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**SURVEY FOR THE "CHESTERFIELD"
SKINK (*Leiopisma* sp.) NEAR HOKITIKA ON
THE WEST COAST, 7-9 MARCH 1995**

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1. Background

In February 1992 Arahura Field Centre staff at Chesterfield, c.15 km north of Hokitika, found a skink which they sent to Science and Research Division of the Department of Conservation in Wellington to be identified. It was small and quite nondescript, and was thought to be *Leiolopisma inconspicuum*.

In February 1993 a second skink from the same location was sent to Wellington for identification. This time the lizard had a more unusual look about it. The colouration of this lizard, in particular the tail, was significantly different from any other native species, enough so to warrant a closer look at the site itself.

A trip was organised the following summer and Geoff Patterson (at that time DoC, S&R) was able to join up with Shane Hall, the Arahura Field Centre Manager, and owner of land where the skinks had been found, for a search. Shane had located the other skinks and was able to relocate a few individuals under boulders adjacent to two drains on his deer farm.

Seven skinks were seen, five of which were measured. The average snout-vent (S-V) measurement was 53.4 mm, making it quite a small species, similar in size to the common skink, *L. polychroma*. It had distinct pink and red colouration and markings on the tail which were unique among New Zealand lizards (Geoff Patterson, pers. com.).

Two skinks were collected for genetic analysis. Gel electrophoresis undertaken by Rod Hitchmough of Victoria University, Wellington, indicated that the skink was a unique species or subspecies affiliated to *Leiolopisma infrapunctatum*, the only other skink known to occur in Westland, but not recorded south of Westport.

In 1994 a larger skink was collected by a domestic cat c.10 km south of Chesterfield, at Kaihinu. In the struggle, it had lost an important diagnostic feature, its tail. This, coupled with its large size, led Patterson *et al* to believe it was different to the Chesterfield animals and more like the *L. infrapunctatum* found north of Westport.

In summer 1995, land at Chesterfield which contained a number of the skinks came up for sale, and effort to make it more saleable included developing rough pasture (in the process destroying skink habitat). In an effort to increase knowledge of the skinks distribution and habitat range, and its abundance on the land for sale, a second field search was undertaken in March 1995.

The "Chesterfield" skink, *Leiopisma* "West Coast skink" is a B priority for conservation management according to the departments ranking system (Molloy and Davis, 1994).

2. Method

The nine or so skinks found to date had been under boulders and logs on farm land adjacent to streams and drains in areas that were free draining but not necessarily dry. As the precise habitat range of the skink was unknown, this search covered a large range of habitat types. Logs (large and small) and boulders were rolled in all habitat types searched and all skinks seen were noted. Most were caught, measured and photographed. Habitats searched included:

1. Bouldery stream banks.
2. Hedgerows and rank grass.
3. Peat swamp, partially drained and full of logs and stumps.
4. Remnant swamp forest enclaves.
5. Wood piles and buildings.
6. Driftwood piles at storm high tide mark.
7. Marram grass dunelands.
8. Open paddocks on stabilised sand dunes.
9. Rough hill paddocks.
10. Railway line and bridge.

Droppings were also searched for in all areas and noted where they occurred. Person hours spent searching were noted to give abundance comparisons.

3. Search Conditions

The weather during the search was mild to warm, sunny or overcast and calm. Conditions for finding diurnal lizards were considered average to good.

4. Search Area

Chesterfield is a collection of dairy and deer farms with about three houses, 15 km northeast of Hokitika. The search area was a 3.5 km x 500 m wide strip of rolling mainly developed farm land between the Waimea Creek to the south and Kapitea Creek to the north. It is bordered on one side by the Tasman Sea and the other by scrubby rough pasture and regenerating bush on the scarp of a plateau about 40 m asl.

The main highway and railway line run along the base of the escarpment with occasional culverts and bridges allowing streams to flow to the sea.

5. Search Effort

The search team was made up of 6 different people during the three-day search period. There were never fewer than two nor more than four people searching at a time. Total time spent searching over the three day search period was 36.5 person hours.

7/3/95	we spent 11 person hours of searching for 1 lizard.
8/3/95	we spent 12.5 person hours of searching for 1 lizard.
9/3/95	we spent 13 person hours of searching for 2 lizards (1 not positively identified) .

6. Results

Four skinks were seen during the search; three were able to be captured, measured and photographed.

7 March 1995

Skink No. 1 was under a hardwood bridge beam among a pile of posts, beams, poles and wire adjacent to a small stream. The stream had been cleaned out using machinery and there were two piles of rocks, boulders and silt of about 2 m³ each nearby. The site is about 150 m from Shane Hall's house and is the same site that three skinks were seen by Patterson and Co in 1994. The map reference is NZMS 260 J32 Greymouth GR529412.

The skink caught was larger than expected with a SV of 74.9 mm but had all the colouration of a Chesterfield skink (see Appendix 2 for description). It was returned to the beam after measurement. Although not previously marked (e.g. toe clipped), gauging by its size, this skink was obviously not one of the lizards that Patterson *et al.* had found in 1994.

Searching continued for the rest of the day but without finding another skink.

Two days later, another thorough search of this site failed to find any skinks.

8 March 1995 - Overcast calm, warm

Skink No. 2 was a smaller skink (SV=57.0 mm) found under a log approximately 500 mm long. The site was similar to that of the first skink in that it was adjacent to a flowing stream but on a well drained substrate of boulder and rock with scattered short grass and weeds. Map Reference NZMS 260 J32 GR532416. The drain was very deep, so deep that deer had to swim to cross it.

9 March 1995 - Overcast, calm, warm

We spent the morning searching the driftwood line at the top of the beach. No success was had, although there was plenty of potential habitat. Some of the wood piles were up to a metre deep and overgrown with *Muehlenbeckia*, blackberry and flax which would offer ample cover for skinks in which they would be difficult to see or catch.

In the afternoon the search moved to the paddocks adjacent to the beach. They were not the rocky or peaty paddocks of further inland but were stabilised sand dunes with marram growing along the edge above the beach.

A skink was seen but not caught when a small piece of wood was lifted next to a fenced windbreak. The skink was able to quickly escape into rank grass. This was assumed to be the same species as the one being searched for.

A second skink (Skink No. 3) was found later in the afternoon under a large log in the marram grass strip between beach and paddock (GR526413). This was a large individual with an SV of 80 mm. Its colouration was consistent with the "Chesterfield" skink described by Patterson *et al.* It was very large bodied compared to the other skinks caught and was thought to be gravid. The chances, however, of this being so are slim because most skinks would have given birth by March (Geoff Patterson, pers. comm.).

7. Other Areas Searched Without Success

Records of skinks seen previously were also checked.

One site, where Hall and Patterson had found a number of skinks including a juvenile, was searched again. The site was a stream bank at the downstream side of a culvert under the main road. The stream had since been cleaned out by machinery and the boulder pile had been destroyed. No skink sign was encountered.

A search later the next day under a railbridge immediately up-stream of the culvert revealed three lizard droppings in a crevice between two railway sleepers stacked to form a retaining wall. No lizards were seen after extensive searching of the site but there is a very high probability that they were Chesterfield skink droppings, because no other reptiles are known to live in the area. This could be one or more of the skinks that Hall and Patterson found on the downstream side of the culvert.

Peter King, previous owner of the land being sold at Chesterfield, also reported seeing a number of skinks in a partially drained peat swamp paddock on his land. He had been clearing logs and stumps off rough pasture so he could mow wiwi *Juncus* sp. In the process he disturbed about four skinks. A thorough search of this site revealed no lizards. The site was very damp - quite different to the other sites where the skinks had been found. The site closest to this that a skink was captured in was further upstream where the cleared drain flowed into the swamp. It was much drier and only a small lizard was found, perhaps indicating suboptimal habitat.

A great deal of searching in small forest remnants on the farmland revealed no lizards of any description.

8. Discussion

The weather conditions that prevailed during the three-day search were not ideal for seeing active diurnal skinks; however, it was dry, calm and warm, so no search time was lost due to the weather, and the skinks were not forced by inclement weather to retreat into places where it would be more difficult to find them.

Very little was known of the habits and habitats of the "Chesterfield" skink prior to this survey, and there is still a great deal to be found out. We were able to extend its habitat range from a bouldery streamside habitat to include dry paddocks with suitable cover and the marram covered foreshore also where suitable cover existed.

We also found a larger size class of skinks that had not formerly been expected from the species, given the results of last years survey by Hall and Patterson. This has opened the way to allow the larger *L. infrapunctatum* from Kaihinu to be included under the same species (Geoff Patterson pers. comm.). If this is found to be correct, it will extend its range 10 km south, and to the south side of the Arahura River. It would also indicate that other records of skinks south of Hokitika could be of the same species.

It would seem wise to conduct searches of sites where any other sightings have been made, so that the distribution of the species can be formally mapped, and some idea of its rarity can be ascertained. If the skink is living along the foreshore in rough pasture and driftwood its prognosis is good, certainly better than if it was restricted to the edges of creeks and drains on farmland, which are sites highly vulnerable to development. Foreshores and beaches are, however, well known as places where predators congregate, including cats, rats, stoats and weka, all of which are known to predate skinks.

Although a mark recapture study has not been undertaken with the "Chesterfield" skink, it seems likely that the population is mobile. This assumption is made on the basis that a variety of different animals have been found at the same site over a period of time. They have been assumed to be different because the number of individuals have fluctuated as has the size of the individuals. Additionally, at least two skinks have been found quite recently in easily disturbed sites under small pieces of wood. Basic ecological data of this nature is vitally important as it will allow us to make sound management decisions which will affect the future conservation status of the species.

Genetic analysis using gel electrophoresis and body characteristics both point to the "Chesterfield" skink being a relative of the speckled skink, *Leiolopisma infrapunctatum* (Patterson *et al.*). The differences, however, are just as obvious as the similarities and together the conclusion is reached that this is probably a subspecies of the speckled skink. This view is strengthened by the knowledge that the speckled skink is the closest other species geographically, being found further north on the West Coast, nearer Westport.

Another recent sighting of an unknown skink has been made in Westland, at Reefton. Only one specimen has ever been seen; however, it has been suggested that it may also be the "Chesterfield" skink (T. Whitaker, pers. comet.). There are also other unconfirmed sightings of skinks from the Buller River which are likely to be either "Chesterfield" skink or *L. infrapunctatum*. These sightings should be checked as time allows.

Between Chesterfield and Westport lies a huge area (c. 100 km of coastline) lacking important survey information for reptiles. It is unknown where or whether the two types overlap in range. If they do overlap, it would indicate two separate species. Genetic analysis of populations which are geographically closer together is needed to confirm taxonomic status, therefore surveys are integral to us building an understanding of the West Coast lizards. This also includes the unique skink population at Big Bay, about which very little is known.

9. Summary of recommendations

- * Check the reptile database for other skink sightings in the general area of Hokitika.
- * Increase public awareness of the skink in an effort to receive new records.
- * Undertake surveys to confirm any sightings to help build a picture of the abundance and distribution of the species (or any other encountered).
- * Enter new records onto the database (in Biosite).
- * Monitor the Chesterfield site biannually to build a picture of population trends.
- * Encourage landowners to leave lizard cover undisturbed to allow populations to remain viable.
- * Undertake research into the ecological requirements of the skink, especially if it is confirmed to be a threatened species.
- * Confirm the Kaihinu record, which is inconclusive, with a follow-up survey and genetic analysis if necessary.
- * Set up a permanent, longterm monitoring programme at one site, eg Kaihinu, using pitfall traps. This could probably be linked to a research programme looking at the ecology of the lizard.
- * Using techniques learned at Kaihinu, undertake systematic searches of sites where lizard populations have been identified, but which more information is required to determine the status of the animals, eg Big Bay.

Appendix 1

Personnel on field trip:

Mike AVISS, Department of Conservation, Threatened Species Unit, Wellington
Shane HALL, Department of Conservation, Arahura Field Centre Manager,
Hokitika
John LYALL, Department of Conservation, West Coast Conservancy, Hokitika
Ian HADLAND, Department of Conservation, Arahura Field Centre, Hokitika
Andrew MILLS, Conservation Corps, Hokitika
Karina BOYD, Conservation Corps, Hokitika

Appendix 2 Skink descriptions

Skink No. 1:

Snout to vent length 74.9 mm

Vent to tail length 83.5 mm

Tip of the nose including eyebrows fawn. Chin a pale pinky yellow colour which came up to halfway between the ear and the front leg. Mouth and tongue blue/grey. Dorsal surface chocolate brown darkly speckled. Forward of the front legs these spots joined to form a line down the centre of the dorsal surface. The dorso lateral region was dark brown from the nostril to the back leg including above the ear. There was a speckled gradient of brown through to karitane yellow on the belly. The underside of all legs was yellow with the palms being black. Regeneration had occurred on the last 23 mm of tail and was of a uniform colour throughout. One third of the underside of the tail was karitane yellow with large blotches of black and smaller patches of red. Small red scales were visible over the entire surface of the tail being less prominent of the sides and top.

Skink No. 2:

Snout to vent length 57.0 mm

Vent to tail length 39.0 mm

Dorsal region fawn with one central broken stripe from its neck to its vent. A broken dark stripe occupied the dorso lateral region from the front legs stopping at the vent. From the nostril through the eye above the ear and to the vent was a chocolate brown stripe with a dark border. At the hind leg the brown became chestnut and continued down the sides and dorsal surface of the tail. Below this stripe black and brown speckles faded into the yellow belly. This yellow colouring was present on the underside of the first 15 mm of the tail which then became pink with black blotches. The undersides of the legs were also yellow with jet black palms. The underside of this lizards chin was an unspeckled pinky yellow.

Skink No. 3:

Snout to vent length 80.0 mm

Vent to tail length 70.0 mm

Dorsal region dark fawn with a central black line running from behind the front legs breaking up and disappearing at the base of the tail. Dorso laterally a chocolate brown stripe bordered above and below by broken black lines extended from the nostril, through the eye to in front of the hind leg. Beneath this another stripe, which was yellowish brown, led from the ear to the hind leg becoming heavily speckled as it faded into the bright yellow of the belly. This yellow was present on the underside of the legs but the palms were brownly black with the odd yellow scale amongst the black ones. Under the chin was an unspotted salmon pink. The underside the first 10 mm of the tail was yellow and the rest was a mixture of pink and grey and grey with black blotches. A broken dorso-lateral line ran down the sides of the tail, which had salmon pink sides fading out at the beginning of the 24 mm section of regeneration. Dorsally the tail was fawn with black scattered speckles.