	04/12/09	14	7.00	6.90	65	52	regen= 43mm	yes	SAL, Crypto	negative
C24	Wareware	f	20/11/09	04/12/09	14	5.40	5.10	60	48	regen= 44mm	yes	SAL, Crypto	negative
C25	Wareware	f	20/11/09	04/12/09	14	7.20	7.00	64	61	regen= 50mm	yes	SAL, Crypto	negative
C26	Muriwhenua	m	20/11/09	04/12/09	14	7.00	6.60	64	52	regen= 43mm		SAL, Crypto	negative
C27	Muriwhenua	m	20/11/09	04/12/09	14	6.10	5.60	64	55	regen= 43mm		SAL, Crypto	negative
C28	Muriwhenua	f	20/11/09	04/12/09	14	6.20	6.20	61	67	original	yes	SAL, Crypto	negative
C29	Muriwhenua	f	20/11/09	04/12/09	14	5.90	5.90	62	27	regen= 20mm	yes	SAL, Crypto	negative
C30	Wareware	f	11/12/09	24/12/09	13	5.40	5.50					SAL, Crypto	negative
C31	Wareware	f	11/12/09	24/12/09	13	6.94	6.90					SAL, Crypto	negative

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