

The Scincid Lizard Genus *Sigaloseps* (Reptilia: Scincidae) from New Caledonia in the Southwest Pacific: Description of a New Species and Review of the Biology, Distribution and Morphology of *Sigaloseps deplanchei* (Bavay)

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ABSTRACT. *Sigaloseps* is a genus of two species of scincid lizards endemic to the southern ultramafic region of New Caledonia in the southwest Pacific. The morphology, distribution, and habits of the moderately widespread species *Sigaloseps deplanchei* are reviewed. The other species in the genus represents a new taxon known only from two high altitude sites above 1,000 m asl. The conservation status of both species is assessed. *Sigaloseps deplanchei* is not regarded as threatened. The new species, *Sigaloseps ruficauda*, by virtue of its restricted distribution and habitat preference, is likely to be adversely affected by habitat modification, and is regarded as vulnerable.

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The generic name *Sigaloseps* was originally proposed by Sadlier (1986) to include the small New Caledonian scincid lizard *Lygosoma deplanchei* Bavay (1869). At that time it was regarded as a monotypic genus and known only from a few specimens from a few localities in the south of New Caledonia.

Field research in the intervening decade has greatly increased both the amount of material available and our knowledge of the distribution and habits of *Sigaloseps deplanchei*. These data indicate that *S. deplanchei* is endemic to moist, closed forest in the ultramafic block in

the southern third of the island. It is relatively common in this habitat type and not considered to be under any immediate threat. Investigation of high altitude habitats in 1995 resulted in the discovery of a second species of *Sigaloseps* in southern New Caledonia. This species is so far known only from two sites in geographical proximity to one another, Mt Mou and Mt Ouin. The new *Sigaloseps* is one of only two species of skink known to be restricted to high altitude habitat in southern New Caledonia (the other being an undescribed species of *Marmorosphax*) and is likely to occur only as scattered relictual populations in

suitably moist habitats around 1,000 m in altitude. Because of its apparently restricted distribution and habitat preferences this new species of *Sigaloseps* is considered vulnerable.

In this paper we provide an overview of the biology and morphology of *Sigaloseps deplanchei* and describe the new species.

Materials and methods

Acronyms. Specimen abbreviations are prefixed as follows: Australian Museum (AMS); California Academy of Sciences (CAS); Museum National d'Histoire Naturelle Paris (MNHN), Naturhistorisches Museum, Basel (NHMB); Auckland Museum (AIM).

Measurements. The following measurements were made for each adult specimen, as determined by reproductive maturity and/or obvious size classes, where possible: snout to vent length—measured from tip of snout to caudal edge of anal scales; axilla to groin distance—measured from middle of base of forelimb to middle of base of hindlimb; forelimb to snout length—measured from tip of snout to middle of base of forelimb; hindlimb length—measured from middle of base of hindlimb to tip of fourth toe including nail; tail length—measured from caudal edge of anal scales to tip of tail, on complete original tails only. Body measurements are expressed as percentages of snout to vent length (SVL) in the taxon accounts.

Scalation. Head scalation terminology generally follows Taylor (1935) as described and figured by Sadlier (1986), abbreviations in brackets are those used in Table 1; midbody scale rows (MBR)—number of longitudinal scale rows around body counted midway between axilla and groin; paravertebral scales (DSR)—number of scales in a paravertebral row from first scale posterior to parietal scale to last scale at level of vent opening; fourth finger (FFS) and toe (FTS) scales—number of dorsal scales on fourth digit of hand and foot, distal scale contains claw, basal scale of fourth finger incorporates basal scale of adjacent third finger, and basal scale of fourth toe broadly contacts basal scale of adjacent third toe; fourth finger (FFL) and toe (FTL) lamellae—number of ventral scales on fourth digit of hand and foot, distal scale contains claw and basal scale is last largely undivided scale at, or proximal to, a point level with intersection of third and fourth digits. Bilateral scalation characters were scored on both sides and the mean value used in the species accounts and tables, but are expressed individually for types as left/right values respectively. Sexual dimorphism in paravertebral scales (the scalation character most likely to exhibit this trait) was assessed using independent two-sample *t*-test for the largest population. Variation between populations in scalation was assessed using independent two-sample *t*-tests for all scalation characters. Characters with a *P* value ≤ 0.05 are provided, however only those with a high *P* value ≤ 0.001 are considered likely to reflect unambiguous differences between populations.

Osteology. Specimens were X-rayed for counting the number of presacral vertebrae and postsacral vertebrae on complete original tails only.

Reproduction. The distribution of eggs in gravid females is expressed as left/right values for the number of eggs in the left and right oviducts respectively.

Species descriptions

Genus *Sigaloseps* Sadlier, 1986.

This genus contains two species of small to moderately small scincid lizard, *Sigaloseps deplanchei* and *Sigaloseps ruficauda* n.sp., both endemic to New Caledonia. Both species are restricted to the south of the island, *S. deplanchei* is moderately widespread in closed forest habitat throughout its range and *S. ruficauda* is known only from two high altitude sites.

Type species. *Lygosoma deplanchei* Bavay, 1869: 23.

Diagnosis. *Sigaloseps* is identified as a member of the *Eugongylus* group of skinks (Greer, 1979) by possessing the following combination of synapomorphies: parietal scales meet behind the interparietal; parietal bordered along its posterior edge by upper secondary temporal/s and transversely enlarged nuchal scale; presacral vertebrae >26 .

Within the *Eugongylus* group, *Sigaloseps* possesses the following suite of derived character states: (a) supranasals absent; (b) frontoparietals fused; (c) ear lobules very small; (d) body scales smooth; (e) basal finger scales of 3rd and 4th fingers generally fused to form a single broad scale. It also has the atlantal arches fused to the intercentrum and is therefore included in the monophyletic *Pseudemoia* subgroup (Greer, 1989).

Sigaloseps ruficauda n.sp.

Figs. 1–6

Type material. HOLOTYPE: AMS R146482 Mt Mou, New Caledonia 22°03'45"S 166°20'39"E (R. Sadlier and P. Rowland, 16.i.95). PARATYPES: MNHN 1997.3325 (formerly AMS R146481) Mt Mou, New Caledonia 22°04'01"S 166°20'34"E; AMS R146483, R146196–97, MNHN 1997.3326 (formerly AMS R146198) same data as holotype; AMS R148004 Mt Mou, New Caledonia 22°03'42"S 166°20'41"E; AMS R148024 Mt Ouin 22°00'34"S 166°27'26"E.

Etymology. The species epithet is from the Latin *rufus*, for red, and *cauda*, for tail. The name alludes to the bright reddish colour of the tail in both sexes of this species.

Diagnosis. *Sigaloseps ruficauda* is distinguished from *Sigaloseps deplanchei* by the following combination of characters: (a) larger adult size (maximum SVL 60 vs 46 mm); (b) more numerous paravertebral scales (53–60 vs 46–56); (c) longer tail (tail length 150 vs 100% SVL); (d) more postsacral vertebrae 47–49 vs 35–39; (e) a uniform bright orange to reddish tail colour overall in both sexes (vs dull orange markings); (f) and well defined and



Figure 1. Paratype of *Sigaloseps ruficauda* n.sp. (AMS R146483), an adult female.

continuous dorsolateral markings between eye and forelimb (vs a series of broken markings in this region).

Description. The species is known from five adults 38–60 mm SVL, and three juveniles 25–27 mm SVL. Measurements are for adults only.

Measurements. Distance from axilla to groin 54.7–58.3% SVL ($\bar{x}$ = 55.7, n = 5); distance from forelimb to snout 35.7–39.6% SVL ($\bar{x}$ = 37.8, n = 5); hindlimb length 30.0–36.8% SVL ($\bar{x}$ = 32.9, n = 5); tail length 152.6% SVL (n = 1).

Scalation. Frontonasal broader than long; prefrontals narrowly-moderately separated; frontal longer than wide; frontoparietals fused; interparietal distinct; parietal bordered by a nuchal and upper secondary temporal scale; primary temporal single; upper secondary temporal single and overlapping lower; lower secondary temporal single; tertiary temporals two; postlabials two; nasals moderately large, moderately to widely separated; supraciliaries usually seven (83.3%), rarely six or eight; upper labials seven, fifth subocular and contacting lower eyelid; lower labials six, first two contacting postmental; large chinshields three, members of first pair in broad contact, members of second pair separated by one scale, members of third pair separated by three scales, all chin scales flush with lower labials.

Lower eyelid with a centrally located semi-transparent disc, length approximately 30% of total eye length.

Ear opening moderately large, with small acute lobules anteriorly and a number of small rounded lobules on posterior and lower edges.

Body scales smooth, midbody scale rows 26–28 ($\bar{x}$ = 26, SD = 0.93, n = 8); paravertebral scales 53–60 ($\bar{x}$ = 56.1, SD = 2.47, n = 8).

Basal scales of third and fourth fingers usually fused to form a single broad scale (69%), occasionally separate; scales on top of fourth finger 7–9 ($\bar{x}$ = 8.1, SD = 0.69, n = 8); lamellae beneath fourth finger 9–13 ($\bar{x}$ = 11.8, SD = 1.67, n = 8); scales on top of fourth toe 11–13 ($\bar{x}$ = 11.0, SD = 1.03, n = 8); lamellae beneath fourth toe 21–28 ($\bar{x}$ = 25.0, SD = 1.98, n = 5), smooth and broad.

Osteology. Premaxillary teeth 11 (n = 2); presacral vertebrae 29; postsacral vertebrae 47–49 ($\bar{x}$ = 47.5, SD = 0.93, n = 4); phalangeal formula for manus and pes 2.3.4.5.3 and 2.3.4.5.4 respectively; 2 pairs of ribs contacting mesosternum.

Coloration. Mid to dark brown dorsally and laterally; both dorsal and upper lateral surfaces (including head) with dark markings aligned longitudinally giving the appearance of a series of broken lines the intensity of which varies between individuals but is at least obvious anteriorly; dorsolateral edge with a dark bar between eye and naris, and a lighter dark edged russet stripe (approximately one scale width) between eye and forelimbs, merging with the general body colour posterior of forelimbs; tail unmarked above and with scattered dark markings below, bright orange-reddish in life; ventral surface usually without dark markings, in life with a yellow flush to the chest and abdomen and pink flush to the throat. The holotype has obvious black markings on the throat which are absent from other adult females in the type series.



Figure 2. Paratype of *Sigaloseps ruficauda* n.sp. (AMS R148004), an adult male.

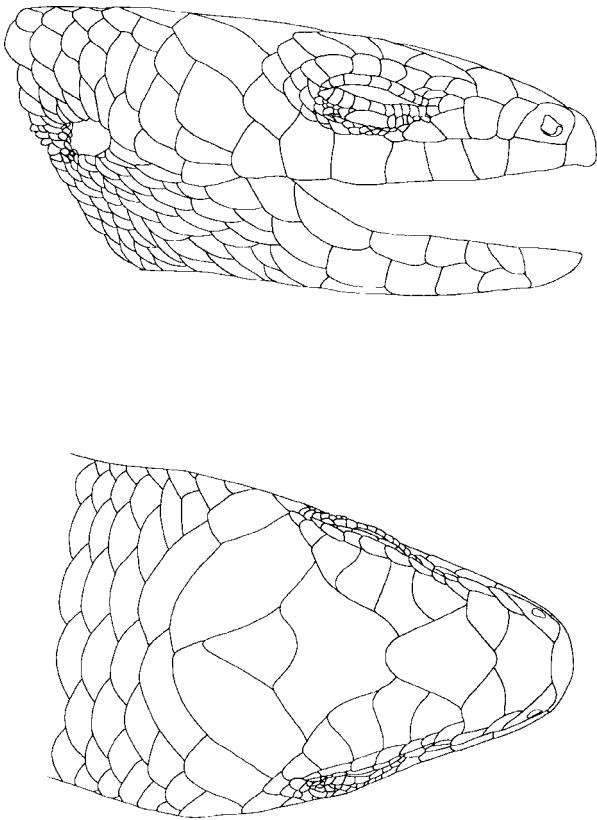


Figure 3. Lateral and dorsal views of the head of holotype of *Sigaloseps ruficauda* n.sp. (AMS R146482).

Dorsal surface of the single adult male lighter anteriorly with a dull russet suffusion (including pale dorsolateral edge between the eye and forelimbs), whereas this region tended to be nearly uniform in colour in adult females.

Details of holotype. Adult female; size 56 mm SVL; distance from axilla to groin 31 mm; distance from forelimb to snout 20 mm; hindlimb length 17 mm; tail length 64 mm, reproduced.

Midbody scale rows 26; paravertebral scale rows 58; dorsal scales of fourth finger 9/9; lamellae of fourth finger 13/12; dorsal scales of fourth toe 12/12; lamellae of fourth toe 25/25.

Gravid with 3 (1/2) shelled oviductal eggs.

Distribution. Summits of Mt Ouin (1,100 m asl) and Mt Mou (1,120–1,150 m asl) in southern New Caledonia.

Biology. *Sigaloseps ruficauda* is known only from low closed forest near the summit of Mt Ouin and maquis shrubland adjacent to low closed forest near the summit of Mt Mou.

Maquis is a heathy formation on ultrabasic rocks, it includes 30% of the native species, 36% of the genera, and 47% of the families, 93% of the species are endemic to New Caledonia (Morat *et al.*, 1986). On Mt Mou the high altitude maquis has a dense understorey of ferns. *Sigaloseps ruficauda* was collected among the jumbled rocks covered by the understorey. The environment beneath the rocks was cool and moist. Specimens were also collected from beneath

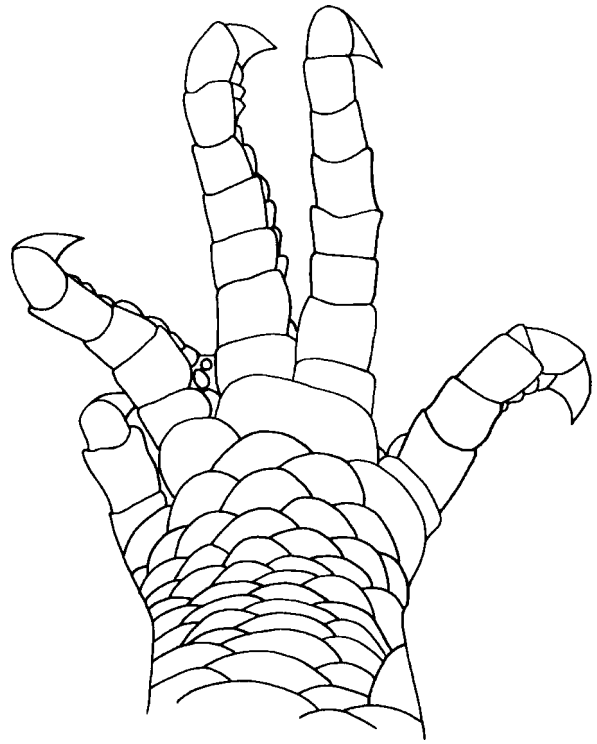


Figure 4. Dorsal view of the hand of *Sigaloseps ruficauda* n.sp. (AMS R146482) showing fusion of basal scales of the third and fourth digits (typical also of *Sigaloseps deplanchei*).

rocks at the interface of the maquis and adjacent closed forest habitat at approximately 1,100 m, here the environment beneath the rocks was also cool and moist. *Sigaloseps ruficauda* was not recorded from the interior of high altitude closed forest on Mt Mou, although this may be due to the limited number of sheltering sites to search. The single Mt Ouin specimen was found under a pile of rocks and wet earth in a track cutting through closed forest.

Two adult females collected on Mt Mou in 16 January were gravid (SVL 48 and 56 mm) and contained 3 shelled oviductal eggs. A clutch of several eggs was found at Mt Mou on 16 January under a small stone beside the track, the young at hatching measured approximately 25–27 mm snout-vent length.

Conservation status. The limited data available indicates *Sigaloseps ruficauda* is restricted to the tops of ranges in the south of the island. Its broader distribution is likely to be as a number of scattered relictual populations between 900–1,200 m altitude. The occurrence of *Sigaloseps ruficauda* at the two known sites appears to be based less on vegetation type than on other variables, such as habitat structure (presence of sheltering sites) and possibly moisture. It is therefore difficult to predict its distribution throughout the region.

Mining activity on the mid to upper slopes of the New Caledonian ranges is most prevalent in the central ranges of the island and on isolated peaks on the west coast. Mining at high altitude in the southern New Caledonia is at present

limited. However, should it be extended to areas where *Sigaloseps ruficauda* is likely to occur, it could have a marked negative impact upon on this and other reptile species restricted to high altitude habitat in the region.

Neither of the known populations of *Sigaloseps ruficauda* are currently protected within a fauna reserve, although the population on Mt Mou is within the Mont Mou Réserve Spéciale Minières et Botanique. Collection and disturbance of minerals and vegetation in this reserve is prohibited, and therefore there is some protection to habitat within the reserve.

Because of the restricted nature of its distribution and apparently restricted habitat preferences *Sigaloseps ruficauda* could conservatively be regarded as Vulnerable:D2 under the current IUCN (1996) classification system (very small population or very restricted distribution; population is susceptible; area of occupancy <100 km² or number of locations <5). When the fragmented nature of its distribution is also taken into account, any human activity in the region which could threaten its preferred habitat would place this species in a higher category of risk. A further consideration is its known occurrence lies outside of designated fauna reserves.

Field research to further determine the species distribution and habitat preferences (particularly the extent of its reliance upon high altitude maquis habitat) are required before its conservation status and the potential impact of development on the species can be determined with certainty.



Figure 5. Habitat at the type locality for *Sigaloseps ruficauda* n.sp., at approximately 1,100 m asl on Mt Mou, New Caledonia.

Sigaloseps deplanchei (Bavay)

Figs. 4, 6, 7

The description of *Lygosoma deplanchei* by Bavay (1869) lists only a single set of measurements but refers to the species as having been encountered more than once. It was one of eight new scincid lizards described by him from New Caledonia for which no types were designated at the time of description, nor any indication as to where the specimens on which the descriptions were based were lodged.

Boulenger's (1887) account of *Lygosoma deplanchei* listed as material in The Natural History Museum, London (BMNH) two types from New Caledonia presented by Bavay (now registered as BMNH 86.9.16.1-2), and the single type of *Hinulia tetragonurus* Günther. Günther's (1872) description of *Hinulia tetragonurus* is one of four new scincid lizards purportedly obtained from the "Feejee Islands"—all of which are synonymous with New Caledonian species already described by Bavay (see Sadlier 1986: 4, for more detail).

Roux (1913) provided the first comprehensive description of the species based on specimens collected by Roux and Sarasin in 1911–12. This collection (12 specimens are registered in the NHMB) came from two localities on the east coast, Yaté and Ngoi.

Some of Bavay's specimens were recently discovered in the Museum National d'Histoire Naturelle Paris, among them, three syntypes of *Lygosoma deplanchei* Bavay (Brygoo, 1985).

Sadlier (1986) reviewed the species and erected the monotypic genus *Sigaloseps* to accommodate *Lygosoma deplanchei* Bavay. This review was based largely on the specimens collected by Roux and Sarasin, together with the BMNH syntypes of *Lygosoma deplanchei* and *Hinulia tetragonurus*, and five specimens from other sources. Unaware of the recent discovery of several syntypes in the MNHN, Sadlier designated a lectotype for *Lygosoma deplanchei* from one (BMNH 86.9.16.1) of the two BMNH syntypes.

In the past 13 years (1986–1998) more intensive field research has resulted in the acquisition of additional specimens from a broad range of localities. This additional material is the basis for the more detailed description of *Sigaloseps deplanchei* that follows.

Material examined. The redescription of *Sigaloseps deplanchei* (below) is based on the following series of specimens:

West coast and ranges: AMS R144348–49, R144352, R146546–60, 146576–84, R146587 Mt Koghis (500 m) 22°10'S 166°30'E; R135167–69 Yahoué Valley, Nouméa 22°13'S 166°30'E; R147849 Forêt Thy 22°11'S 166°37'E; R78246–47 Mt Dore (eastern base), 2 km W Plum turnoff on Mt Dore road 22°17'S 166°37'E.

Plaine des Lacs region: AMS R125824, R125899, R135609–11 Rivière Bleue, Kaori Géant 22°06'S 166°39'E; R125895 Rivière Bleue, 1 km E Kaori Géant 22°06'S 166°39'E; R147916 Rivière Bleue, Haute Rivière Bleue Walk 22°05'S 166°37'E, R147952–53 Rivière Bleue, 4.7 km E Pont Germain 22°06'S 166°41'E; R147954 Rivière

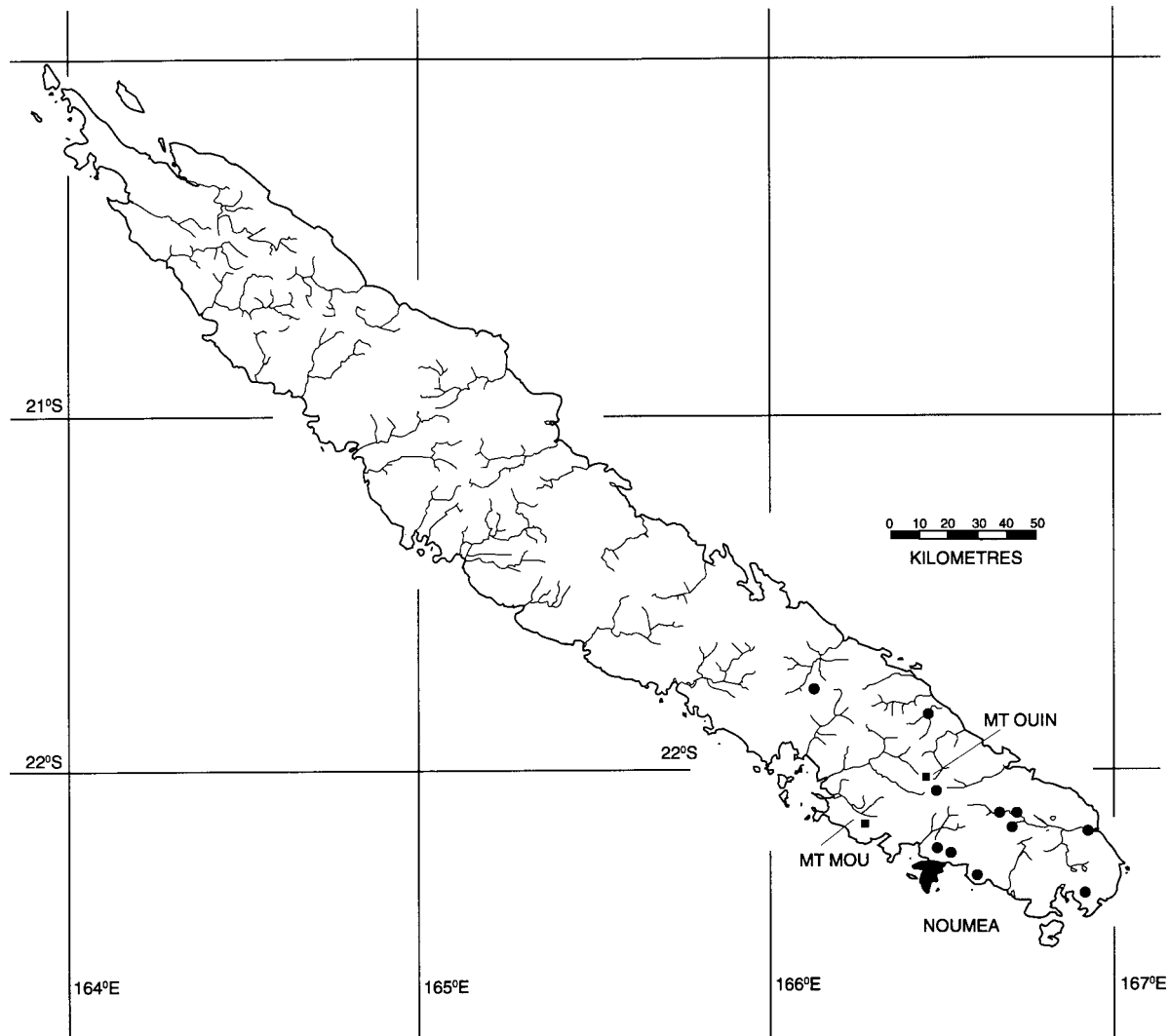


Figure 6. Records of *Sigaloseps ruficauda* n.sp. (■) and *Sigaloseps deplanchei* (●) in southern New Caledonia.

Bleue, Hoop Géant 22°09'S 166°41'E; R148063–67 Fôret Nord on SW base of Kwa Néie 22°19'S 166°54'E; CAS 158391–92 Mt Aiguillon (= Kwa Néie 22°19'S 166°54'E).

East coast: CAS 157690–91, 158336–42, 162352–53 Goro 22°17'S 167°01'E; NHMB 7198–201, 7205 Yaté 22°09'S 166°55'E.

The following specimens were also examined and are used in compiling the general distribution of *Sigaloseps deplanchei*, but were not used in the redescription (below): AMS R150066 headwaters of Ni River, east of Mt Ouin (745 m) 21°59'S 166°30'E; AIM 1716, 1718, 1730, 1748–49, 1751–52, 1774 Pic Ningua 21°45'S 166°08'E.

Diagnosis. See account for *Sigaloseps ruficauda*.

Description. *Measurements* (adults only): maximum SVL 46 mm; distance from axilla to groin 50–61.1% SVL ($\bar{x}$ = 55.5, n = 57); distance from forelimb to snout 36.8–43.6% SVL ($\bar{x}$ = 39.5, n = 57); hindlimb length 28.6–34.4% SVL

($\bar{x}$ = 31.6, n = 55); tail as long, or slightly shorter or longer than body 87.5–110.8% SVL ($\bar{x}$ = 100.4, n = 21).

Scalation. Frontonasal broader than long; prefrontals narrowly to moderately separated, rarely widely separated; frontal longer than wide; frontoparietals fused; interparietal distinct; parietals each bordered by a nuchal and upper secondary temporal; nuchals occasionally divided to form two smaller equal size scales, and occasionally separated and not contacting medially along the vertebral axis; primary temporal single (93%, n = 64), rarely divided obliquely to form two similar sized scales; upper secondary temporal single and overlapping lower; lower secondary temporal single (98.4%, n = 64), very rarely divided obliquely to form two near similar sized scales; tertiary temporals two; postlabials two; nasals moderately large, usually widely separated; supraciliaries usually seven (87.3%, n = 63), occasionally six; upper labials seven, last very rarely divided by an oblique suture; lower labials six; postmental contacting second lower labial; large chinshields three,

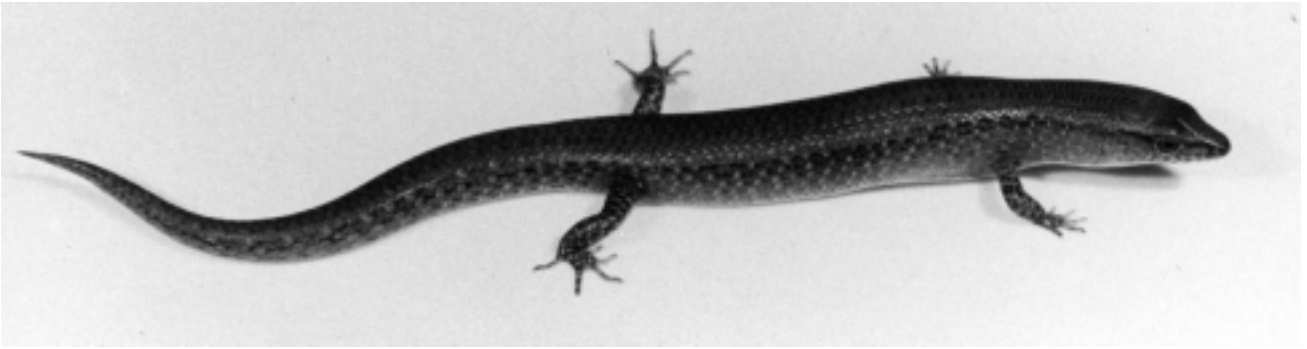


Figure 7. *Sigaloseps deplanchei* from Mt Koghis in southern New Caledonia.

members of first pair in broad contact, members of second pair separated by one scale, members of third pair separated by three scales, all large chin scales flush with lower labials.

Lower eyelid with a large opaque disc centrally (approximately 30% of eye length), which in some individuals is variably divided by one or more transverse sutures to give the appearance of a scaled lower eyelid.

Ear opening moderately large and with 2–4 small acute lobules anteriorly, and a number of small rounded lobules on posterior and lower edges.

Body scales smooth, midbody scale rows 24–28 ($\bar{x}$ = 27.1, SD = 1.43, n = 62); paravertebral scales 46–56 ($\bar{x}$ = 50.6, SD = 2.35, n = 62).

Basal scales of third and fourth fingers usually fused to form a single broad scale (94%), occasionally separate; scales on top of fourth finger (including basal scale) 7–9 ($\bar{x}$ = 7.9, SD = 0.47, n = 58); lamellae beneath fourth finger 10–15 ($\bar{x}$ = 11.9, SD = 0.87, n = 54); scales on top of fourth toe 10–12 ($\bar{x}$ = 11.1, SD = 0.37, n = 59); lamellae beneath fourth toe 24–29 ($\bar{x}$ = 25.9, SD = 1.44, n = 54), broad.

There was no significant difference between the sexes of the largest sample from mid altitude on Mt Koghis (13 males and 12 females respectively) for midbody scale rows ($\bar{x}$ = 27.9 vs 28.1, t_{23} = -0.612, P = 0.547), paravertebral scales ($\bar{x}$ = 52.1 vs 52.8, t_{23} = -0.906, P = 0.347), scales on top of fourth finger (including basal scale) ($\bar{x}$ = 8.1 vs 8.2, t_{23} = -0.853, P = 0.403), lamellae beneath fourth finger ($\bar{x}$ = 12.0 vs 12.1, t_{22} = -0.230, P = 0.821), scales on top of fourth toe ($\bar{x}$ = 11.3 vs 11.0, t_{23} = 1.357, P = 0.188), lamellae beneath fourth toe ($\bar{x}$ = 26.1 vs 25.9, t_{23} = 0.386, P = 0.703).

Osteology. Premaxillary teeth 10–11 (n = 2); presacral vertebrae usually 29 (n = 60), occasionally 28 (n = 2) or 30 (n = 3); postsacral vertebrae 35–39 (n = 4); phalangeal formula for manus and pes 2.3.4.5.3 and 2.3.4.5.4 respectively (n = 54); 2 pairs of mesosternal ribs contacting mesosternum; atlantal arches fused to the intercentrum.

Coloration. Dorsal surface light to mid-brown, occasionally darker, uniform or variably marked with darker streaks aligned longitudinally to give the appearance of a series of broken lines; lateral surface paler than dorsal, most individuals with a concentration of dark flecks uppermost, tending to be most prominent at the dorsolateral edge of the body; side of head with dark markings, particularly on labial scales and along dorsolateral margin where a dark streak runs from the naris through to near the level of the ear opening; ventral surface yellow posterior to the level of

the forelimb and with an orange to pinkish flush to the throat.

There is obvious sexual dimorphism in ventral coloration between adult males and females. Ventral surface of adult males bold yellow posterior to the level of the forelimb, and with a bright orange throat; adult females not so brightly marked, moderate yellow on the abdomen and with a dull pinkish flush to the throat; subadults with no obvious colour to the abdomen and a dull pinkish flush to the throat.

Geographic variation. Across the range of samples geographic variation was observed in seven scalation characters.

There was a trend for samples from the southeast coast at Ngoi (100%, n = 2) and Yaté (83%, n = 6) and from the southeast ranges at Rivière Bleue (78%, n = 9) to have a complete subocular row of scales, whereas those from the Plaine des Lacs region at Kwa Néie (n = 5) and from the west side of the island at or near the Koghis Range (Mt Koghis n = 28, Yahoué Valley, Mt Dore and Fôret Thy collectively n = 8) all had the subocular upper labial contacting the lower eyelid. Samples from Goro (n = 12) on the east coast (only 20 km south of Yaté) are more similar to the adjacent sample at Kwa Néie (10 km east) on the Plaine des Lacs in having the subocular upper labial contacting the lower eyelid.

The same samples were assessed for interpopulation variation in the following six variable scalation characters (see Table 1): midbody scale rows (MBR), paravertebral scales (DSR), fourth finger (FFS) and toe (FTS) scales, and fourth finger (FFL) and toe (FTL) lamellae. There was significant variation in several characters between populations from the southeast coast (Yaté and Goro), the southeast ranges (Rivière Bleue), Plaine des Lacs region (Kwa Néie), or low altitude populations at or near the base of the Koghis range (Yahoué Valley, Mt Dore and Fôret Thy). The sample from Goro had fewer paravertebral scales than the Rivière Bleue (t_{18} = -2.385, P = 0.028) sample; the Yaté sample fewer fourth toe scales than the Rivière Bleue (t_{12} = -2.518, P = 0.027) sample; and the Goro sample more fourth toe scales than the Yaté (t_{13} = 2.404, P = 0.032) sample. There were significant differences between these populations and the mid-altitude population from the Koghis range in midbody scale rows, paravertebral scales, fourth finger scales and lamellae, and fourth toe scales. The Koghis range mid altitude sample had significantly: more midbody scale rows than the Yaté (t_{30} = 4.954, P < 0.001), Goro (t_{36} =

7.907, $P < 0.001$), Rivière Bleue ($t_{34} = 7.315$, $P < 0.001$), or Koghis low altitude ($t_{32} = 4.806$, $P < 0.001$) samples; more paravertebral scales than the Yaté ($t_{30} = 4.247$, $P < 0.001$), Goro ($t_{36} = 6.114$, $P < 0.001$), Kwa Née ($t_{29} = 3.848$, $P < 0.001$), Rivière Bleue ($t_{34} = 3.377$, $P < 0.002$), or Koghis low altitude ($t_{32} = 3.787$, $P < 0.001$) samples; more fourth finger scales than Goro ($t_{34} = 2.163$, $P = 0.038$), Yaté ($t_{30} = 4.431$, $P < 0.001$), Kwa Née ($t_{29} = 3.529$, $P < 0.001$), or Rivière Bleue ($t_{34} = 3.535$, $P < 0.001$) samples; more fourth toe scales than the Yaté ($t_{30} = 2.729$, $P = 0.011$) sample; and more fourth finger lamellae than the Yaté ($t_{28} = 2.155$, $P = 0.040$) sample.

The differences in scalation between the low altitude populations at the base of the Koghis range and the regionally sympatric populations on the Koghis range at mid altitude could be viewed in two ways. Firstly as an indication of genetic differentiation between populations at low and high altitude, or as variation in scalation over an altitudinal gradient within a single species i.e., an increase in number of scales with altitude. To further test the first of these possibilities additional high altitude samples from different locations are required. Unfortunately the specimens from high altitude (900–1,000 m asl) at Pic Ningua are from formalin-based pit-fall trap samples and their state of preservation is such that the characters cannot be assessed accurately. To test the second possibility would require samples from the Koghis range at intermediate altitudes between 300 m and 700 m asl.

Distribution. Southern third of New Caledonia to as far north as Pic Ningua (21°45'S 166°08'E), approximately 16 km northeast of the town of Bouloupari. The single specimen of *Sigaloseps deplanchei* collected from the headwaters of Ni River, east of Mt Ouin at mid to high altitude (745 m) is the geographically closest site to the Mt Ouin location for *S. ruficauda*.

Biology. *Sigaloseps deplanchei* occurs in lowland and mid (500 m) to high altitude (1,000+ m) closed forest habitat where it can be relatively abundant. It is a secretive species usually found sheltering beneath rocks, logs, and debris on the forest floor but is occasionally observed active in leaf litter. When active it moves constantly amongst the litter and was not observed to actively bask in sunlit patches.

Gravid females have been collected during the summer (wet season) month of December. Modal clutch size is two,

with three eggs recorded occasionally. A sample of six adult females collected on Mt Koghis (500 m asl) in December 1986 had two ($n = 5$) to three ($n = 1$) oviductal eggs, whereas a sample of 10 adult females from the same location collected in January 1995 had flaccid oviducts ($n = 9$) indicating egg laying had occurred, or yolked ovarian follicles ($n = 1$).

Conservation status. *Sigaloseps deplanchei* is known from over ten sites scattered over much of the ultramafic area in southern New Caledonia. It was previously assessed as moderately widespread and common by Bauer & Sadlier (1993) based on the number of museum specimen records available at that time. It has since been recorded from several additional localities, most notably Pic Ningua which represents a significant range extension to the north, indicating the species is likely to be more widespread in the southern ultramafic region of the island than previous records indicated.

At Mt Koghis, which has been visited repeatedly, *Sigaloseps deplanchei* is common in mid-altitude (500 m asl) closed forest habitat; it has also been collected on successive occasions at several other sites (Goro, Kwa Née, Rivière Bleue). Because of its moderately widespread distribution *Sigaloseps deplanchei* is considered secure at the island level, and would be regarded as Lower Risk:lc under the current IUCN classification system (1986). However, because it is restricted to closed forest habitat, populations of *S. deplanchei* in the more highly developed west coast lowlands are likely to be threatened at a local level by human activities in these areas.

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Table 1. Variation in scalation characteristics for *Sigaloseps deplanchei* from six locations throughout the species range.

		MBR	DSR	FFS	FFL	FTS	FTL
Yaté	range	26–28	47–51	7–8	10–12	10–11	23–26
	$\bar{x}$	26.4	48.8	7.4	11.2	10.6	24.9
	SD	0.89	1.89	0.55	0.76	0.42	1.89
	n	5	5	5	5	5	4
Goro	range	24–28	46–51	7–8	10–12	10–12	22–28
	$\bar{x}$	26.0	48.4	7.9	11.8	11.0	25.8
	SD	0.89	2.01	0.33	0.76	0.24	1.85
	n	11	11	9	7	10	8
Kwa Néie	range	26	47–51	7–8	11–13	11–12	25–27
	$\bar{x}$	26.0	49.8	7.5	12.0	11.1	25.9
	SD	0.0	1.71	0.58	0.71	0.25	0.75
	n	4	4	4	4	4	4
Rivière Bleue	range	26–28	48–52	6–8	11–14	11–12	25–28
	$\bar{x}$	26.2	50.2	7.6	11.9	11.1	26.4
	SD	0.67	1.30	0.6	0.81	0.33	1.28
	n	9	9	9	9	9	7
Mt Koghis Range (mid altitude)	range	26–30	49–55	8–9	11–15	10–12	23–29
	$\bar{x}$	28.0	52.4	8.2	12.2	11.2	26.1
	SD	0.62	1.78	0.30	0.93	0.41	1.48
	n	27	27	27	25	27	26
Mt Koghis Range (low altitude)	range	26–28	48–51	7–8	10–13	10–11	25–27
	$\bar{x}$	27.6	49.7	7.9	11.2	10.9	25.4
	SD	0.98	1.11	0.38	0.76	0.38	0.65
	n	7	7	7	7	7	5