



## TRANSLOCATION OF ORNATE SKINK (*Cyclodina ornata*) FROM WHATUPEKE ISLAND TO MATAKOHE-LIMESTONE ISLAND (NOVEMBER/DECEMBER 2008)

Report prepared by Cathy and Peter Mitchell  
for the Friends of Matakoho-Limestone Island, January 2009.

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### ABSTRACT

Thirty ornate skinks (*Cyclodina ornata*) were captured on Whatupuke Island, Marotere group, in November 2008 for translocation to Matakoho-Limestone Island as part of the island restoration project. The skinks were selected for a female biased population of 1:2 (total number, ten males and 20 females).

The skinks 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 skinks were held in individual containers and fed mealworms raised at Massey University.

All 30 ornate skinks were negative for *Salmonella*. Two of the 30 ornate skinks tested positive for *Cryptosporidia* on the initial direct microscopy. Samples from these two skinks were sent to Massey University, Palmerston North for immunofluorescent antibody testing which was negative.

On December 22<sup>nd</sup> 2008, 27 ornate skinks were released into the back of Gerry's Folly on Matakoho-Limestone Island. One skink was found to be dead at the time of release. The body was sent to Massey University, Palmerston North for post-mortem examination. The cause of death was not confirmed, but there appeared to be a tail injury, which may have lead to the death of the skink. Two further skinks were released in the same location on Matakoho-Limestone Island on December 12<sup>th</sup>, once they were shown to be negative for *Cryptosporidia*. In total 29 ornate skinks, ten males and 19 females, were translocated to Matakoho-Limestone Island.

### INTRODUCTION / BACKGROUND

The ornate skink (*Cyclodina ornata*) is a native skink of the *Cyclodina* genus. This species is widespread in the North Island and on many outlying islands, including the Hen and Chickens group. The skink lives among leaf litter and under rocks and logs, or in dense herbage, in forests, shrublands and heavily vegetated coastlines. It is very secretive and seldom emerges from cover. It can become active at any time, but most usually at dawn and dusk. In common with all native skinks, except *O. suteri*, it bears live young, which are born in January – February (Jewel et al, 2008). One study showed the main foods were beetles, spiders, mites, small snails and plant matter. Adults appear to be territorial, with a small home range from which they exclude other adults (Gill et al, 1996).

Matakoho-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 Matakoho-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 0.05% tracking over the last three years). It is highly likely that many species of lizard, including ornate skink, originally inhabited Matakoho-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, including Whatupuke Island, has been studied over many years. A survey of Whatupuke Island (Whitaker and Parrish, 1999) resulted in pitfall-trap capture rates for ornate skinks of 8/100 Trap Days (TD) in coastal habitats and 3.4/100TD in the forest. Ornate skinks were also found beneath logs and stones throughout all forest areas surveyed. This survey found that ornate skinks were widespread on Whatupuke Island and appeared to be relatively abundant.

The purpose of the translocation is to establish a new population of ornate skink on Matakoho-Limestone Island, as identified in the Matakoho-Limestone Restoration Plan (J Ritchie, 2000). This is primarily a species restoration exercise, but will additionally provide valuable advocacy opportunities. The ornate skink is the second of up to eight species of lizard planned for translocation to Matakoho-Limestone Island over the next three – five years. (Shore skink was the first species, translocated in 2007 – see Mitchell C & P, 2008).

## **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, Whatupuke Island November 2008

On Monday November 3<sup>rd</sup> 2008 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 Whatupuke Island each day.

The purpose of the trip was two-fold. It was planned to capture both ornate and moko skinks for translocation to Matakoho-Limestone Island. Pitfall traps were therefore set at Koarea Bay (K Bay) and Boulder Bay (B Bay) for moko skinks, and in the forested areas for ornate skinks. Pitfall traps consisted of four-litre plastic buckets set into the ground, baited with cat food and covered with a plywood lid.

Once camp was set up at Lady Alice Island, two of the team were dropped off at K Bay and relocated and set 17 of the established pitfall traps at this location. Due to problems with the outboard motor, no other work was carried out that day.

A replacement outboard was delivered out to Lady Alice Island and work recommenced at 11 am on Tuesday 4<sup>th</sup>. A number of the established pitfalls at B Bay were relocated and set for moko skinks. Twenty pitfall traps were set for ornate skinks in the bush around the Whatupuke campsite. A further ten pitfalls were set on the ridge above the bay, running west from Track Marker Five (TM5) on Loop Track. Six adult and two juvenile ornate skinks were captured by hand searching (five people for one hour) from TM 5 back down to and around the campsite.

On Wednesday 5<sup>th</sup>, the traps at K Bay were checked (one moko skink captured) and ten additional pitfall traps were established. The ornate pitfall traps were checked: no skinks had been captured. Three additional traps were set. Thirty-five minutes of hand searching East of the campsite, was carried out by the four people present and one adult ornate skink was captured. Due to deterioration in the sea conditions (increasing swell and wind), work was abandoned at 1 pm that day, and the team returned to Lady Alice Island.

The K Bay and B Bay pitfall traps were checked on the morning of Thursday 6<sup>th</sup> (one moko skink captured in a pitfall and one moko skink was hand caught). There were no ornate skink captured in the pitfall traps, however hand searching proved very successful. The area alongside Loop Track from TM 5 to TM 20 was searched and the full quota of ornate skinks was captured. The ornate pitfall traps were removed and the holes were filled in.

On Friday 7<sup>th</sup>, the K Bay and B Bay pitfall traps were checked (two additional moko skinks were captured), and the traps were filled with rocks and left in place. A total of seven moko skinks were captured – this was

considered to be an insufficient number for this translocation to proceed and the lizards were all released at their capture locations. The moko skink translocation is ongoing and a full report will be released at a later date.

The ornate skinks for translocation were transported by boat from Lady Alice Island to Reotahi Bay in Whangarei Harbour. They were then transported by car down to the Ecology and Conservation Group at the Massey University Albany Campus on the afternoon of November 7<sup>th</sup>.

The 30 adult skinks were selected for a female-biased sex ratio of 1:2 – that is ten males and 20 females. Many of the females were gravid. Skink identifications refer to the capture locations. C is Campsite, TM is Track Marker (1, 5 or 9), and remaining numbers refer to track markers where the skinks were captured. For example, 12A to 12J were captured in the vicinity of Track Marker 12.

#### Quarantine at Massey University

Disease testing was undertaken on the ornate skinks 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 skinks were held in individual containers, checked everyday for any obvious symptoms of potential sickness, provided with fresh water and periodically fed meal-worms grown at the facility. The skinks were held at this facility for a period of almost two weeks, until the final disease testing results became available.

All skinks were weighed, snout-vent length (SVL) and vent-tail lengths were measured (see Appendix 2). Faecal samples were collected for disease screening by placing skinks in individual cleaned and disinfected ice-cream containers. Trigen 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 skinks were in the containers and water was provided.

Once faeces were obtained, skinks 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.

#### Ornate skink disease test results

All of the 30 ornate skinks disease screened for *Salmonella* were negative. Two of the 30 skinks had a positive test result for *Cryptosporidia* by direct microscopy. Samples from these two skinks were sent to Massey University, Palmerston North for further testing. The more specific IFA (immunofluorescent antibody) test was *Cryptosporidia* negative and the skinks were given clearance for release to Matakohe-Limestone Island.

#### Ornate skink release

On the morning of November 26<sup>th</sup> 2008, 28 ornate skinks travelled by car in individual containers to Onerahi. The 28 skinks were then transferred to the island barge and transported to the pontoon landing at Matakohe-Limestone Island.

On arrival at Matakohe-Limestone Island, the skinks were welcomed and blessed. Te Warahi Heteraka of *Ngatiwai* and Te Ihi Tito of *Te Parawhau* led the welcome and handing over of the skinks. Those present included many members of the FOMLI Committee and members of the general public, approximately 20 people in total.

The skinks were released at the previously identified site in the back of Gerry's Folly. Artificial refuges, in the form of log piles, had been placed in the release area. All the skinks were released within a 20 metre radius of each other.

At the time of release one of the skinks, a female, was found to have died at some time during transport. The body was sent to Massey University, Palmerston North for post-mortem. The identity of the skink is unknown.

The two skinks still in quarantine were confirmed to be *Cryptosporidia* negative on December 5<sup>th</sup> 2008. On the afternoon of December 12<sup>th</sup> these two skinks travelled up to Onerahi by car, were transferred to the island by the barge and then were released onto Matakohe-Limestone Island. They were released into the back of Gerry's Folly in the same area as the first 27 skinks. Thus 29 ornate skinks were released in total.

## DISCUSSION

### Ornate skink location and capture

Pitfall trapping in the forested areas failed to capture any lizards of any species in 102 TD. The weather during the trip was mostly overcast and cool, with sporadic showers and fresh South-West winds. This may have resulted in low levels of skink activity, which therefore lead to the failure of these traps to catch ornate skinks. Hand searching in the area around camp was not very productive, so another possibility is that the traps were set in a location of low skink density. Of interest, the beach pitfall traps also failed to catch any ornate skinks in 128 TD. In the survey by Whitaker and Parrish (1999) coastal traps in the same locations had a catch rate of 8/100 TD.

The catch rate for hand searching was approximately 1.8 skinks/person hour, (juvenile captures were not always reported). The best capture rate was achieved on Thursday 6<sup>th</sup>, when three people captured 20 adult skinks in two hours, giving a capture rate of 3.3 skinks/person hour. The hand searching on this day was undertaken on Loop Track between TM5 and TM20 as it headed up towards the island summit. The habitat in this area had more low vegetation, the ground contained more moisture and there were more rotting log refuges. In addition, by this time, the team members had gained experience in locating and capturing the skinks. Rotting log refuges were found to be the most productive sites for ornate skinks.

### Disease screening of skinks/dead skink

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 ornate skinks tested negative for *Salmonella*. Two out of 30 were positive for *Cryptosporidia* on direct microscopy, using carbylfuschin staining. However further testing of these two with the more specific immunofluorescent antibody test was negative, so these skinks could also be safely translocated.

The dead skink was not observed to be unwell during the quarantine period, or at the time when it was placed in the tube for transport to Matakohe-Limestone Island. The skinks were all placed in the transport tubes on the evening of the 25<sup>th</sup> November and they were released less than 24 hours later. All the remaining skinks appeared well at the time of release. It was noted in the preliminary post-mortem report that the distal tail was crushed and the tip was missing, with possible necrosis. The tissues were too autolysed to determine the cause of death using histology. It is possible that the trauma to the tail could have lead to the death of the skink.

### Monitoring

Post-translocation monitoring of the ornate skinks 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). Monitoring will be carried out using pitfall traps and hand searching.

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## ACKNOWLEDGEMENTS

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

- *Ngatiwai* have *mana whenua* over the Marotere Island Group, and *Te Parawhau* over Matakohe-Limestone Island. Both groups were involved in all stages of this project.
- Richard Parrish for his advice at all stages of the translocation and for his practical assistance on the collection trip.
- Marleen Baling and the team at Massey University, Albany Campus, for their practical assistance and advice with skink collection and their care of the skinks while they were in quarantine.
- Department of Conservation staff who gave advice (Peter Anderson), and assistance with preparation of the translocation proposal and obtaining the permits (Andrea Booth, Gail Townsend and Bryce Lummis).
- Dean Marine Charters who transported the team out to Lady Alice Island, the people and skinks back to the mainland and also 'rescued' the project by running the replacement outboard out to us at short notice. The weather was less than perfect on most of these trips – thank you Dean.
- Anchorage Marine who supplied a replacement outboard at short notice, free of charge.
- The many FOMLI Committee members and volunteers who gave their time to help with the project, in particular Gerry Brackenbury, Pam Stevens and Richard Drake.
- Northland Regional Council, Harbour Restoration Fund, which provided the funding for this project. Without this funding the project could not have gone ahead.

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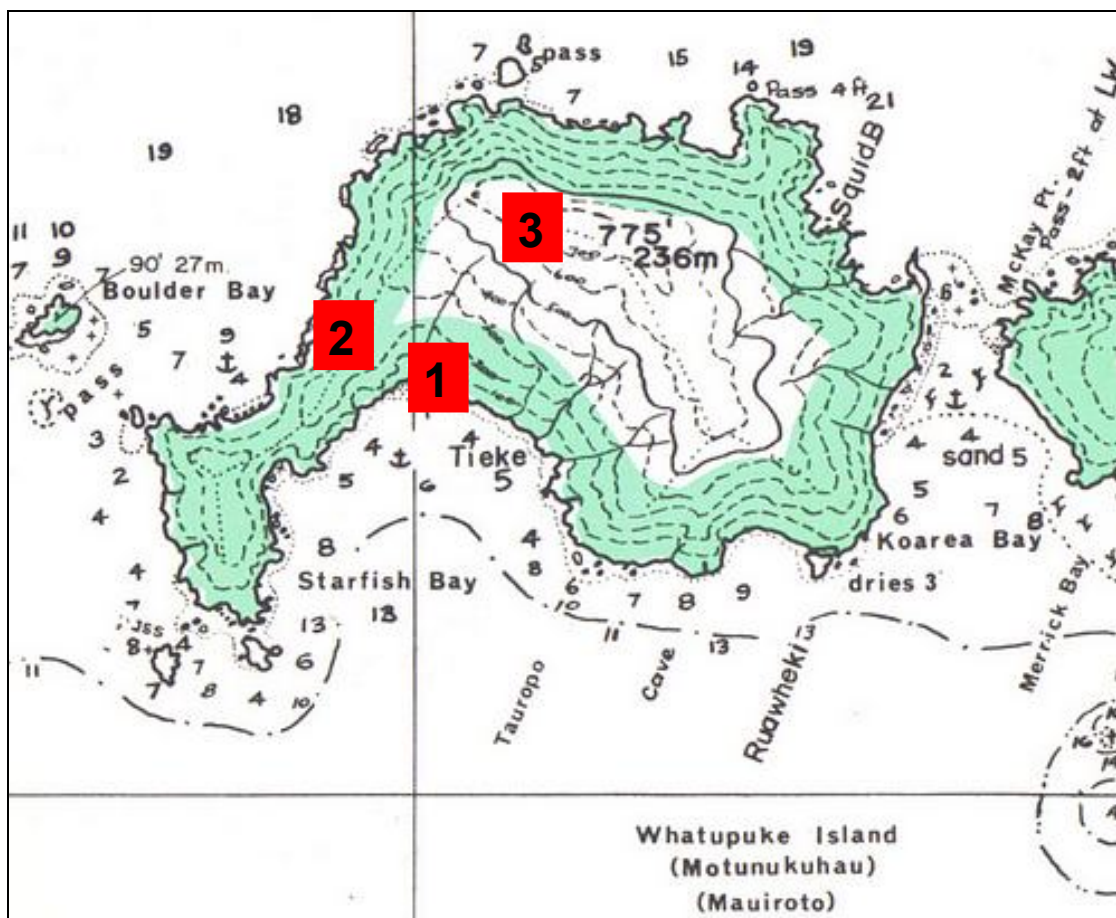
## APPENDICES

Appendix 1: Map of Whatupuke showing sites where pitfall traps were set, and capture locations of ornate skinks between 3<sup>rd</sup> and 5<sup>th</sup> November 2008.

Appendix 2: Ornate skink data recorded at Massey University (Albany Campus) during quarantine between November 7<sup>th</sup> and November 26<sup>th</sup> 2008.

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**Appendix 1:** Map of Whatupuke showing sites where pitfall traps were set, and capture locations of ornate skinks between 3<sup>rd</sup> and 5<sup>th</sup> November 2008.



- Key**
1. Campsite and TM1. 32 – 35 pitfalls set east of track above camp. Eight ornate skinks captured by hand between Campsite and TM5
  2. TM5. 12 pitfalls set along ridge west of TM5. 25 adult ornate skinks were captured by hand between TM5 and TM20.
  3. TM20.

(map from Pickmere, 1974)

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**Appendix 2:** Ornate skink data recorded at Massey University (Albany Campus) during quarantine between November 7<sup>th</sup> and November 26<sup>th</sup> 2008.

#	Skink ID	Sex	SVL (mm)	VTL (mm)	Initial WT (g)	Final WT (g)
1	C2	Male	56.0	36.5	3.70	3.52
2	12F	Male	54.0	62.0	3.50	3.65
3	TM1	Male	54.0	62.0	4.10	4.07
4	19Z	Female	62.0	63.0	5.60	5.93
5	12C	Male	57.0	35.0	3.20	3.50
6	TM9	Female	57.0	59.0	4.40	4.32
7	12B	Female	65.0	43.5	6.40	6.51
8	R1	Female	60.0	55.0	4.80	5.09
9	19A	Female	56.5	57.0	4.60	4.85
10	12E	Female	61.0	56.0	4.40	4.68
11	12J	Female	61.5	64.0	5.50	5.90
12	C1	Female	59.0	24.0	4.50	4.79
13	12H	Female	53.0	42.5	2.80	2.69
14	C3	Female	55.0	52.0	3.30	3.37
15	19C	Female	56.0	45.0	4.10	4.39
16	12A	Male	55.0	52.5	2.90	2.81
17	19C	Male	56.5	60.5	3.90	3.40
18	TM5	Male	50.0	45.0	3.50	3.38
19	19D	Male	58.0	35.0	3.60	3.27
20	20X	Female	61.0	62.0	4.90	5.30
21	19B	Male	56.0	58.0	4.60	4.32
22	12G	Female	56.0	40.0	3.60	3.66
23	14C	Female	56.0	45.0	4.20	4.37
24	19Y	Female	60.0	22.0	5.00	4.57
25	12D	Female	59.0	56.5	4.90	4.88
26	20B	Female	54.0	59.0	3.30	3.20
27	14A	Female	60.0	37.0	3.80	3.67
28	1F	Female	61.0	53.5	4.70	4.92
29	12I	Female	48.0	48.5	2.20	2.40
30	14B	Male	53.0	57.0	2.80	2.81

**Note:** Skink identifications (Skink ID) refer to capture locations. C is Campsite, TM is Track Marker (1, 5, 9), and remaining numbers refer to track markers where the skinks were captured. For example, 12A to 12J were captured in the vicinity of Track Marker 12.

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