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## COVER IMAGE

FRONT COVER: Figure 43G (p. 114), *Bavayia jourdani*,  
from Mé Maoya (400 m), New Caledonia. Photo by R.A. Sadlier.

## COVER DESIGN

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## A Revision of the Genus *Bavayia* Roux, 1913 (Squamata: Gekkota: Diplodactylidae), a Non-adaptive Radiation of Microendemic Species

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*Bavayia* Roux, 1913 is the most speciose of the gecko genera endemic to New Caledonia, with 13 recognized species. The presence of many undescribed taxa has been signaled by previous studies using mito-nuclear data sets and by a comprehensive DNA barcoding study. However, the conservative morphology of the group has hindered formal description of additional species. We examined more than 2000 specimens of *Bavayia* from throughout New Caledonia and its satellite islands and included ~600 specimens in a phylogenetic analysis of the mitochondrial ND2 gene. Our tree topology was consistent with previous, though less comprehensive, results from other molecular data sets and supported our recognition of 28 new species in the genus, bringing the total diversity to 41 species distributed in 12 well-supported clades. Although variation in size, precloacal pores and arrangement of apical sensors of the first digit are useful characters to diagnose the species of *Bavayia*, many taxa are supported only by subtle differences in coloration pattern, which is typically characterized by alternating brownish and whitish markings.

In situ radiation and microendemism in New Caledonia is common in both geckos and skinks, but *Bavayia* is exceptional, accounting for 30% of the known terrestrial herpetofauna. Although as many as five *Bavayia* species may occur in sympatry, these are almost always representatives of different clades within the genus. Most species and some entire clades are endemic either to ultramafic substrates (seven to the large southern ultramafic block, usually one or two to the isolated ultramafic massifs of the north) or to massifs or portions of the Chaîne Centrale on volcano-sedimentary substrates. We consider the radiation of *Bavayia*, which has been dated to the Early Miocene, to represent a “non-adaptive radiation” with many of the species distributed allopatrically and lacking genetic continuity but living similar lifestyles and retaining plesiomorphic features. Of the 41 species of *Bavayia* 36 are in IUCN Threatened categories and, of these, 29 are Endangered or Critically Endangered. Wildfire, agriculture, mining and introduced species implicated in habitat destruction, predation and competition are among the greatest current threats to *Bavayia* spp.

KEYWORDS. New Caledonia, gecko, molecular phylogeny, description, systematics

*Bavayia* is the most speciose of the eight genera of diplodactylid geckos that are endemic to the New Caledonian region, with 13 species currently recognized (Bauer and Sadlier 2000; Bauer et al. 2008, 2012a, b, 2022). Members of the genus are ubiquitous in New Caledonia, with one or more species occurring almost everywhere on the Grande Terre (New Caledonian mainland) and all offshore islands, wherever any type of forest formation is present. Some species also occupy edificarian habitats that offer suitable refuge sites. Although both widespread and often present in high densities (Bauer and Sadlier 2000), the superficial similarity of *Bavayia* spp. to other Pacific geckos with fine granular scales, no enlarged tubercles, and well-developed basal toepads initially obscured their recognition as New Caledonian endemics.

Several mid-19<sup>th</sup> century biologists collected and/or commented upon aspects of the New Caledonian herpetofauna (see Bauer and Sadlier 2000), the earliest collections to be extensively studied were those of Arthur René Jean Baptiste Bavay (1839–1923), who spent four years in residence in New Caledonia while serving as a naval pharmacist. His monograph on the reptiles of the island described several species of lizards, but specimens belonging to *Bavayia* were identified by him as *Platydactylus pacificus* (syn. *Dactylocnemis pacificus* (Gray, 1842)), a New Zealand species. Even when recognized as specifically distinct, 19<sup>th</sup> century authors allocated these rather nondescript New Caledonian geckos to *Lepidodactylus*, *Hemidactylus* or *Peripia*, the last of these currently considered a synonym of *Gehyra* (Günther 1872, 1873; Bocage 1873; Sauvage 1879; Boulenger 1883, 1885).

Jean Roux (1876–1939), in his monograph of the herpetofauna of New Caledonia (Roux 1913), based in large part on his 1911–1912 expedition with Carl Friedrich (Fritz) Sarasin, erected the genus *Bavayia* to accommodate *Peripia cyclura* Günther, 1872 and *Lepidodactylus sauvagii* Boulenger, 1883. These taxa differed from the superficially similar *Lepidodactylus* by the presence of a clawed digit I on both manus and pes, a feature that formed the core of his diagnosis of the new genus. *Bavayia sauvagii* was characterized by the claw of digit I being bordered by a single, medial apical scansor (Fig. 1A), whereas *B. cyclura* had the claw of digit I lying between a small lateral and a larger medial apical scansor (actually divisions of a single cleft scansor; Fig. 1C). These two species also differed from each other in the number of rows of precloacal pores present in males (single row in the former vs. two rows in the latter). Both species were regarded by Roux (1913) as widely distributed on the Grande Terre and on outlying islands. *Bavayia cyclura*, how-

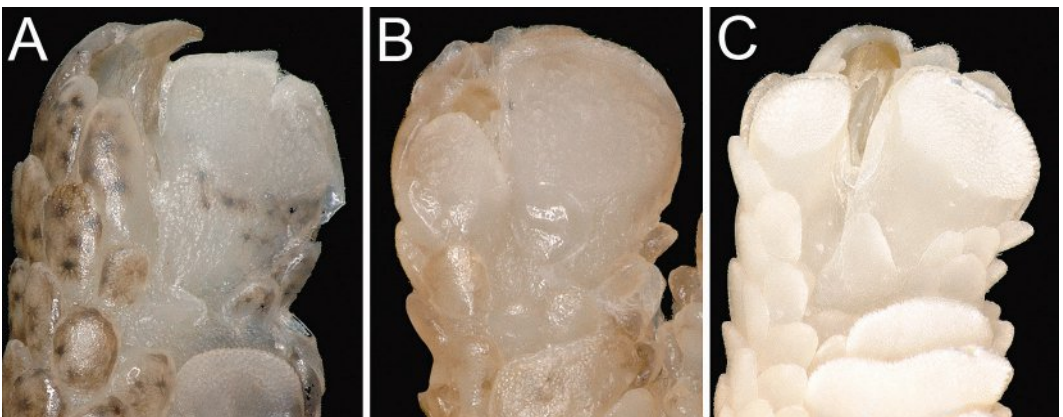


Figure 1. Configuration of apical scansors of digit I of the pes in *Bavayia* spp. A) Claw borne lateral to a single medial apical scansor, *B. tchingou* sp. nov. (CAS 265731); B) Claw borne between large medial and small lateral apical scansors, *B. lepredourensis* sp. nov. (AMS R.266253); C) Claw in a cleft between larger medial and smaller lateral portion of an apical scansor, *B. mandjeliensis* sp. nov. (AMS R.198707). Digit from left pes depicted in A and B, digit from right pes flipped horizontally in C to maintain comparable orientation. Medial is to the right in all images.



ever, was regarded as more broadly distributed on small offshore islands and also occurred on Lifou and Ouvéa, two of the Loyalty Islands where *B. sauvagii* was believed absent.

Roux (1913) described two additional subspecies of *B. cyclura* — *B. c. montana* and *B. c. crassicollis* and one of *B. sauvagii* — *B. s. ornata*. Subsequent revisers (Sadlier 1988; Bauer 1990a) assigned specific rank to these taxa and have recognized *B. cyclura* and *B. sauvagii* complexes, each characterized by the digital and precloacal pore features noted above. In addition, most members of the *B. cyclura* complex are relatively large (>60 mm maximum SVL), have yellowish venters in life (Fig. 2B), and are arboreal, occurring from strand vegetation to high elevation rainforest, whereas *B. sauvagii* complex taxa are smaller (usually <60 mm maximum SVL), have whitish or cream to brown venters (Fig. 2A), and often spend daylight hours under rocks, logs, or other terrestrial retreats, although they climb at night when active and foraging.



FIGURE 2. Ventral coloration in the *Bavayia sauvagii* Group (A) and *B. cyclura* Group (B). A) *Bavayia centralis*, AMS R.172742, Mé Maoya, 600 m. B) *Bavayia jourdani*, AMS R.172754, Mé Maoya, 400 m. Yellowish ventral coloration occurs only in the *B. cyclura* Group, whereas whitish to light brown coloration is present in both the *B. sauvagii* and *B. ornata* Groups.

Sadlier (1988) described two more *Bavayia*, *B. septuiclavis* and *B. validiclavis*, neither clearly assignable to either the *B. cyclura* or *B. sauvagii* complex. The former species possessed an intermediate claw position (Fig. 1B) but had only a single row of precloacal pores. The latter species has subsequently been removed from *Bavayia*, and placed in *Dierogecko*, a genus of small, nimble geckos endemic to northern New Caledonia, which has since been recognized as a radiation of at least nine species, mostly occurring in allopatry in vegetation on ultramafic surfaces (Bauer et al. 2006; Skipwith et al. 2014).

Bauer et al. (1998) described *B. exsuccida* and *B. pulchella*, both small-bodied forms sharing the digital and pore combination seen in *B. septuiclavis*. Wright et al. (2000) described *B. robusta*, a very large species (to 91 mm SVL) of the *B. cyclura* complex, from Mt. Koghis, near Nouméa. In so doing, they recognized that remaining “*B. cyclura*” probably represented more than one species. For the purposes of diagnosing their new species, they considered populations from Plage de Poé, Yahoué Valley, Pindai, and the nearshore islands of New Caledonia and the Isle of Pines to be representative of *B. cyclura* sensu stricto and also regarded the names *Lepidodactylus neocaledonicus* and *Hemidactylus (Peripia) Bavayi* to be referable to this taxon as so restricted.

Wright et al. (2000) also described a distinctively patterned member of the *B. sauvagii* Group from Mt. Koghis, *B. geitaina*. Although Boulenger’s (1883) terse description of *B. sauvagii* is consistent with the species to which that name is currently applied, the presumed holotype, MNHN 5790 (Guibé 1954; Brygoo “1990” 1991), is actually referable to a member of the *B. cyclura* Group (Bauer 1990a; Bauer and Henle 1994). Given the recognition that there was unrecognized diversity in the *B. sauvagii* Group and that the putative holotype of *B. sauvagii* is not consistent with the description, Wright et al. (2000) considered the actual holotype to be lost and designated a neotype in order to stabilize the use of the name. As in the case of *B. cyclura*, the original type had no precise locality, so a neotype (MNHN-RA 1998.0605) was chosen from Mt. Koghis, a locality close to Nouméa and presumably representative of the populations that would have been most easily accessible to early collectors in the territory.

Bauer et al. (2000) described *B. madjo*, a high elevation form from northeastern New Caledonia that shared the *sauvagii* type digit I structure, but which had large body size, a proportionally enlarged head and distinctive habitus. Subsequent molecular phylogenetic analyses of New Caledonian diplodactylid geckos (Bauer et al. 2012a; Skipwith et al. 2016, 2019) revealed that this taxon falls outside of the genus *Bavayia*, and a monotypic genus, *Paniegekko* Bauer et al., 2012, was erected to accommodate it.

Bauer et al. (2008) described a small member of the *B. cyclura* Group from the far south of New Caledonia, *B. goroensis*, and Bauer et al. (2012b) described a high-elevation species from the forests of Mt. Ouin and Mt. Dzumac, *B. nubila*. Most recently, Bauer et al. (2022) described *B. loyaltiensis*, a very small-bodied member of the *B. sauvagii* Group restricted to Maré, the southernmost of the main Loyalty Islands chain.

Until recently, inadequate sampling of *Bavayia* in much of New Caledonia, combined with a general conservativeness in most morphological features across the genus, has hindered further resolution of the taxonomy of these geckos. However, allozyme, mitochondrial DNA, and nuclear DNA sequence datasets (Wright 1999; Jackman et al. 2004; Skipwith 2011; Bauer et al. 2012a; Skipwith et al. 2016; Bernstein et al. 2021) have strongly suggested that both *B. cyclura* and *B. sauvagii* are composite species and that these nominal species as currently recognized are rendered paraphyletic by the other named members of their respective complexes (Wright 1999; Wright et al. 2000; Bauer and Sadlier 2000). Bauer and Sadlier (2000) also suggested that *B. montana* might be a complex of several species and that the status of insular vs. mainland *B. crassicollis* populations also required further investigation.

Intergeneric patterns of relationship within New Caledonian diplodactylids have been particularly difficult to resolve (Bauer et al. 2012b; Skipwith et al. 2016, 2019), and despite the availability of genomic scale data, the sister group of *Bavayia* remains elusive. However, the most comprehensive phylogenetic analyses have consistently supported the monophyly of *Bavayia* independent of the groups excised from it (e.g., *Dierogekko* and *Paniegekko*) and the monophyly of three major subclades, here referred to as “Groups”: the *B. cyclura* Group, the *B. sauvagii* Group

and the *B. ornata* Group, the last including *B. ornata* and *B. septuiclavis* (Wright 1999; Bauer et al. 2012b; Skipwith et al. 2016, 2019; Bernstein et al. 2021).

After more than 40 years of collecting throughout New Caledonia, a sufficient specimen and tissue base now exists to evaluate the systematics of the group in detail. A DNA barcoding approach was recently employed to identify putative taxa in *Bavayia* and other endemic New Caledonian genera (Bernstein et al. 2021). Although no new taxa were named in that paper, the CO1 marker was found to identify 27 putative taxa within *Bavayia* in addition to the then described 12 species, largely consistent with unpublished ND2 data. We here present that ND2 data and erect a comprehensive hypothesis of relationships within the genus. Although the entire diplodactylid fauna of New Caledonia was included in our study, we do not draw any taxonomic inferences regarding the phylogeny of other New Caledonian genera as these have been discussed elsewhere (Bauer et al. 2006, 2009, 2012a; Skipwith et al. 2016, 2019). Our aims are rather 1) to use the mitochondrial ND2 gene to explicitly verify the lineages supported by CO1 barcoding data and previously published nuclear data; 2) to characterize and describe new species consistent with an integrative taxonomic approach, and 3) establish the relationships among previously and newly recognized species of *Bavayia*.

## MATERIALS AND METHODS

*Molecular methods.* — Genomic DNA was extracted using the Qiagen QIAamp tissue kit. Extracted DNA was then used to amplify mitochondrial ND2 and 5 tRNAs (WANCY) in a single 25 µl PCR under the following conditions: initial denaturation for 2 min at 95°C followed by 35 s at 95°C, annealing for 35 s at 50°C, and extension 95 s at 72°C. Four seconds were added to each extension phase per cycle (32 cycles). Case-by-case adjustments to annealing temperatures and extension times were made when samples and primers were not functioning maximally. PCR products were visualized using a 1.5% agarose gel and then purified using a magnetic bead solution (Agencourt Bioscience) or a home-made magnetic bead solution (Rohland and Reich 2012). The primers listed in Table 2 of Nielsen et al. (2011) for ND2 were used for amplification (Metf.1 and CO1r.1) with additional internal ND2 and TRP tRNA primers used for sequencing reactions. The sequencing reactions were then cleaned using magnetic beads and were analyzed using an ABI 3730XL automated sequencer. To ensure accuracy, there were negative controls in each step and both the forward and reverse sequences were analyzed. Electropherograms were then assembled and aligned in Geneious versions 4.5 through 8 (Biomatters Ltd.; Kearse et al. 2012). The alignment of ND2 was refined by translating and aligning by codon. The tRNA secondary structure was used as a guide for refining the alignments of the 5 tRNA genes by eye.

*Phylogenetic methods.* — We used IQTree 2 (Minh et al. 2020) to estimate phylogenetic relationships of the 1533 aligned bases of ND2 and the 5 tRNAs. Four partitions (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> codons, and tRNAs) were determined to be the best partitioning scheme using the model partition features of IQ-Tree. We estimated branch support using standard bootstrapping (Felsenstein 1985) with 500 replicates (option -b 500).

*Morphology.* — We examined specimens from the collections of the American Museum of Natural History (AMNH), Australian Museum (AMS), California Academy of Sciences (CAS), Field Museum (FMNH), Museum of Comparative Zoology (MCZ), Muséum National d'Histoire Naturelle, Paris (MNHN), Natural History Museum, London (here, for continuity, we use the former symbolic code BMNH), Naturhistorisches Museum Basel (NMBA), Naturhistorisches Museum Wien (NMW), Queensland Museum (QM), Naturalis Biodiversity Center, Leiden (RMNH), South Australian Museum (SAMA), Senckenberg Forschungsinstitut und Naturmuseum (SMF),



University of Michigan Museum of Zoology (UMMZ), United States National Museum of Natural History (USNM), Yale Peabody Museum of Natural History (YPM), Zoologisches Forschungsmuseum Alexander Koenig (ZFMK), and Museum für Naturkunde, Berlin (ZMB). Specimens were examined under a Nikon SMZ-10 dissecting microscope or Keyence VHX 6000 digital microscope and measurements were taken with Brown and Sharpe Digit-cal Plus digital calipers or with a digital micrometer. As this project came to a close, many type specimens were transferred between collections in order to meet permit obligations (requiring holotypes to be deposited in MNHN) or to ensure representation at the two collections (AMS and CAS) where most specimens are housed. Because some of these specimens will have been cited elsewhere under their previous numbers and because some of our images predate these collection changes, we cite not only the final registration numbers of types, but also any earlier field or museum numbers. Field numbers mentioned are in the following series: Aaron M. Bauer field series (AMB), Anthony J. Geneva Field Series (AMB-AJG), Australian Museum Herpetology field series (AMH), Museum of Comparative Zoology field series (MCZ A, MCZ Z). Locality data were recorded using GPS receivers or were georeferenced using Google Earth<sup>TM</sup> [TM as superscript] and topographic maps from the period of collection. Data are reported in the format degrees-minutes-decimal seconds (WGS84 map datum).

The following measurements were recorded for each specimen to the nearest 0.1 mm: snout-vent length (SVL); tail length (TailL); forearm length measured from the elbow to the wrist (ForeaL), crus length, measured from the knee to the ankle (CrusL); head length from retroarticular process of mandible to snout tip (HeadL); maximal head width (HeadW); maximal head height (HeadH); orbital diameter (OrbD); distance from posterior border of orbit to anterior margin of ear (EyeEar); distance from anterior border of orbit to tip of snout (SnEye); nares to eye length (NarEye); interorbital distance measured between the superciliary scale rows at mid-orbit (InterOrb); ear length along longest dimension (EarL); and internarial distance (InterNar). Measurements were recorded for the right side of the body only, unless damaged. Counts of midbody scale rows, interorbital scales, and scales across the narrowest point of the frontal bone, as well as enlarged supralabial and infralabial scales, subdigital lamellae and precloacal pores are reported for holotypes only, with any noteworthy variation mentioned in the “Variation” section at the end of descriptions of new taxa. Subdigital lamellae (SDL) were counted from the basalmost plate that was at least twice the width of a typical scale beneath the metacarpals or metatarsals and included the terminal, undivided scansor. In the case of digit I, the paired apical plates were not included in lamellar counts (note that the method of counting used here is not identical to that used by us in earlier *Bavayia* papers, e.g., Wright et al. 2000; Bauer et al. 2008, 2012a but has been adopted as it is less ambiguous than other methods). As a caveat, it should be noted that none of the measurements and counts recorded are individually diagnostic and indeed, with larger samples, all exhibit both high intraspecific variation (see Wright et al. 2000) and substantial interspecific overlap. Thus, the diagnoses provided rely more on a combination of features and even so, there will be some lack of discrimination among the most similar species pairs.

*Images.* — Because the gestation of this project was so long, and because the covid pandemic (2020–2022) made it difficult or impossible to revisit critical material, our imaging of specimens reflects a mixture of image sources, lighting and editing used over the course of more than a decade. Most macro images were taken using a Keyence VHX 6000 digital microscope with 20–100 x lens. Whole body images were taken with a number of different Nikon and Canon digital cameras. Lighting of specimens included adjustable copy stand lights, flash and ambient lighting. As a consequence, many of the images of preserved animals herein do not accurately reflect actual specimen color. However, as most images were taken many years after the specimens were



preserved, life colors had long faded. For the most part, the very conservative white/cream and brown coloration of *Bavayia* spp. is not diagnostic, although pattern is, in many cases (Fig. 3). In light of this, we have digitally modified brightness, contrast and saturation to best visualize pattern while maintaining the original color as closely as possible. To provide uniform backgrounds for ease of viewing we used various versions of Adobe Photoshop™. Extraneous background items and shadows were removed and in some cases multiple individuals were plated together in a single paratype series image, but we did not intentionally alter aspects of the morphology or color pattern of any of the specimens.

Life photographs were taken over a period of at least 30 years and include both direct digital images and images scanned from slides. The latter may have aged and lost true color and/or may tend to have overall color shifts depending on the brand and type of slide film originally used.

**Conservation Status.** — Conservation assessment criteria and categories follow the *IUCN Red List Categories and Criteria*, version 3.1, 2<sup>nd</sup> edition (IUCN Species Survival Commission 2012). Assessments of species were conducted as part of a Red Listing Workshop held at IRD Nouméa 11–12 December 2017 and facilitated by Vincent Tanguy of Endemia.nc. Formal red list assessments of the 12 species recognized prior to the date of that workshop were published in 2021 and are cited in each of these species accounts. The new species described herein, as well as the recently described *B. loyaltiensis*, were also evaluated, but these assessments remain unpublished. In the associated species accounts we provide the major results of those assessments, in some cases modified by more recent data, such as the recognition of additional populations that might affect the area of occupancy or number of locations.

**Species Concept.** — When possible, we prefer to use an integrative taxonomic approach (*sensu* Padial et al. 2010) and all of the new species described herein are supported by a combination of molecular data and morphology. These two sources of data represent different lines of evidence supporting lineage independence under a general lineage species concept (de Queiroz 1999). In addition, as noted under molecular methods, we also employ explicit species delimitation methods and the lineages we recognize are fully congruent with those supported by Bernstein et al. (2021) using a CO1 barcoding approach. With this stated, the morphological support for the new lineages reported is often subtle and difficult to describe. The fact is that most *Bavayia* are extremely conservative in their outward appearance. In most cases, a combination of a few, quite consistent

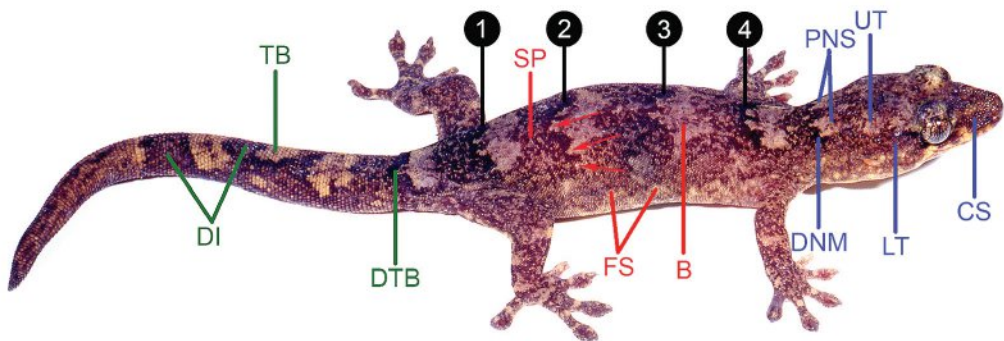


FIGURE 3. Main dorsal and lateral pattern elements in most *Bavayia*. Black: 1–4 dark transverse markings, bands or bars between limb insertions. Red: Trunk elements. B = pale dorsal blotches; FS = flank spots; SP = speckling; small unlabeled arrows = whitish spots along anterior margin of dark transverse markings. Blue: Head elements. CS = canthal stripe or streak; LT = lower temporal stripe, streak or marking (dark); UT = upper temporal marking or streak (pale); PNS = paired pale nape markings or streaks; DNM = dark nape marking or band. Green: Tail elements. DTB = dark tail base marking or band; TB = pale dorsal tail blotch; DI = dark interspaces.

clade-defining characters, along with aspects of color pattern (Fig. 3), size and proportion, precloacal pore number and disposition, and (rarely) scalation at the species level serve to diagnose these lineages.

While resorting to authority rather than data and repeatable methods is poor taxonomic practice, there is something to be said for practical experience with any group under study. In this case, some of the authors of this monograph have worked with *Bavayia* for almost four decades and have seen thousands of specimens in the field and in the context of their ecologies and behaviors. Over the years, as our field coverage of New Caledonia became more complete, we began to recognize the congruence of geographical boundaries and barriers with morphological subtleties distinguishing populations of *Bavayia*. The molecular data presented here, first generated more than 15 years ago and added to over time, have provided reciprocal illumination to morphology (or perhaps more accurately, gestalt) to bring us to this revision. As we will argue in the discussion, *Bavayia* is a difficult group because it seems to represent only a few clear groupings, more or less congruent with the clades we recognize herein, that reflect differences in habit, habitus and habitat. Individual species are, however, to be frank, “much of a muchness,” a study in shades of brown. We believe this is largely the result of a “non-adaptive” radiation, within which historical factors have fragmented ancestral populations into largely isolated lineages that have lost genetic contact but live nearly identical lives. If this is true, one might expect plesiomorphic features to be retained and few “adaptive” novelties to arise. Paradoxically, this makes *Bavayia* both a fascinating group from the perspective of evolution and biogeography and an incredibly tedious one from the perspective of descriptive taxonomy. This duality has kept this research afloat for decades but has likewise slowed its progress. While more can and will be done, we are relieved to present what we hope represents some progress in the understanding of these infuriatingly boring and endlessly intriguing little brown geckos. Minimally, our taxonomy is a working hypothesis about diversity in the genus that can be tested by future workers.

## RESULTS

The aligned ND2 sequences include 900 sequences, with 649 *Bavayia* sequences and 251 out-group sequences with representatives of all described species of New Caledonian diplodactylid geckos for a total of 1533 aligned bases. The four DNA substitution models chosen and the relative rates of evolution (in parentheses) for the four positions were: 1<sup>st</sup> codon position: TPM3+F+I+G4 (2.1), 2<sup>nd</sup> codon position: GTR+F+R4 (1), 3<sup>rd</sup> codon position GTR+F+R4 (6.5), tRNAs TIM+F+R6 (2.4). DNA sequences are available from GenBank (Appendix 1) and as an aligned nexus file upon request from the authors.

Our ND2 tree (Fig. 4) found support for the recognition of several deeply divergent subclades within *Bavayia* (henceforth we use the convention of capitalizing Clade when used with respect to specific monophyletic units within each of the three more inclusive *Bavayia* Groups). Each of the three previously retrieved more inclusive groupings are retrieved, with 100% bootstrap support (bs) for the *B. sauvagii* and *B. cyclura* Groups, and 67% support for the *B. ornata* Group. The genus, as a whole, receives only 64% support, with the sister group relationship of the *B. ornata* and *B. cyclura* Groups having a bootstrap value of 72%. The broader *B. sauvagii* Group is divided into five major clades, the *B. sauvagii* Clade, the *B. pulchella* Clade, the *B. exsuccida* Clade, the *B. geitaina* Clade, and a previously unnamed group of central Grande Terre lineages here referred to as the *B. centralis* Clade. The *B. sauvagii*, *B. centralis* and *B. geitaina* Clades each have 100% bootstrap support, whereas the *B. exsuccida* (71% bs) and *B. pulchella* (50% bs) Clades are more weakly supported. The relationship of these clades to one

another is depicted in Fig. 4: ((*pulchella* Clade, *sauvagii* Clade) ((*exsuccida* Clade (*geitaina* Clade, *centralis* Clade))) and all interclade relationships receive >70% bootstrap support, with 100% bs for the sister group relationship of the *B. sauvagii* and *B. pulchella* Clades, and 97% support for the grouping of the other three clades.

All 15 species that we recognize within the *B. sauvagii* Group receive 100% bs support. Intra-Clade patterns of species relationship are variably supported, although only two species pairings have bootstraps of less than 88%. Each clade is largely geographically coherent and its constituent species are mostly or strictly allopatric. Thus, within the *B. sauvagii* Clade, which is restricted to southern New Caledonia, *B. sauvagii* sensu stricto occupies the western side of the Grande Terre from Mt. Mou south to Nouméa, *B. campestris* sp. nov. occupies the Plaine des Lacs and the far south, and *B. kunyie* sp. nov. occurs on the east coast from near the Baie de Bouquet south to Goro and the Isle of Pines and its satellite islets. Variation within all constituent *B. sauvagii* Group species is limited, except within *B. geitaina*, in which sampling is broad enough to show significant substructure (Fig. 48), with subclades from 1) the Plaine des Lacs and south coast, 2) Kwa Née, Plaine des Lacs region, 3) Mt. Koghis, Rivière Bleu and Montagne des Sources, and 4) Mt. Ouin, Mt. Dzumac, Mt. Vulcain, the Massif du Kouâkoué, the Tontouta Valley, Pic Ningua, and Camp des Sapins, each with strong support ( $\geq 98\%$  bs). There are several apparently geographically misplaced samples in these clades which likely represent mislabeling or (less likely) translocations. The phylogeography of *B. geitaina* will be discussed separately in another publication.

In the *Bavayia ornata* Group, the monophyly of each of the three species, and of the two constituent Clades receive 100% bootstrap support, although the Group as a whole is weakly supported with 67% bs. As for *B. geitaina*, sampling is broad and deep across the range of *B. septuiclavus*, revealing clear substructure with subclades (Fig. 4C) from 1) Goro and the Baie de Prony and other far southern sites, 2) Rivière Bleue, the Pourina River Valley, Montagne des Sources, Pic du Pin, and 3) Mt. Ouin, Mt. Vulcain, and Mt. Koghis, although several localities, including Mt. Koghis, are not exclusive to a single clade.

The *Bavayia cyclura* Group includes the *B. cyclura* Clade, the *B. goroensis* Clade, the *B. montana* Clade, the *B. crassicolis* Clade, and a clade including six new species from the central and northern parts of the Grande Terre — the *B. borealis* Clade. Each of the clades receives strong support ( $\geq 98\%$  bs, except for the *B. borealis* Clade – 55%) and all 22 constituent species receive 100% bootstrap support. Relationships among the *B. cyclura* Group clades, which have the relationship: (*goroensis* Clade, (*montana* Clade (*borealis* Clade (*crassicolis* Clade, *cyclura* Clade))))), all have strong to very strong bootstrap support except for the relationship of the *B. borealis* Clade to its sister group (57% bs). Most intra-Clade relationships are well-supported, except for those in the *B. borealis* and *B. montana* clades, within which bootstrap support ranges from 30% to 100%. In the *B. montana* Clade, with seven species, each is largely or exclusively associated with single massifs or clusters of nearby mountains. The *B. borealis* Clade is similar, with most of its six species limited to one or a cluster of neighboring northwest ultramafic massifs; the exception being *B. borealis* sp. nov. itself, which has one of the most extensive distributions of any *Bavayia*, ranging from the far north of the Grande Terre and nearby Île Balabio to Houailou in the middle of the east coast. Interestingly, in the *B. crassicolis* Clade, *B. tanleensis* sp. nov. appears to be restricted to tiny Tanlé Island, whereas *B. insularis* sp. nov. occurs on numerous northern islands, including the distant Îles Belep, as well as several mainland localities, and exhibits almost no substructure. Our most in-depth sampling is for *B. robusta*, a member of the *B. cyclura* Clade, which occurs across the southern Grande Terre and on the Isle of Pines and essentially all of its vegetated satellite islets. It has two main strongly supported and reciprocally monophyletic subclades, one mostly on the mainland and the other on the southern islands plus the

*B. pulchella* Clade

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50

30

100

AMS R. 166251  
CAS 265759

AMS R. 149934  
AMS R. 149878  
AMS R. 149833  
AMS R. 149935

AMS R. 166219  
AMS R. 172758  
AMS R. 172759

AMS R. 172787

*Bavayia lepredourensis*

*Bavayia pulchella*

100

AMS R. 144107  
AMS R. 135062  
CAS 265717

AMS R. 146449  
AMS R. 146445

AMS R. 172629  
AMS R. 135051

AMS R. 135052

AMS R. 172628  
AMS R. 172630  
AMS R. 146490

AMS R. 166281

CAS 265885  
AMS R. 146488  
AMS R. 146489

AMS R. 166328  
AMS R. 166329  
AMS R. 146533

AMS R. 150759

AMS R. 144308  
AMS R. 144309  
AMS R. 144310

AMS R. 144312  
AMS R. 135089

AMS R. 148017

AMS R. 135090  
AMS R. 135088  
AMS R. 144318

AMS R. 144316  
AMS R. 144307  
YPM HERR.022298

*Bavayia stephenparki*

100

AMS R. 146530  
AMS R. 144317

AMS R. 146526  
AMS R. 144320  
AMS R. 144323  
AMS R. 144321

AMS R. 144322  
CAS 202737  
AMS R. 146531  
AMS R. 146532  
CAS 202739

AMS R. 144319

AMS R. 146529  
AMS R. 148018  
AMS R. 148016  
AMS R. 174953  
CAS 202738

*Bavayia sauvagii*

*B. sauvagii* Clade

0.02

88

100

CAS 265764  
AMS R. 172590  
MNHN-RA-2022.0045  
AMS R. 164327  
AMS R. 172591

AMS R. 172592  
AMS R. 171344  
AMS R. 171345

AMS R. 172914  
AMS R. 172589

AMS R. 164288  
AMS R. 164289

CAS 265761

CAS 265762  
CAS 265765

AMS R. 150028  
AMS R. 148070  
AMS R. 148072  
AMS R. 150025

AMS R. 148069

AMS R. 164307  
AMS R. 164306  
AMS R. 164310

*Bavayia campestris*

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CAS 265967  
CAS 203063  
AMS R. 138582  
CAS 203059  
CAS 203060

CAS 203062  
AMS R. 138583  
CAS 265989

CAS 203057  
CAS 203059  
AMS R. 138581

AMS R. 163247  
CAS 265988

MNHN-RA-2022.0055  
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AMS R. 174790

AMS R. 174778  
AMS R. 174789  
AMS R. 174786  
AMS R. 174771

AMS R. 174787  
AMB7304

AMS R. 171439  
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AMS R. 171404  
AMS R. 171412  
AMS R. 171406  
AMS R. 171405  
AMS R. 171410

AMS R. 167822  
AMS R. 171411

*Bavayia kunye*

*B. ornata* Group

*B. cyclura* Group

*B. sauvagii* Group

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100

97

64

67

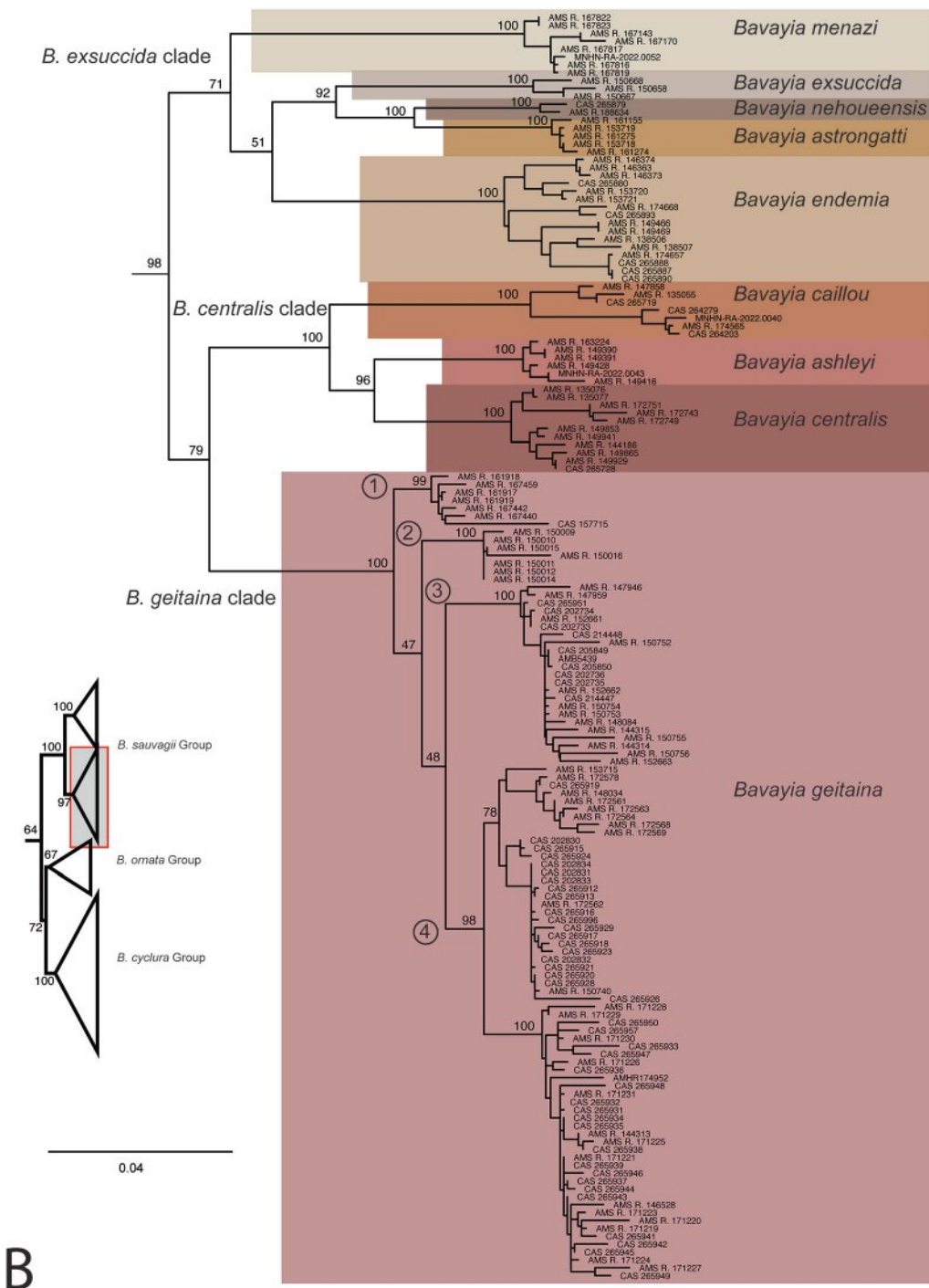
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FIGURE 4. ND2 mitochondrial phylogram of the genus *Bavayia* (continued).



*B. ornata* clade

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*B. septuiclavus* clade

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*B. sauvagii* Group

*B. ornata* Group

*B. cyclura* Group

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*Bavayia ornata*

*Bavayia tchingou*

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AMS R. 167402

AMS R. 167403

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AMS R. 164340

AMS R. 164338

AMS R. 164337

AMS R. 179118

AMS R. 179101

AMS R. 179107

AMS R. 179099

AMS R. 179096

AMS R. 179116

AMS R. 179100

AMS R. 179099

AMS R. 179102

AMS R. 179117

AMS R. 179095

AMS R. 179101

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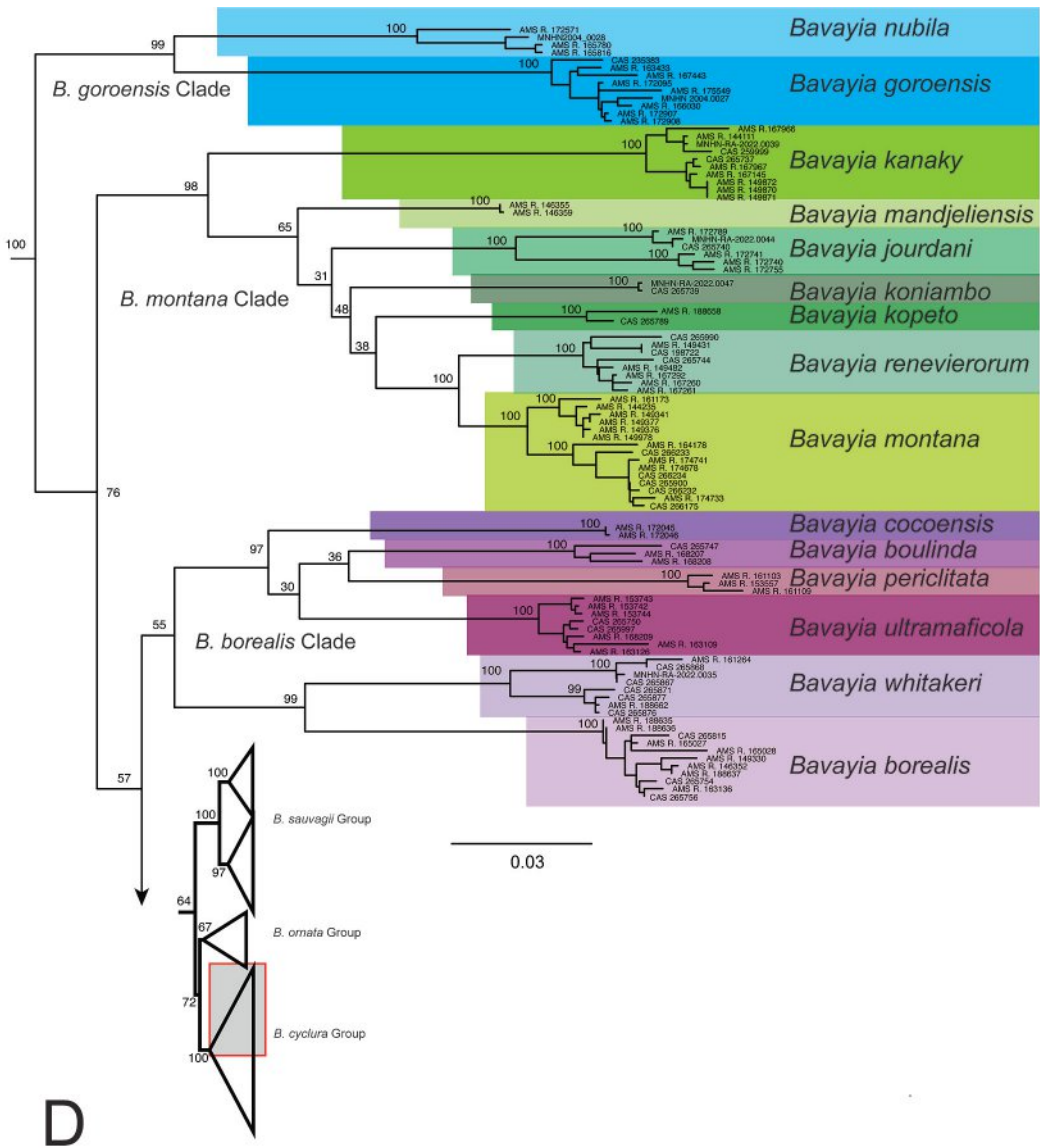
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FIGURE 4. ND2 mitochondrial phylogram of the genus *Bavayia* (continued).







vicinity of Forêt Nord in the far south of the Grande Terre. However, the two subclades could not be distinguished morphologically, nor was there evidence of a “barcode gap” between them (Bernstein et al. 2021).

## SYSTEMATICS

In this monograph, we have recognized a total of 40 species level taxa that have been included in our phylogenetic analysis. A 41<sup>st</sup> species, the recently described *Bavayia loyaltiensis* from the island of Maré, was not represented by genetic material, but we place it in the *B. sauvagii* Clade on the basis of its morphology and its geographic proximity to mainland members of this clade. The outline of the allocation of species to Clades and Groups is presented below and our treatments in the descriptive part of this monograph follow this order (initial page for each unit also indicated in parenthesis as p. xx):

### *Bavayia* Roux, 1913

#### *B. sauvagii* Group (p. 17)

##### *B. sauvagii* Clade (p. 17)

*B. sauvagii* (Boulenger, 1879) (p. 17)

*B. campestris* sp. nov. (p. 22)

*B. kunyie* sp. nov. (p. 26)

*B. loyaltiensis* Bauer, Telma and Sadlier, 2022 (p. 31)

##### *B. centralis* Clade (p. 33)

*B. centralis* sp. nov. (p. 33)

*B. caillou* sp. nov. (p. 40)

*B. ashleyi* sp. nov. (p. 44)

##### *B. pulchella* Clade (p. 49)

*B. pulchella* Bauer, Whitaker and Sadlier, 1998 (p. 49)

*B. stephenparki* sp. nov. (p. 52)

*B. lepredourensis* sp. nov. (p. 57)

##### *B. exsuccida* Clade (p. 61)

*B. exsuccida* Bauer, Whitaker and Sadlier, 1998 (p. 61)

*B. nehoueensis* sp. nov. (p. 63)

*B. astrongatti* sp. nov. (p. 69)

*B. endemia* sp. nov. (p. 74)

*B. menazi* sp. nov. (p. 79)

##### *B. geitaina* Clade (p. 85)

*B. geitaina* Wright, Bauer and Sadlier, 2000 (p. 85)

#### *B. ornata* Group (p. 90)

##### *B. ornata* Clade (p. 90)

*B. ornata* Roux, 1913 (p. 90)

*B. tchingou* sp. nov. (p. 93)

##### *B. septuiclavis* Clade (p. 97)

*B. septuiclavis* Sadlier, 1988 (p. 97)

#### *B. cyclura* Group (p. 101)

##### *B. cyclura* Clade (p. 101)

*B. cyclura* (Günther, 1872) (p. 101)

*B. robusta* Wright, Bauer and Sadlier, 2000 (p. 105)

##### *B. goroensis* Clade (p. 109)

*B. goroensis* Bauer, Jackman, Sadlier, Shea and Whitaker, 2008 (p. 109)

*B. nubila* Bauer, Jackman, Sadlier and Shea, 2012 (p. 111)

##### *B. montana* Clade (p. 112)

*B. montana* Roux, 1913 (p. 113)

*B. kanaky* sp. nov. (p. 116)

*B. mandjeliensis* sp. nov. (p. 121)

*B. kopeto* sp. nov. (p. 125)

*B. koniambo* sp. nov. (p. 130)

*B. jourdani* sp. nov. (p. 135)

- B. renevierorum* sp. nov. (p. 140)
- B. borealis* Clade (p. 145)
  - B. borealis* sp. nov. (p. 145)
  - B. cocoensis* sp. nov. (p. 153)
  - B. bouldina* sp. nov. (p. 157)
  - B. ultramaficola* sp. nov. (p. 161)
  - B. periclitata* sp. nov. (p. 166)
  - B. whitakeri* sp. nov. (p. 172)
- B. crassicollis* Clade (p. 176)
  - B. crassicollis* Roux, 1913 (p. 177)
  - B. tanleensis* sp. nov. (p. 180)
  - B. rhizophora* sp. nov. (p. 184)
  - B. occidentalis* sp. nov. (p. 188)
  - B. insularis* sp. nov. (p. 193)

In the accounts that follow we provide definitions for the unranked infrageneric groupings of “Group” and “Clade” corresponding to the classification above. Previously described species are presented with diagnoses serving to distinguish them from other members of the same clade and, in some cases, phenotypically similar members of other clades. For new species both a diagnosis and description are provided. Type and referred material have been plotted on the accompanying maps, each of which corresponds to an individual clade. Sequenced specimens are indicated by an asterisk (\*) and are also listed in the Appendix. All species accounts include sections on Distribution, Natural History, Conservation Status and, when warranted, Remarks. In addition to nomenclatural notes, Remarks include clarification of the prior uses of names in previous publications.

### *Bavayia* Roux, 1913

- 1913 *Bavayia* Roux, Nova Caledonia, Zool. 1(2):85. Type Species: *Peripia cyclura* Günther, 1872 by original designation.
- 1954 *Bavaya* Underwood, Proc. Zool. Soc. London 124:471 (incorrect subsequent spelling of *Bavayia* Roux, 1913).
- 1983 *Bavaia* Rösler, Salamandra 19:223 (error typographicus, incorrect subsequent spelling of *Bavayia* Roux, 1913).

**Diagnosis:** Small to medium-sized diplodactylid geckos (41–90 mm maximum SVL, mostly 50–70 mm), scalation fine and granular, entirely lacking tubercles, digits expanded and bearing adhesive subdigital scansors, divided for most of the free length of digits II–V, interdigital webbing absent or only weakly developed, all digits clawed, claws of digit I borne lateral to a single median apical scansor, between a larger medial and small lateral apical scansor, or in a notch between a partly divided apical scansor, males with 7–46 precloacal pores arranged in 1–4 contiguous rows, original tail cylindrical or slightly depressed, ~99–117% SVL (usually <110% SVL). Dorsal life coloration is a combination of browns and whites to creams, most often in alternating bands or chevrons with paler blotches or saddles on a darker background (patternless or striped individuals are typical in three species and occur uncommonly in some others). Ventral coloration in life cream, yellow, grayish or brownish. Among other New Caledonian diplodactylid geckos, *Bavayia* spp. may be distinguished from *Oedodera* Bauer, Jackman, Sadlier, and Whitaker, 2006, *Eurydactylodes* Wermuth, 1965, *Rhacodactylus* Fitzinger, 1843, *Correlophus* Guichenot, 1866 and *Mniarogekko* Bauer, Whitaker, Sadlier, and Jackman, 2012 by their divided subdigital scansors (vs. undivided), from *Paniegekko* Bauer, Jackman, Sadlier, and Whitaker, 2012 by their proportionally smaller head, smaller number of precloacal pores (maximum 46 vs. >50), and from *Dierogekko* Bauer, Jackman, Sadlier, and Whitaker, 2006 by their generally larger size (40 of 41 species with

maximum SVL >46 mm vs. all species <45 mm SVL) and dorsal pattern of predominantly transverse elements (vs. predominantly longitudinal elements). See Bauer et al. 2012a for diagnoses of all New Caledonian diplodactylid genera.

### *Bavayia sauvagii* Group

**Definition:** Members of this species group are distinguished from those of the *B. cyclura* Group by their generally smaller size (most species <60 mm SVL vs. most species >60 mm SVL), less robust bodies, narrower digits, claw of digit I of manus and pes borne lateral to a single apical scansor or between a much larger medial and a much smaller lateral scansor (vs. in a cleft within a single asymmetrical scansor with a large medial and smaller lateral component), usually a single row of precloacal pores in males (vs. usually 2–4 rows), and whitish to brownish (vs. yellow) ventral coloration. From members of the *B. ornata* Group they are distinguished by their absence of prominent whitish spots as the dominant limb pattern (vs. limbs spotted in the *B. ornata* Clade) and dorsal pattern of predominantly transverse elements (vs. patternless or longitudinally striped in *B. septiclavialis*).

### *Bavayia sauvagii* Clade

**Content:** *Bavayia sauvagii* (Boulenger, 1883); *B. campestris* sp. nov.; *B. kunyie* sp. nov.; *B. loyaltiensis* Bauer, Telma and Sadlier, 2022. No sequence data are available for *B. loyaltiensis* but, on the basis of morphology and geography, it is presumed to be a member of this clade.

**Definition:** Members of the *B. sauvagii* Clade are distinguished from other *B. sauvagii* Group taxa by their intermediate body size (maximum 45–60 mm SVL vs. 72 mm in *B. geitaina*) and the placement of the claw of digit I of the manus and pes lateral to a single medial apical scansor (vs. between a much larger medial and a much smaller lateral scansor in the *B. pulchella*, *B. exsuccida*, and *B. geitaina* Clades). Males possess a single row of precloacal pores (with a single pore in a second row reported for one individual, see *B. loyaltiensis*) with 15–27 pores (rarely fewer). Tail length <105% SVL, with 6–7 dorsal scale rows per tail whorl (vs. 9 in *B. geitaina*). The dorsum typically bears a pattern of four (rarely five) dark transverse markings between limb insertions (vs. typically five or more in *B. geitaina*). These geckos are most similar in general appearance to members of the *B. centralis* Clade but are generally smaller and more commonly maintain unfragmented dark dorsal pattern elements.

### *Bavayia sauvagii* (Boulenger, 1883)

Figures 5, 6A–B.

1879 *Hemidactylus cyclura* (part) Sauvage, Bull. Soc. Philomath. Paris (7)3:72.

1883 *Lepidodactylus sauvagii* Boulenger, Proc. Zool. Soc. London 1883:122; pl. XXII, figs. 5, 5a.

1913 *Bavayia sauvagei* (unjustified emendation) Roux, Nova Caledonia, Zool. 1(2):91, pl. 4, figs. 2, 2a.

**Neotype:** MNHN-RA 1998.0605\* (formerly AMS R.146526), “Mt. Koghis, Province Sud,” New Caledonia [22°10'43"S, 166°30'20"E], coll. R.A. Sadlier, January 1995. Neotype designation by Wright, Bauer and Sadlier (2000:41). Boulenger's type description, though very brief, is consistent with the species universally regarded as *B. sauvagii* [“resembles the preceding [*B. cyclura*] in proportions, scutellation, size, and color, but differs in the much narrower digits, and the presence of a single series of preanal pores; this series is composed of 23 pores.”; translation ours]. However, the specimen long regarded as the holotype, MNHN-RA 5790 (Guibé 1954; Brygoo “1990” 1991), is actually a member of the *B. cyclura* species group (Bauer 1990a; Bauer and Henle 1994; Wright et al. 2000). Given this mismatch, Wright et al. (2000) considered the true holotype

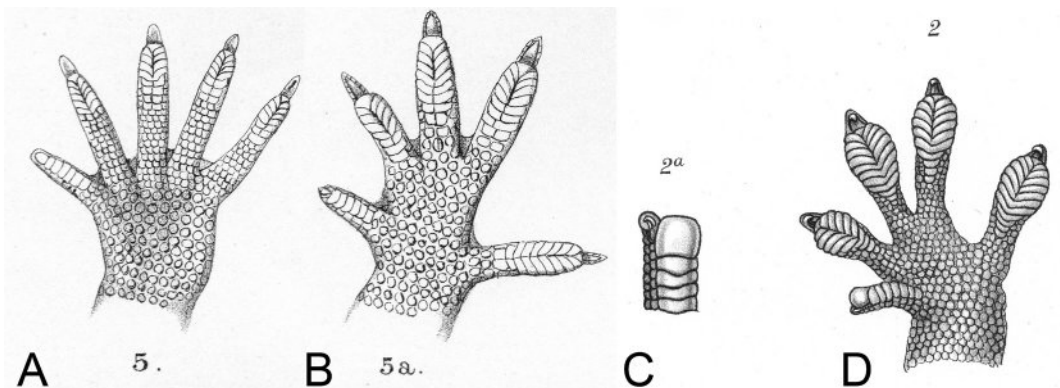


FIGURE 5. *Bavayia sauvagii* (Boulenger, 1883), A) ventral view of manus; B) ventral view of pes (A and B from Boulenger 1883: pl. XXII); C) detail of digit I of pes; D) ventral view of pes (C and D from Roux 1913: pl. 4).

to have been lost and designated the neotype to stabilize the use of the name *B. sauvagii*. The data with MNHN-RA 5790 indicates that it was purchased from the natural history dealer Deyrolle (Guibé 1954; Brygoo "1990" 1991), so its precise locality is unknown.

**Referred Material:** (all localities in Province Sud) AMS R.174953\*, Camp des Sapins, 21°45'58.16"S, 166°10'57.44"E; CAS 162186–90, Mt. Mou, ~5 km E of Païta (200 m asl), 22°04'S, 166°21'E; CAS 265885\*, CAS 265886, Mt. Mou, 22°04'S, 166°21'E; AMS R.135667–73, AMS R.146488–90\*, Mt. Mou, 2.2 km E of Route 1 on track to Sanitarium, 22°04'S, 166°20'E; AMS R.78331–33, R.78342, R.122880, R.125882, R.125884, R.125886–87, R.125879, R.135092–99, R.135101, R.135662, R.144307–313\*, R.144316, R.144317–23\*, R.146280, R.146282–83, CAS 158378–83, 162184–85, 196349, Mt. Koghis (forest near Grande Piste, ~460 m asl), 22°10'S, 166°30'E; CAS 198646–48, 202727–29, 2027331–32, 202737–39\*, 202740, 205397–409, USNM 515880–81, Mt. Koghis (near Auberge) (~500 m asl), 22°10'40"S, 166°30'23"E; AMS R.64615–17, Mt. Koghis, 22°10'S, 166°32'E; AMS R.146526\*, R.146528–33\*, R.147780–85, R.147845, R.148016–18\*, R.150757–28, R.150759\*, Mt. Koghis, 22°10'43"S, 166°30'20"E; AMNH 81769–71, Forêt de Thy, 22°11'06"S, 166°32'14"E; AMS R.166280, R.166281\*, R.166282, Nouméa, Baie Tina, Piste Cyclable de Tina, 22°14'45.3"S, 166°29'30"E; AMS R.166290–91, R.166315–16, Koumourou, Ducos, Nouméa, 22°14'02"S, 166°23'59.7"E; AMS R.166326, R.166328–29\*, Monts Kouiambo, Pointe Maa, 22°12'43.5"S, 166°21'0.3"E; AMS R.135088–90\*, CAS 80831, 80836, 80846–47, 80859–60, 175521, MCZ R46171, Yahoué Valley (vic. Nouméa), 22°13'19.3"S, 166°29'52.9"E; CAS 162225, 162240, 162242, Forêt de Yahoué (11 km N Nouméa), 22°13'19.40"S, 166°29'52.46"E; YPM pending (ex. MCZ Z39227), YPM HERR.022298\*, Île Uéré 22°18'51"S, 166°28'46"E.

**Diagnosis:** *Bavayia sauvagii* is a large member of the *Bavayia sauvagii* Clade (maximum 60 mm SVL), characterized by its relatively short, depressed body and short tail (to 102% SVL); digits II–V relatively narrow; 6–12 (usually >10) relatively slender lamellae beneath digit IV of hindfoot; claw of digit I of manus and pes borne lateral to a single medial apical scansor. Single row of 7–23 precloacal pores (usually >12, with individuals from Mt. Mou having lower counts); relatively high number of cloacal spur scales. Dorsal pattern typically with four largely symmetrical, well demarcated, thin to moderately thick, dark, transverse markings between the limb insertions, and pale head dorsum with a pair of pale, often ill-defined nape stripes; flanks with whitish punctations or spots. Tail usually with pale dorsal markings longer than dark interspaces (here and in all following Diagnoses and Descriptions refer to Fig. 3 for color pattern elements).



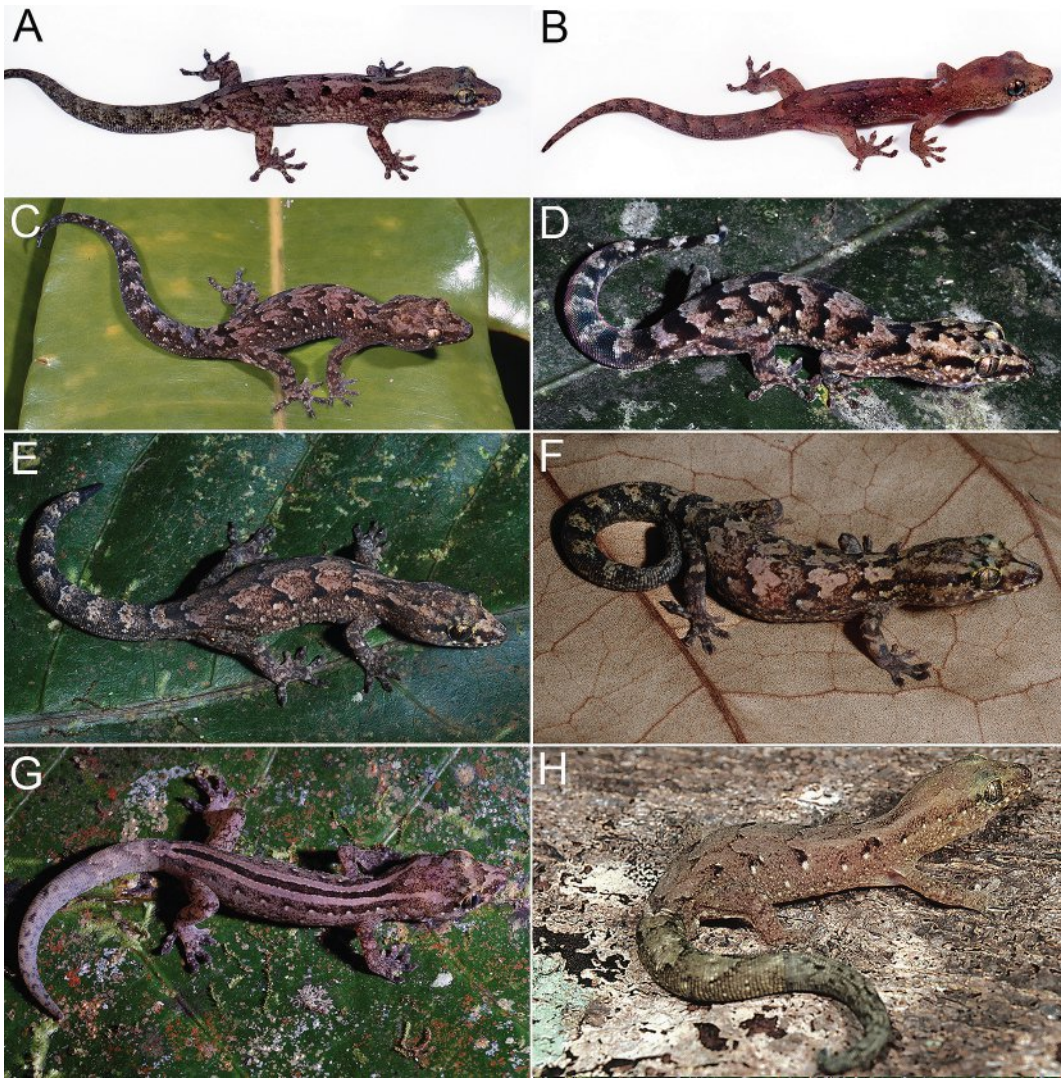


FIGURE 6. Life photographs of representatives of the *Bavayia sauvagii* Clade. A) *B. sauvagii*, adult from Mt. Koghis. B) *B. sauvagii*, juvenile from Mt. Koghis. C) *B. campestris* (paratype CAS 265763) from Prony Bay. D) *B. campestris* (non-type) from Forêt Nord. E) *B. kunyie* (non-type AMS R.171436) from Pourina River. F) *B. kunyie* (non-type) from Côte Oubliée. G) *B. kunyie* (non-type AMS R.171439) from Pourina River, showing striped pattern that is uncommon in the *B. sauvagii* Clade. H) *B. loyaltiensis* (holotype MNHN-RA-2022.0037) from Cengeite, Maré, Loyalty Islands. Photos A–G by R.A. Sadlier, photo H by H.G. Cogger.

Among its own clade members *B. sauvagii* is distinguished by its larger size (to 60 mm SVL vs. 52 mm or less) and from *B. loyaltiensis* by its lack of a distinctly differentiated precloacal pore row and its lower number of cloacal spur scales (maximum 6 vs. 8). From *B. campestris* sp. nov. and *B. kunyie* sp. nov. it differs in its greater number of cloacal spur scales (6 vs. 4) and in having pale dorsal tail blotches longer than dark interspaces (vs. dark interspaces usually as long or longer than pale blotches).

**Distribution:** Widespread in greater Nouméa including Île Uéré, and possibly present on all islands with appropriate habitat in the Baie de Dumbéa, Baie de Sainte-Marie and Baie de

Magenta (Fig. 7). Reaching at least 500 m elevation on Mt. Koghis, inland from Nouméa. Also known from Monts Kouiambo, south of Païta and Mt. Mou to the north. A single genetically confirmed specimen has been identified from Camp des Sapins, 37 km north-northwest of Mt. Mou, although further confirmation from this site is desirable. It is likely present throughout low to middle elevations in the region.

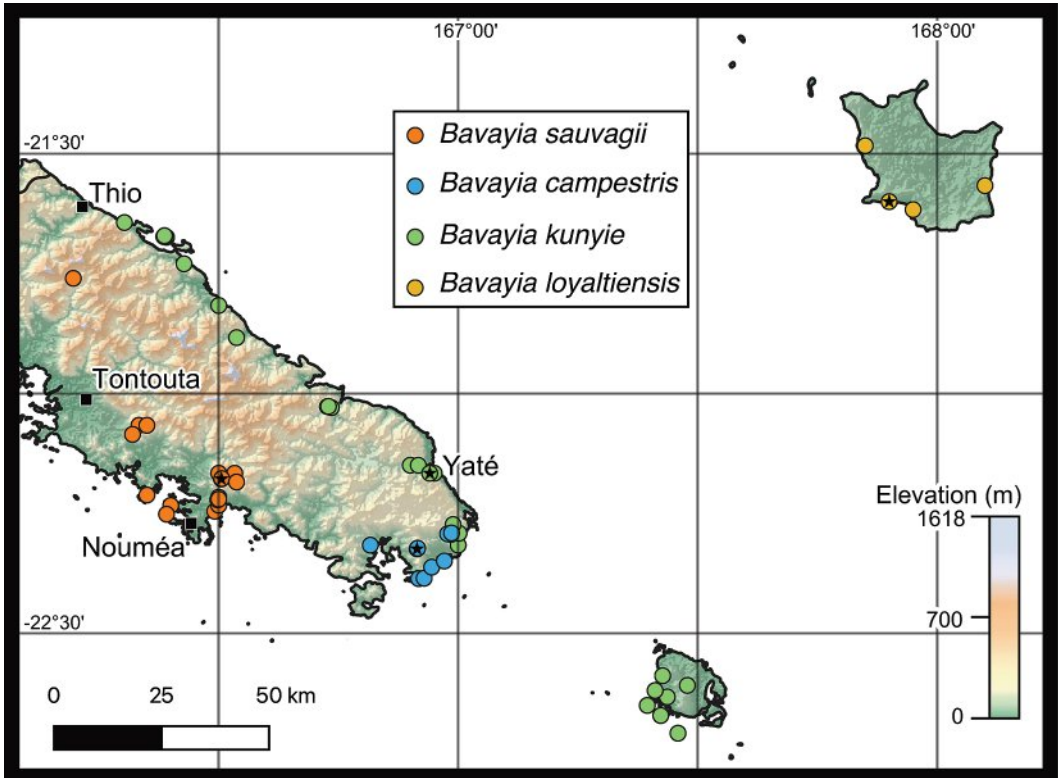


FIGURE 7. Map showing the distribution of members of the *Bavayia sauvagii* Clade. *Bavayia sauvagii* (orange), *B. campestris* (blue), *B. kunyie* (green), *B. loyaltiensis* (mustard). Stars indicate type localities. Cartography by J. DeBoer.

**Natural History:** *Bavayia sauvagii* has been recorded from low to mid elevation closed forest (Fig. 8A), sclerophyll forest, and coastal forest habitat. It shelters by day beneath logs and rocks on the forest floor or beneath the bark of dead fallen and standing trees. At night it forages both on and near the ground and in the branches of trees and shrubs. This species is broadly insectivorous, (Bauer and DeVaney 1987). As for all members of the genus, females lay two leathery-shelled eggs. Gravid females have been recorded in December but reproduction appears to take place throughout the year, although the frequency of reproduction for any individual remains unknown.

**Conservation Status:** *Bavayia sauvagii* as now restricted meets the criteria (B1ab(ii, iii, v)+2ab(ii, iii, v)) to be categorized as Endangered on the IUCN Red List (Sadlier et al. 2021a). It has a restricted distribution being known from only three locations with an extent of occurrence estimated at 226 km<sup>2</sup> and an area of occupancy at 36 km<sup>2</sup> (but this estimate does not include the isolated record from Camp des Sapins to the north). It is presumed to have suffered a substantial reduction in population size and extent from past habitat loss and degradation through clearance for agriculture and afforestation. The main threat to the species is from ongoing habitat loss and degradation, particularly in coastal areas due to urbanization, and from wildfires (Ibanez et al.



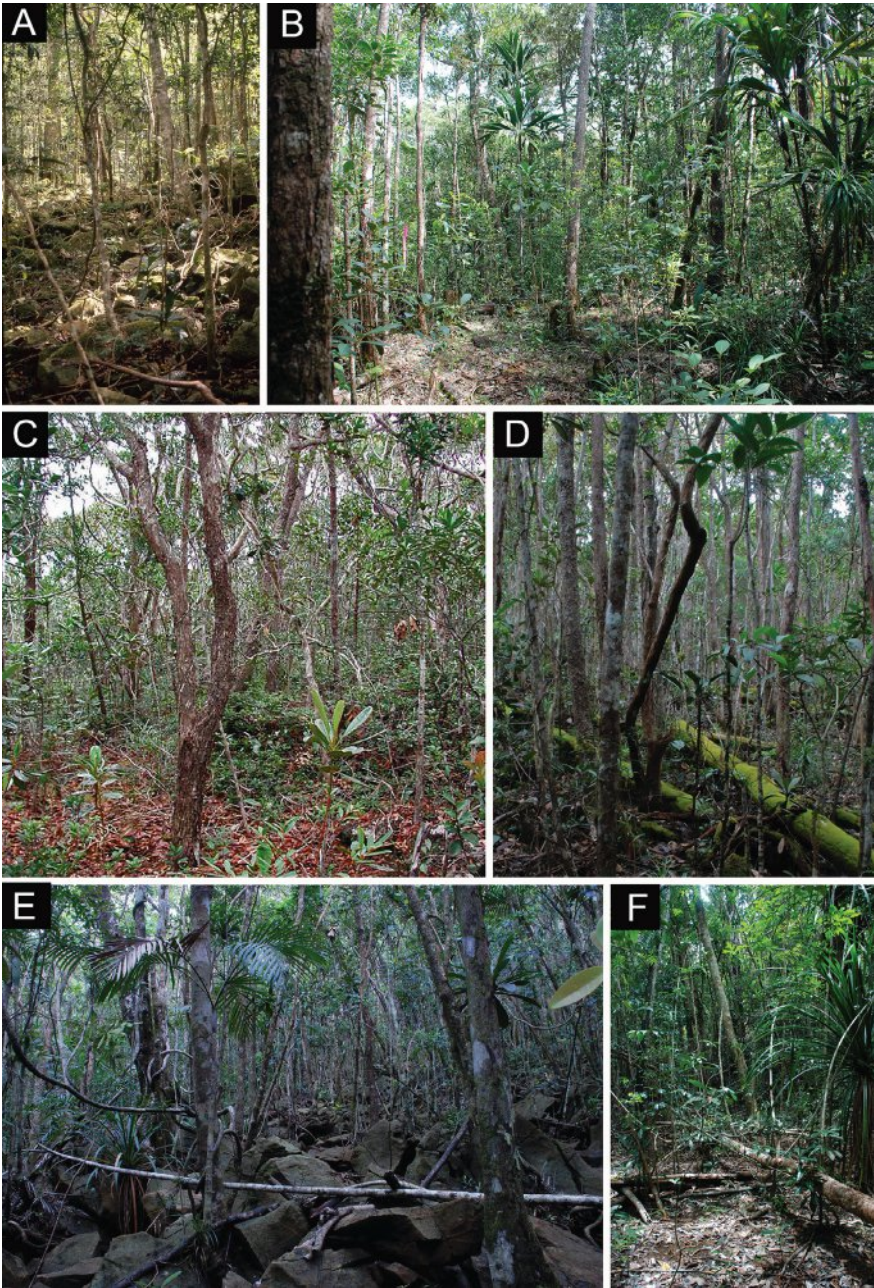


FIGURE 8. *Bavayia* habitats. A) Mid-elevation humid forest on Mt. Koghis, near Nouméa, Province Sud, habitat of *Bavayia sauvagii*, *B. septuiclavis*, *B. geitaina*, and *B. robusta*; B) Maquis paraforestier/preforestier on the Goro Plateau, Province Sud, habitat of *Bavayia campestris* sp. nov., *B. kunyie* sp. nov., and *B. septuiclavis*; C) Closed maquis arbustif on the Goro Plateau, Province Sud, habitat of *Bavayia goroensis*, *B. septuiclavis*, *B. campestris* sp. nov., and *B. kunyie* sp. nov.; D) Maquis preforestier on the Goro Plateau, Province Sud, habitat of *Bavayia goroensis*, *B. kunyie* sp. nov., and *B. septuiclavis*; E) Closed forest habitat on peridotite in the Wajana Valley, Goro Plateau, Province Sud, habitat of *Bavayia geitaina*, *B. goroensis*, *B. kunyie* sp. nov., and *B. septuiclavis*; F) Low elevation forest in the Ni River Valley, Côte Oubliée, Province Sud, habitat of *Bavayia kunyie* sp. nov. All photos by R.A. Sadlier.

2019). In forest habitat it is likely to be threatened by the introduced Fire Ant *Wasmania auropunctata* which has the potential to displace geckos from ground sheltering sites and arboreal foraging sites and affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001), and from predation by cats (Palmas et al. 2017).

**Remarks:** Specimens of “*B. sauvagii*” from Mt. Dore (22°17’S, 166°37’E; AMS R.135664–66) may represent this species, but these require re-examination, as the locality falls between the known ranges of this species and *B. campestris* sp. nov. Of the various localities reported for *B. sauvagii* by Roux (1913), none actually support populations of *B. sauvagii* sensu stricto. We have tentatively allocated Roux’s material to the species to which it likely belongs, but his material from Coné (Koné) remains uncertain and it may be referable to either *B. astrongatti* sp. nov. or *B. endemia* sp. nov. and records from La Foa and from the region of Canala could be either *B. cail-lou* sp. nov. or *B. stephenparki* sp. nov. Dietary records for *B. sauvagii* reported by Bauer and Devaney (1987) actually include records from this species (Mt. Koghis), *B. kunyie* (Goro), and *B. endemia* (Mt. Koyaboa). *Bavayia kunyie* and *B. campestris* were included within *B. sauvagii* by Bauer and Sadlier (2000) and Cygnet Surveys & Consultancy (2016). The karyology of this species was discussed and mitotic chromosomes figured by King (1987) and King and Mengden (1990).

***Bavayia campestris* sp. nov.**

Figures 6C–D, 9.

**Holotype:** MNHN-RA 2022.0045\* (ex. AMS R.150024), Forêt Nord, SW base of Kwa Née, Plaine de Lacs region, Province Sud, New Caledonia, 22°19’28”S, 166°54’51”E, coll. R.A. Sadlier and A.H. Whitaker, 8 November 1996.

**Paratypes:** AMS R.150026\*, R.150027–28, data as for holotype; CAS 265760 (ex. AMB 7297), CAS 265761\* (ex. AMB 7298), CAS 265762–63 (ex. AMB 7300–01), Prony Bay, 22°19’35”S, 166°49’23”E, coll. A.M. Bauer and R.A. Sadlier, 22 September 2002; AMS R.148069\*, R.148072\*, Forêt Nord, SW base of Kwa Née, Plaine de Lacs region, Province Sud, New Caledonia, 22°19’28”S, 166°54’51”E, coll. R.A. Sadlier and G.M. Shea, 28 September 1995.

**Referred Material:** (all localities in Province Sud) AMS R.172914\*, Goro Plateau, Kwé Nord, 22°17’28.78”S, 166°59’09.91”E; AMS R.171344–45\*, Kwé Nord, 22°17’35.16”S, 166°58’40.51”E; AMS R.148070\*, R.148071, R.150025\*, R.150029, R.164326, R.164327\* R.166073–80, R.166161–63, UMMZ 219089–90, Forêt Nord, SW base of Kwa Née, Plaine de Lacs region, 22°19’28”S, 166°54’51”E, CAS 265764–65\*, CAS 266177, Prony Bay, 22°19’35”S, 166°49’23”E; AMS R.164244–45, R.164287–89\*, R.164314–18, Port Boisé, Gîte Kanua, 22°20’59”S, 166°58’16”E; CAS 158386–88, Mt. Aiguillon (foot of N slope) [= Forêt Nord], 22°21’S, 166°50’E; AMS R.172589–92\*, Ko Mwa Nūri, Port Boisé, 22°21’45.39”S, 166°56’41.06”E; AMS R.164306–07\*, R.164308–09, R.164310\*, Cap N’Doua, 22°23’08”S, 166°55’44”E.

**Etymology:** The specific epithet *campestris* is a Latin adjective formed in the nominative feminine singular meaning “of the plain or field” and refers to the distribution of this species in the Plaine des Lacs region of the southern Province Sud of New Caledonia.

**Diagnosis:** A small member of the *Bavayia sauvagii* clade (maximum SVL 50.3 mm) characterized by its relatively short, depressed body and short tail (to 103% SVL); digits II–V relatively narrow; 8–12 (usually >10) relatively slender lamellae beneath digit IV of hindfoot; claw of digit I of manus and pes borne lateral to a single medial apical scansor. Single row of 20–27 precloacal pores; relatively low number of cloacal spur scales. Dorsal pattern typically with four symmetrical or asymmetrical, well demarcated, thin to moderately thick, dark, transverse markings between the limb insertions; head usually with distinct patterning; pale nape stripes often broken longitudinal-



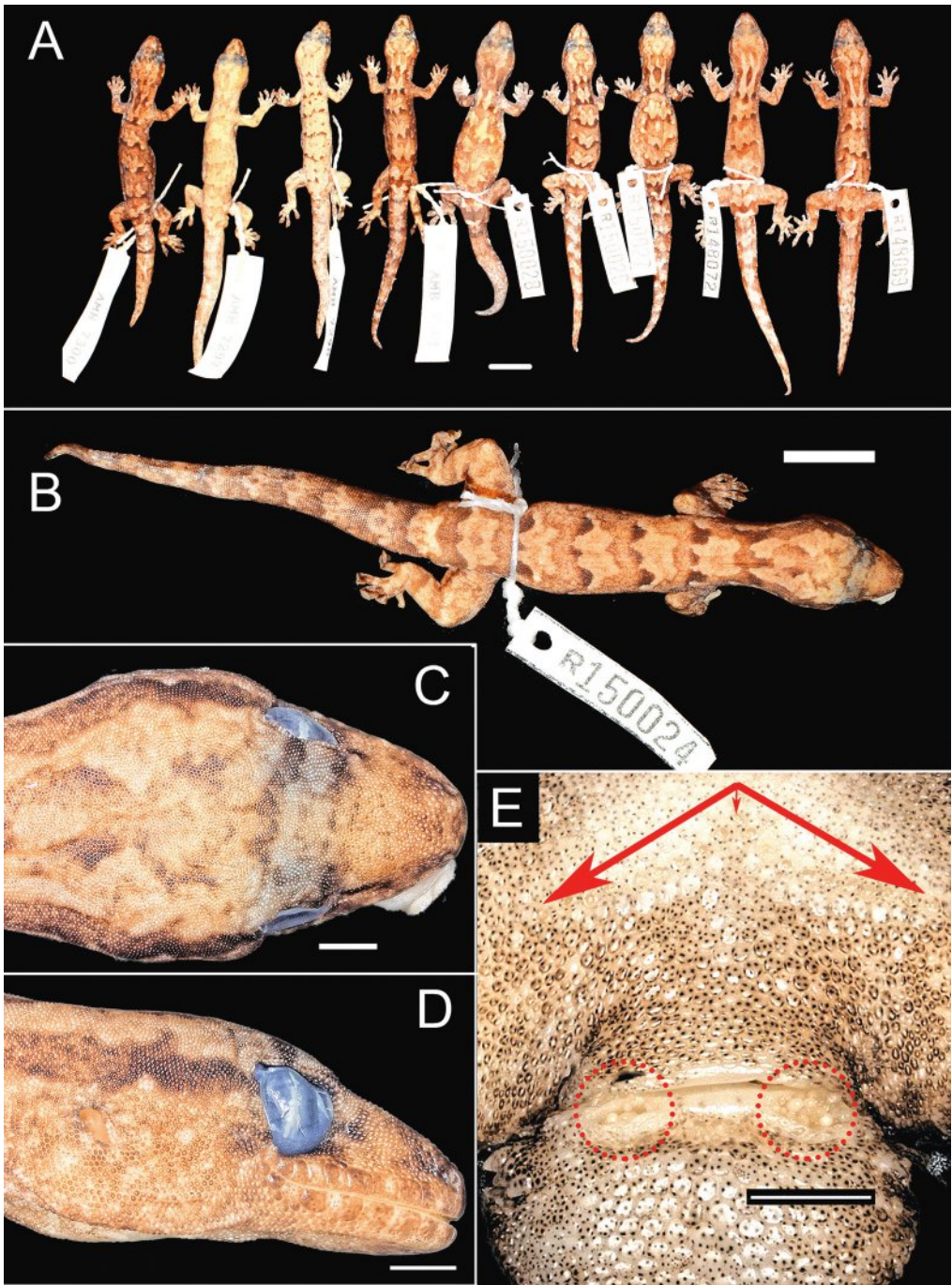


FIGURE 9. *Bavayia campestris*, sp. nov. A) Paratype series. B–E) Holotype MNHN-RA-2022.0045 (ex. AMS R.150024): B) whole body dorsal view; C) dorsal view of head; D) left lateral view of head (flipped for uniformity of plates; E) cloacal region, small central arrow indicates position of apex of chevron of precloacal pores, larger red arrows indicate the extent of the pore rows; the dashed circles surround the openings of the cloacal sacs, which harbor trombiculid mites, visible as small spherical objects at the mouth of the sacs. Scale bars: (A–B) = 10 mm, (C–E) = 2 mm.

ly and fused transversely; flanks with whitish punctations or spots in multiple longitudinal rows. Tail usually with dark dorsal interspaces longer than or equal to pale dorsal caudal blotches.

Among its own clade members *B. campestris* is distinguished by its smaller size (to 50.3 mm SVL) relative to *B. sauvagii* (maximum 60 mm SVL) and its larger size relative to *B. loyaltiensis* (maximum 45 mm SVL). It is further distinguished from the latter species by its smaller number of enlarged cloacal spur scales (usually 4 vs. up to 8) and by its lack of a distinctly differentiated precloacal pore row from the latter species). In having dark interspaces on tail dorsum usually as long or longer than pale caudal blotches it is distinct from both *B. sauvagii* and *B. loyaltiensis*. It is most similar to *B. kunyie*, which is similar in size and has similar pattern elements, although in comparison to this species it typically has bolder head markings and a larger number of white spots on the flanks and lateral surface of the head.

**Description:** Based on holotype MNHN-RA-2022.0045 (ex. AMS R.150024), an adult male. Snout-vent length (SVL) 50.0 mm; trunk relatively short, depressed. Head oblong, large (HeadL 26% SVL), relatively wide (HeadW 76% HeadL), not strongly depressed (HeadH 43% HeadL), distinct from neck; interorbital/frontal region broad, flat with a slight interorbital depression, canthus weakly developed; snout relatively long (ES 46% HL), more than twice eye diameter (OrbD 21% HeadL). Granular scales on anterior snout approximately twice diameter of those on occipital region. Pupil vertically oriented with crenelated margins; posteriormost superciliary scales conical, moderately elongate, pointed. Ear opening approximately twice as high as wide, canted posterodorsally to anteroventrally; eye to ear distance much greater than the diameter of eye (EyeEar 154% OrbD). Rostral rectangular, much broader than high; without a midline groove; contacted posteriorly by three internasals, the central largest, and two slightly enlarged supranasals, contacted posteroventrally by first supralabial. Nostrils oval and anterolaterally oriented, surrounded by two postnasals, one supranasal, and the rostral, in relatively broad contact with first supralabial. Mental triangular, approximately as deep as wide; a single enlarged, median postmental, triangular anteriorly, oval posteriorly, in point contact with apex of mental; first infralabials each in contact posteriorly with median postmental and one much smaller lateral postmental. First three to five rows of chinshields larger than remaining throat scales. Eleven enlarged supralabial scales, of which the seventh through eleventh are beneath the eye; 10 infralabial scales; 51 interorbital scale rows between superciliaries at midpoint of orbit, 19 interorbitals across the narrowest width of the frontal bone.

Dorsal scales small, homogeneous, very slightly conical, granular; ventral scales slightly larger than dorsals, subimbricate, enlarged posteriorly on the body. Posterior abdominal scales rounded, mid-abdominal scales elongate, diamond-shaped. Approximately 155 scale rows around midbody. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Precloacal pores in a single row of 20 small, but easily discernable pores. Forearm relatively short and crus proportionally longer (13% and 17% of SVL, respectively); axillary pockets shallow. Digits short and moderately narrow, all bearing claws, those on digit I of both manus and pes greatly reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital lamellae typically paired, except variably single or fragmented at the base of digits. Distalmost lamella of digits II–V, manus and pes, undivided. Claw of digit I positioned lateral to a single apical scansor. Lamellar counts from holotype: 8-10-10-11-12 left manus and 5-10-10-12-10 right pes.

Original tail 48.6 mm, approximately 97% of snout-vent length, tapered, stout, roughly oval in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, rectangular, arranged in regular rows. Surface of tail weakly segmented, caudal scale rows forming whorls, each whorl

~7 dorsal scale rows and 6 ventral scale rows long; midventral caudal scales not enlarged. Scales on pygal portion of tail much smaller ( $\frac{1}{2}$  to  $\frac{1}{3}$ ) than postpygal scales. Cloacal spurs consisting of a radiating set of 3–4 conical scales directed posterodorsally and borne on a raised mound adjacent to the cloaca.

**Color in preservative:** Dorsum and flanks a speckled light brown, with a pattern consisting of highly contrasting dark and light markings. Four mostly symmetrical cream to beige transverse blotches between nape and anterior point of hind limb insertion, each with an anterior border with two main anteriorly projecting points or bulges and a scalloped posterior edge. Each anterior edge with a narrow brown margin and each posterior edge with three prominent dark brown markings that fill the concavities in the margin of the pale blotches. An additional symmetrical pale blotch lies over the sacrum. It has a diffuse mid-brown central marking and the edges of the marking are similar to those of the trunk, although the posterior dark brown markings are not as distinct or extensive. A pair of pale markings extend from the nape on to the temporal regions of the head. These are each bordered laterally by a mid- to dark brown stripe from the posterior margin of the orbit to the shoulder. Medially the pale markings are bordered by a diffuse and irregular mid- to dark brown border.

Interorbital region bearing an irregular arched mid-brown band that terminates above the middle of each eye. An additional incomplete brown transverse band runs between the anterior edges of the orbits. Diffuse brown markings on the snout, in front of and beneath the orbits. Labial scales mottled with whitish scales with fine brown speckling roughly alternating with darker brown labial markings. The finely speckled brown base pattern covers the flanks. The limbs are mottled with predominantly pale areas alternating with irregular brown markings, especially distally. The tail has a darker brown base color than the trunk and bears a series of 10 cream-colored blotches, the more proximal of which have a circular to oval shape bearing a smaller lateral projection on each side; each blotch bordered behind by a very dark and well-defined border and anteriorly by a paler and less-well demarcated edge. The five most basal pale blotches have rounded brown central marking. Brown interspaces between blotches approximately as long as blotches themselves. Body venter beige, with light pigmentation, especially on the chest and ventral surface of thighs; throat with distinct, though pale mottling and mottled pattern of the flanks extending onto the lateral margins of the ventral surface; hemipenial bulge whitish. Tail venter a mosaic of cream to dark brown scales forming an irregular pattern of irregular blotches and reticulations.

**Color in life:** based on life photo of paratype CAS 265763 (Fig. 6C) and a non-type specimen (Fig. 6D). A relatively dark brown base pattern with purplish tinges. Pale dorsal markings a light purplish-brown, with bright white markings along the posterior edges. Longitudinal row of spots on flank also bright white. Dark markings on head, including a median nasal marking not present in the holotype, a mixture of distinctly darker and lighter shades of brown. Pale markings on limbs becoming lighter distally with near-white bands on toes. Light markings on tail lighter than markings on dorsum, with scattered bright white scales along their posterior margins and forming mid- and ventrolateral spots along tail.

**Variation:** Mensural features of paratypes are presented in Table 1. Male paratypes with 20–27 precloacal pores; no pores or dimpled scales in females. Longest original tail 100% SVL (AMS R.148072). Color pattern highly variable, but always with a series of pale markings alternating with darker interspaces. Pattern usually, although not always (AMS R.150028) generally symmetrical. A longitudinal series of bright whitish spots fused to the edges of the dorsal pale markings and/or forming a line across the flanks. Tail patterning variable, pale blotches often without central dark marking.

TABLE 1. Mensural data from the type series of *Bavayia campestris* sp. nov.; \*tail regenerated.

	Holotype	Paratypes									
	MNHN-RA-2022.0045	CAS 158387	AMS R.148069	AMS R.150027	AMS R.148072	AMS R.150026	AMS R.150028	CAS 265763	CAS 265762	CAS 265761	CAS 265760
Sex	M	F	M	F	M	F	F	F	F	F	M
SVL	50.0	49.1	49.2	44.4	49.0	42.8	50.3	42.8	47.9	42.4	45.2
ForeaL	6.7	6.1	6.2	5.4	6.5	5.3	6.5	5.4	5.6	5.3	5.8
CrusL	8.3	7.3	7.6	6.5	7.4	6.0	7.4	6.4	6.7	6.4	6.9
TailL	48.6	50.6	39.4*	41.5	48.9	44.7*	28.7*	40.6	28.2*	36.8	41.4
HeadL	13.1	21.9	12.9	12.2	13.0	12.0	13.1	11.5	11.6	11.1	11.9
HeadW	9.9	12.6	9.4	8.6	8.9	7.8	9.2	8.1	8.3	7.8	8.3
HeadH	5.6	8.9	5.1	4.6	5.2	4.2	4.8	4.2	4.5	4.3	4.5
OrbD	2.8	4.8	3.1	2.8	2.8	2.7	3.1	2.8	2.8	3.0	2.8
EyeEar	4.3	3.1	4.3	4.3	4.1	3.6	4.0	3.5	3.6	3.5	4.0
SnEye	6.0	3.9	5.7	5.2	5.8	5.2	5.3	5.5	5.5	5.4	5.6
NarEye	4.2	5.8	4.1	3.8	3.9	3.5	4.3	3.7	3.6	4.1	3.9
Interorb	6.2	4.1	6.0	5.8	6.2	5.7	5.9	5.5	5.1	5.3	5.3
EarL	1.6	5.2	1.7	1.6	1.7	1.5	1.8	1.5	1.6	1.8	1.7
InterNar	2.2	1.9	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.1	1.8

**Distribution:** Found across the southern Plaine des Lacs region from Prony Bay in the west to the Goro Plateau in the east (Fig. 7). Sympatric with *B. kunyie* sp. nov. at Kwé Nord.

**Natural History:** *Bavayia campestris* sp. nov. has been recorded from a number of maquis habitats from shrubland to preforest (Figs. 8B–C). At Kwé Nord it was most frequently observed at the interface of maquis shrubland and maquis arbustif, and in maquis paraforest. It was also recorded from within closed forest at Forêt Nord, and from coastal forest at Prony Bay, Port Boisé, and Cap N'Doua. Within closed forest habitat it has been found sheltering beneath fallen timber on the forest floor.

**Conservation Status:** *Bavayia campestris* sp. nov. meets the criteria (B1ab(ii, iii, v) + 2ab(ii, iii, v)) to be categorized as Endangered under IUCN Red List criteria. It is restricted in distribution to a small area of far southern Grande Terre, with an estimated extent of occurrence of ~800 km<sup>2</sup>. It occurs in a range of maquis and forest habitats, but has likely suffered a reduction in population size and extent from past habitat loss from wildfires. It is considered to be at an ongoing high level of threat through loss and degradation of habitat from wildfires (Ibanez et al. 2019), the expansion of the nickel mining industry (Pascal et al. 2008), predation by cats (Palmas et al. 2017), and from the introduced Fire Ant, *Wasmania auropunctata*, which has the potential to displace geckos from ground sheltering sites and arboreal foraging sites, and to affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001).

**Remarks:** Specimens from Mt. Dore (22°17'S, 166°37'E; AMS R.135664–66) may represent *B. campestris*, but these require re-examination, as the locality falls between the known ranges of this species and *B. sauvagii* sensu stricto. *Bavayia campestris* was included within *B. sauvagii* by Bauer and Sadlier (2000) and Cygnet Surveys & Consultancy (2016). Langner and Schönecker (2018) figured *B. campestris* from Cap N'Dua as *B. cf. sauvagii*.

***Bavayia kunyie* sp. nov.**

Figures 6E–G, 10.

**Holotype:** MNHN-RA-2022.0055\* (ex. AMB 7293), Mt. Gouemba, Province Sud, New Caledonia, 22°10'00.12"S, 166°56'26.88"E, coll. A.M. Bauer and R.A. Sadlier, 22 September 2002.

**Paratypes:** CAS 158329, Goro, Gite Wadiana, Province Sud, New Caledonia, 22°17'14.24"S, 167°00'53.27"E, coll. A.M. Bauer and L.A. Wishmeyer, 21 May 1985; CAS 158332, same locality and collectors as holotype, 15 June 1985; CAS 162230, same locality and collectors as holotype, 18 December 1986; CAS 182148, CAS 182151, Isle of Pines, Gite Kodjeue on Waa Mé Bay,



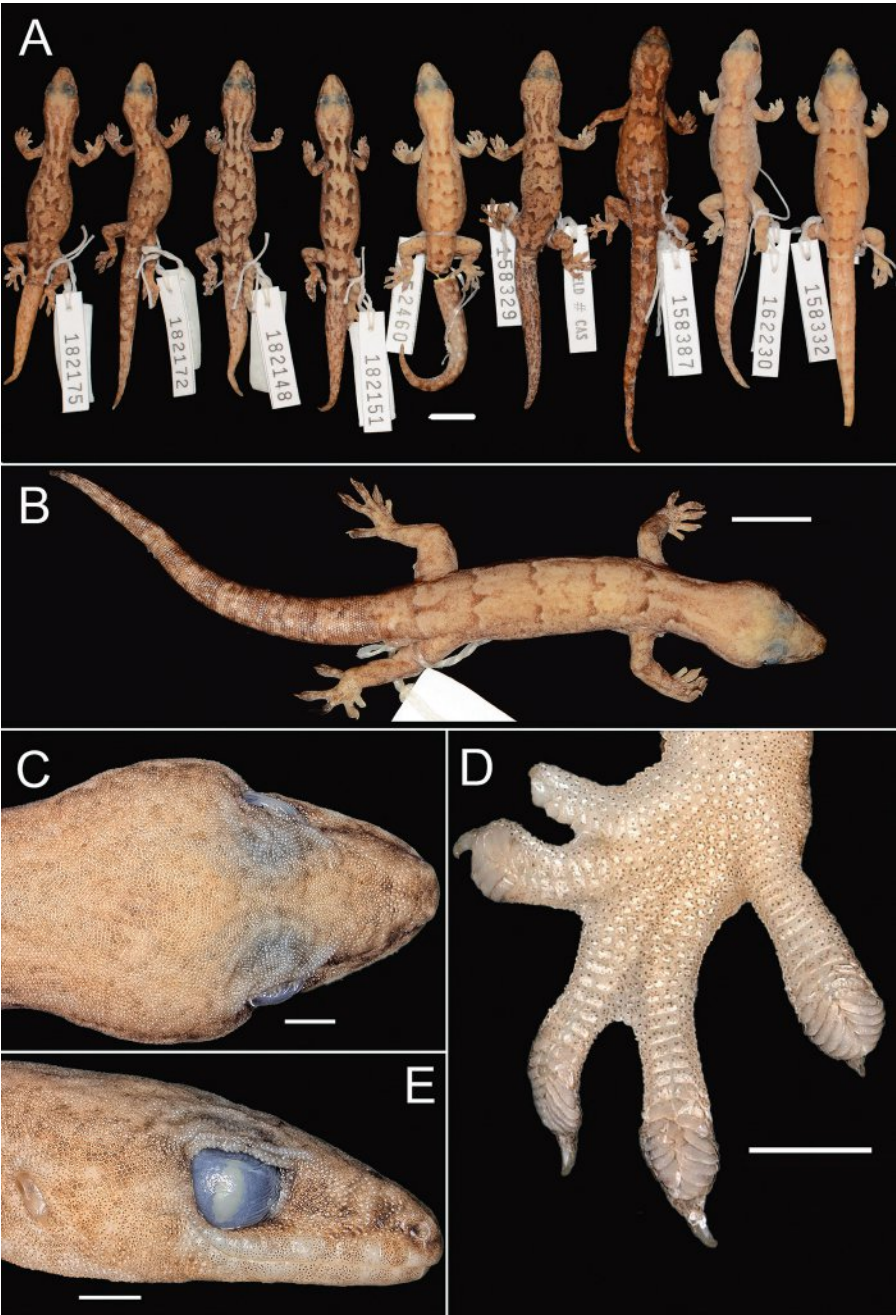


FIGURE 10. *Bavayia kunyie*, sp. nov. A) Paratype series. B–E) Holotype MNHN-RA-2022.0055 (ex. AMB 7293): B) whole body dorsal view; C) dorsal view of head; D) ventral view of right pes; E) right lateral view of head. Scale bars: (A–B) = 10 mm, (C–E) = 2 mm.

Province Sud, New Caledonia, 22°35'19"S, 167°25'39"E, coll. A.M. Bauer and R.A. Sadlier, 29 February, 1992; CAS 182175, CAS 182172, same locality and collectors as previous, 1 March 1992; YPM HERR.022291 (ex. YPM F2460), Îlot Noutiê, off of St. Gabriel, SE of Yaté, Province Sud, New Caledonia, 22°12'29.92"S, 166°59'38.65"E, coll. J. Kolby, 22 January 2003.

**Referred Material:** (all localities in Province Sud) UMMZ 174469, Moara Beach, 21°38'37"S, 166°18'11"E; AMS R.175838–45, YPM HERR.022294–96, Îlot Nemou, Baie de Port-Bouquet, Province Sud, New Caledonia, 21°40'25.9"S, 166°23'17.98"E; YPM HERR.022297, Îlot Tupeti, Baie de Port-Bouquet, Province Sud, New Caledonia, 21°41'44.61"S, 166°24'40"E; AMB 7304\* [tail only, no corresponding specimen], 30.9 km S Thio by road, 21°43'47"S, 166°25'39"E; NMBA 6995, Ngoï Valley (no precise location); AMS R.171404–06\*, R.171409, R.171410–12\*, Ni River Valley, 21°53'01.07"S, 166°32'14.45"E; AMS R.171431\*, Pourina River Valley, 22°01'39.49"S, 166°43'37.21"E; AMS R.171432, R.171444\*, Pourina River Valley, 22°01'37.88"S, 166°43'44.72"E; AMS R.171436–37, R.171439\*, Pourina River Valley, 22°01'47.18"S, 166°44'06.35"E; CAS 265766, Mt. Gouemba, 22°10'00.12"S, 166°56'26.88"E; AMS R.78128, R.78138, R.78154–58, Mt. Gouemba (base), 3 km south of La Fausse Yaté Bridge, near Yaté, 22°10'S, 166°57'E; YPM HERR.022292–93, Îlot Noutiê, off of St. Gabriel, SE of Yaté, 22°12'29.92"S, 166°59'38.65"E; MCZ R27938, NMBA 6988–90, UMMZ 64307, Yaté [no precise locality]; AMS R.174787–90\*, Goro Plateau, Wajana River drainage (upper reaches), 22°16'25.18"S, 166°59'21.76"E; AMS R.171346, Kwé Nord, 22°17'35.16"S, 166°58'40.51"E; AMS R.172902\*, Goro Plateau, Kwé Nord, 22°17'39.12"S, 166°59'04.92"E; AMS R.172914–15, Goro Plateau, Kwé Nord, 22°17'28.78"S, 166°59'09.91"E; AMS R.173928–29\*, R.173930, R.174771\*, R.174772, R.174778\*, Goro Plateau, Wajana River drainage (barrage), 22°17'30.33"S, 167°00'06.14"E; CAS 159553, Goro, Gite Wadiana, beach forest, 22°17'06.79"S, 167°01'05.7"E; AMS R.188669–70, CAS 157717–18, 158322–24, 158327, 158330–31, 162228–29, Goro, Gite Wadiana, 22°19'S, 167°00'E; CAS 265987–88\*, Île Nâ Nâ, 22°31'42"S, 167°25'15"E; CAS 203047, 203049, 203052, 203055, 203057–63\*, Isle of Pines, 22°36'33.24"S, 167°28'42.76"E; CAS 265989\*, Île Mwârêya, 22°34'07"S, 167°30'44"E; AMS R.138581–83\*, R.138584–89, R.138603–10, R.138629, R.188671, CAS 182148–57, 182171–79, 182198, Isle of Pines, Gite Kodjeue on Waa Mé Bay, 22°35'19"S, 167°25'39"E; AMS R.163257, R.163261, Isle of Pines, Île Kûûmo, 22°37'11.5"S, 167°24'40.36"E; CAS 182162–63, AMS R.138594, Isle of Pines, 3 km N of Kuto on main lowland ring-road, 22°38'00"S, 167°26'12"E; CAS 265961, Taré, Bay of Upi, SE Île des Pins, 22°38'26"S, 167°32'10"E; AMS R.163247\*, Isle of Pines, Île Aventure, 22°40'23"S, 167°27'30"E.

**Diagnosis:** A small member of the *Bavayia sauvagii* clade (maximum SVL 51.5 mm) characterized by characterized by its relatively short, depressed body and short tail (to 100% SVL); digits II–V relatively narrow; 8–15 (usually >12) relatively slender lamellae beneath digit IV of hindfoot; claw of digit I of manus and pes borne lateral to a single medial apical scansor. Single row of 15–23 precloacal pores; relatively low number of cloacal spur scales. Dorsal pattern typically with four (rarely five) symmetrical or asymmetrical, well demarcated, thin to moderately thick, dark, transverse markings between the limb insertions (very rarely with longitudinal stripes, see Fig. 6G); head usually with diffuse, dark patterning; pale nape stripes often broken longitudinally and fused transversely; flanks with whitish punctations or spots in multiple longitudinal rows. Original tail usually with dark dorsal interspaces longer than or equal to pale dorsal caudal blotches.

Among its own clade members *B. campestris* is distinguished by its smaller size (to 50.3 mm SVL) relative to *B. sauvagii* (maximum 60 mm SVL) and its larger size relative to *B. loyaltiensis* (maximum 45 mm SVL). It is further distinguished from the latter by its smaller number of

enlarged cloacal spur scales (usually 4 vs. up to 8) and by its lack of distinctly differentiated precloacal pore row from the latter species). In having dark interspaces on tail dorsum usually as long or longer than pale caudal blotches it is distinct from both *B. sauvagii* and *B. loyaltiensis*. It is most similar to *B. campestris*, which is similar in size and has similar pattern elements, although in comparison to this species it typically has less bold, contrasting and well-defined head markings and a smaller number of white spots on the flanks and lateral surface of the head.

**Description:** Based on holotype — MNHN-RA-2022.0055 (ex. AMB 7293), an adult male. Snout-vent length (SVL) 51.5 mm; trunk relatively short, depressed. Head oblong, large (HeadL 26% SVL), relatively wide (HeadW 74% HeadL), moderately depressed (HeadD 37% HeadL), distinct from neck; interorbital/frontal region broad, flat with a slight midline depression, canthus weakly developed; snout relatively long (EyeSn 43% HeadL), more than twice eye diameter (OrbD 23% HeadL). Granular scales on anterior snout approximately twice diameter of those on occipital region. Pupil vertically oriented with crenelated margins; two superciliary scales just posterior to midpoint of orbit conical, moderately elongate, pointed. Ear opening approximately 2.5 times high as wide, canted posterodorsally to anteroventrally; eye to ear distance much greater than the diameter of eye (EyeEar 148% OrbD). Rostral rectangular, much broader than high, with a short dorsal midline groove, contacted posteriorly by three wide subequal internasals and two slightly enlarged supranasals, contacted posteroventrally by first supralabial. Nostrils oval and anterolaterally oriented, surrounded by two postnasals, one crecentic nasal, one supranasal, and the rostral; in relatively broad contact with first supralabial. Mental subtriangular, approximately as deep as wide; a single enlarged, median hexagonal postmental in narrow contact with apex of mental; first infralabials each in contact posteriorly with median postmental and one smaller lateral postmental. First three to five rows of chinshields larger than remaining throat scales. Eleven enlarged supralabial scales, of which the sixth through eleventh are beneath the eye; 11 infralabial scales; 58 interorbital scale rows between superciliaries at midpoint of orbit, 21 interorbitals between the orbital margins of the frontal bone.

Dorsal scales small, homogeneous, very slightly conical, granular; ventral scales slightly larger than dorsals, juxtaposed anteriorly becoming subimbricate and somewhat enlarged posteriorly on the body. Posterior abdominal scales rounded, mid-abdominal scales elongate, diamond-shaped. Approximately 134 scale rows around midbody. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Precloacal pores in a single continuous row of 15 small, but easily discernable pores, 12 to the left of the midline and three to the right. Forearm and crus relatively short (13% and 16% of SVL, respectively), axillary pockets shallow. Digits short and moderately narrow, all bearing claws, those on digit I of both manus and pes greatly reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital lamellae typically paired, except variably single or fragmented at the base of digits. Distalmost lamella of digits II~V, manus and pes, undivided. Claw of digit I positioned lateral to a single apical scansor. Lamellar counts from holotype: 5-11-12-13-12 left manus and 5-11-13-15-13 right pes.

Mostly original tail 50.3 mm, approximately 98% of snout-vent length, tapered, stout, roughly oval in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, rectangular, arranged in regular rows. Surface of tail weakly segmented, caudal scale rows forming whorls, each whorl ~7 dorsal scale rows and 6 ventral scale rows long; midventral caudal scales not enlarged. Scales on pygal portion of tail much smaller ( $\frac{1}{2}$  to  $\frac{1}{3}$ ) than postpygal scales. Cloacal spurs comprising a radiating set of 4 conical scales directed posterodorsally and borne on a raised mound adjacent to the cloaca.

**Color in preservative:** Dorsum and flanks a speckled light brown, with a pattern consisting of contrasting dark and light markings. Three slightly asymmetrical cream to beige transverse blotches between shoulder and anterior point of hind limb insertion, each with an anterior border with two main anteriorly projecting points or bulges and a scalloped posterior edge. Each anterior edge with a weakly-differentiated narrow brown margin and each posterior edge bordered by a thicker, darker brown margin. Small white spots in roughly transverse rows lie immediately anterior to the dark posterior margins. An additional, somewhat paler, blotch, divided mid-dorsally by a diffuse dark brown line lies over the sacrum. A pair of pale markings extend from the nape on to the temporal regions of the head. These are each bordered laterally by a mid-brown stripe that extends from the nostril (anteriorly incomplete on the right side), below the canthus, through the upper half of the eye and posteriorly to the shoulder.

The crown, interorbital and frontal regions are almost patternless. A faint, incomplete transverse line, only one row of granules wide extends between the anterodorsal portion of the orbits. Irregular and diffuse dark markings on the frontal and nasal regions and on the rostral and first supralabials. Labial scales mostly whitish with fine brown speckling roughly alternating with darker brown labial markings. The finely speckled brown base pattern covers the flanks and a line of small, diffuse, white spots run longitudinally along the flanks. The limbs are mottled with predominantly pale areas alternating with irregular brown markings, especially distally. The tail has a darker brown base color than the trunk that roughly alternates with a series of cream to beige colored blotches that are largely asymmetrical and fragmented. Body venter beige, with light pigmentation, especially on the chest and ventral surface of thighs; throat with distinct, though pale mottling and with a more-or-less pigmentless central patch; mottled pattern of the flanks extending onto the lateral margins of the ventral surface; precloacal region (except for area just anterior to anterior cloacal lip) and hemipenial bulge paler than remainder of venter. Tail venter a mosaic of cream to dark brown scales forming a pattern of irregular blotches and reticulations.

**Color in life:** based on life photo of non-type AMS R.171436 (Fig. 6E) and one other specimens (Fig. 6F). A mid-brown base pattern with conspicuous dark brown speckling. Pale dorsal markings a light brown, with bright white spots in a longitudinal row along the upper border of the flanks, with another row beneath it. Light spots on labials and area in front of ear also bright white. Pale markings on tail with a pinkish cast, especially mid-dorsally, at least 10 pale markings on original tails.

**Variation:** Mensural features of paratypes are presented in Table 2. Male paratypes with 15–23 precloacal pores; no pores or dimpled scales in females. Longest original tail 103% SVL (paratype CAS 162230). Color pattern highly variable, but always with a series of pale markings alternating with darker interspaces and usually with very poor definition between the pale markings and the areas anterior to them (but see Fig. 10). Pattern ranges from very regular and symmetrical to asymmetrical, with the blotches running almost diagonally. Rarely the pattern may be dominated by a dark mid-vertebral line flanked by two pale lines of similar width and a prominent row of small white spots on the flanks. Markings on dorsum of head variable frequently faint and diffuse but may be distinct. Pale markings on tail may be regular or irregular, usually shorter or equal to length of intervening brown bands.

**Etymology:** The specific epithet is derived from *Kunyié*, the name given to the Île des Pins in the indigenous Numèè or Kwényii language used by the Kanak people of the island and extreme south of the Grande Terre.

**Distribution:** Southeast coastal regions of the Province Sud of New Caledonia from approximately the Nema River mouth south to the Baie de Goro (including small nearshore islands) and on the Île des Pins and numerous offshore islands (e.g., Île Nā Nā, Île Mwârèya, Île Kûûmo, Taré,



TABLE 2. Mensural data from the type series of *Bavayia kunyie* sp. nov.; \*tail regenerated, \*\* broken.

	Holotype	Paratypes							
	MNHN-RA 2022.0055	CAS 182175	CAS 182151	CAS 158329	CAS 182172	CAS 182148	CAS 158332	CAS 162230	YPM HERR 022291
Sex	M	F	F	F	F	F	F	M	F
SVL	51.5	47.7	46.0	45.4	42.8	46.1	46.0	42.8	46.1
ForeaL	6.7	5.1	5.6	5.9	5.3	5.4	5.4	5.3	5.4
CrusL	8.0	6.2	6.5	7.0	6.1	6.0	6.0	6.0	6.2
TailL	50.3	32.0*	34.3*	36.6*	36.1*	34.3	40.7**	44.1	46.8**
HeadL	13.4	11.8	12.1	12.4	11.3	11.7	11.1	10.7	11.6
HeadW	9.9	8.4	8.3	8.4	7.9	7.7	8	8.1	8.0
HeadH	4.9	4.5	4.2	4.6	4.2	4.4	4.3	4.4	4.5
OrbD	3.1	2.7	2.4	2.8	2.7	2.8	3.0	2.7	2.8
EyeEar	4.6	3.9	3.9	4.1	3.7	3.5	3.8	3.7	3.6
SnEye	5.8	5.1	5.2	5.9	5	5.3	5.2	5.1	5.7
NarEye	4.0	3.6	3.8	3.8	3.7	3.8	3.7	3.4	3.6
Interorb	5.8	5.1	4.7	5.2	4.9	4.9	4.9	4.5	4.8
EarL	1.7	1.7	1.6	1.6	1.5	1.6	1.5	1.7	1.7
InterNar	2.0	1.9	1.8	1.9	1.8	1.8	1.7	1.8	1.8

and Île Aventure) (Fig. 7). Its occurrence on multiple island groups around the Île des Pins suggest that it may be found on all islands providing adequate appropriate habitat.

**Natural History:** *Bavayia kunyie* sp. nov. has been recorded from a number of maquis habitats from shrubland to preforest on the Goro Plateau (Figs. 8B-E), and from within closed forest at the Ni and Pourina Rivers (Fig. 8F), and edge of closed-forest on Mt. Gouemba. In near coastal closed forest habitats on the Isle of Pines this species utilizes interstices in the coral pavement as daytime retreats (Bauer & Sadlier 1994). *Bavayia kunyie* is broadly insectivorous, (Bauer and DeVaney 1987). It has been recorded (as *B. sauvagii*) in the diet of *Rhacodactylus auriculatus* (Bauer and DeVaney 1987; Bauer 1990b).

**Conservation Status:** *Bavayia kunyie* sp. nov. meets the criteria (B1ab(ii, iii, v) + 2ab(ii, iii, v)) to be categorized as Vulnerable on the IUCN Red List. It has a distribution which extends down the southeast coast of Grande Terre to the Baie de Goro (including small nearshore islands) with an estimated extent of occurrence of ~400 km<sup>2</sup>, and on the Île des Pins and its offshore islands, with an estimated extent of occurrence of ~150 km<sup>2</sup>. It is considered to be at a high level of threat from loss and degradation of habitat from wildfires (Ibanez et al. 2019), predation by cats (Palmas et al. 2017), disturbance and habitat degradation by introduced pigs, and from the introduced Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from ground sheltering sites and arboreal foraging sites, and to affect the abundance and composition of invertebrate prey.

**Remarks:** Material from Vallée de Ngoï, and Yaté referred to *B. sauvagii* by Roux (1913) is referable to *B. kunyie*. *Bavayia kunyie* was included within *B. sauvagii* by Bauer and Sadlier (1992, 2000), de Vosjoli (1995), and Cygnet Surveys & Consultancy (2016).

***Bavayia loyaltiensis* Bauer, Telma and Sadlier, 2022**

Figure 6H.

**Holotype:** MNHN-RA-2022.0037 (ex. AMS R.125775), Cengeite, Maré Island, Loyalty Islands, Province des Îles Loyauté, New Caledonia, 21°36'S, 167°54'E, coll. H.G. Cogger and R.A. Sadlier, 19 August 1987.

**Paratypes:** AMS R.125763, R.125767–68, R.125776–77, same data as holotype; AMS R.125802, R.125811, same locality and collectors as previous, 20 August 1987; AMS R.125823, same locality and collectors as previous, 21 August 1987; CAS 38826, Maré Island, Loyalty Islands, Province des Îles Loyauté, New Caledonia, coll. F. Sarasin and J. Roux, December 1911.

**Referred Material:** (all localities in Province des Îles Loyauté) AMS R.125764–66,

R.125769–74, R.125786, R.125803, R.125812–14, Cengeite, Maré Island, Loyalty Islands, 21°36'S, 167°54'E; AMNH 24689–90, FMNH 106963, MCZ R19635, NMBA 7007, 7709–10, 7012, 7014–16, 7918–19, Netché, Maré Island, Loyalty Islands, 21°29'S, 167°51'E; NMBA 7020–21 Medou [= Medu], Maré Island, Loyalty Islands, 21°37'S, 167°57'E; NMBA 7022, Pénélo, Maré Island, Loyalty Islands, 21°34'S, 168°06'E; NMW 14745:2, AMNH 60469–71, 61589, FMNH 106964, RMNH 6787, UMMZ 64308, Maré, Loyalty Islands [no precise locality]; USNM 59008–09, Loyalty Islands [no precise locality].

**Diagnosis:** *Bavayia loyaltiensis* sp. nov. is a small member of the *Bavayia sauvagii* group (maximum 45 mm SVL), characterized by its short, depressed body, relatively short tail (100% SVL). Digits II–V relatively narrow, claw of digit I of manus and pes borne lateral to a single medial apical scansor; a maximum of 12 lamellae beneath digit IV of pes. Usually single row (in one case with a single scale in a second row) of 16–24 precloacal pores occupying a distinctive scale row; large number of cloacal spur scales. Dorsal pattern of four largely symmetrical, thin, dark transverse markings between the limb insertions, and pale head dorsum with a pair of pale nape stripes, often weakly-demarcated and/or not fused to pale shoulder blotch; dark transverse markings often mostly or entirely interrupted medially, yielding pairs of dark dorsolateral markings; two main rows of white spots on flanks.

Within the *B. sauvagii* Clade it differs in body size from its mainland relatives (maximum 45 mm vs. 60 mm SVL in *B. sauvagii* sensu stricto and at 50–51.5 mm in *B. campestris* and *B. kunyie*) and exhibits a distinctive differentiation of the precloacal pore-bearing scale row from the adjacent scale rows both anterior and posterior to it (vs. no such differentiation). Male *B. loyaltiensis* also may have cloacal spurs comprising clusters of up to at least 8 enlarged scales (see Bauer et al. 2022), whereas in other clade members it is usually 3 or 4 (up to 6 in *B. sauvagii*). In comparisons with its close relatives, *B. loyaltiensis* also has a dorsum with fewer dark pattern elements.

**Distribution:** Restricted to Maré, the southernmost island of the Loyalties (Province des Îles Loyauté) (Fig. 7). Its occurrence on the nearby islands of Tiga (Tokanod) and Dudune is possible but not confirmed.

**Natural History:** The species occurs in lowland forest formations (Fig. 11A) and in and around human-disturbed areas. It has been found in daytime retreats under exfoliating tree bark and active at night on building walls (Sadlier and Bauer 1997).

**Conservation Status:** *Bavayia loyaltiensis* meets the criteria (B1ab(ii, iii, v) + 2ab(ii, iii, v)) to be categorized as Vulnerable on the IUCN Red List. The species is endemic to Maré Island in the Loyalty Islands and has a very small distribution with an estimated extent of occurrence of 650 km<sup>2</sup>. It is presumed to have suffered past declines in population size and extent of occurrence as a result of loss of forest habitat from clearance for occupation and agriculture. It is considered to be at a high level of threat from further loss and degradation of forest habitat from clearance for agriculture and settlement, from predation by cats (Palmas et al. 2017), and from the introduced Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from ground sheltering sites and arboreal foraging sites, and to affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001).

**Remarks:** This species has previously been referred to as *Bavayia sauvagii* (Roux 1913; Bauer and Vindum 1990; Bauer and Henle 1994; Sadlier and Bauer 1997; Bauer and Sadlier 2000). Subfossil remains from Tiga, to the northwest of Maré may be referable to this species (Daza et al. 2015).

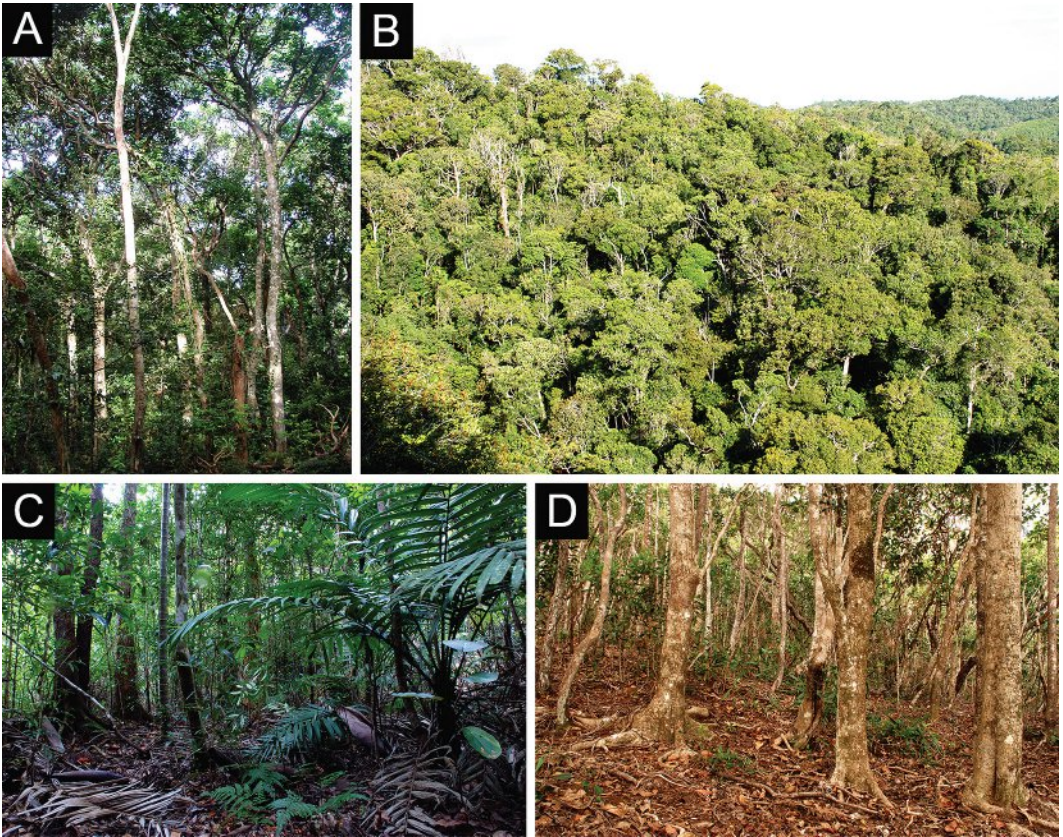


FIGURE 11. *Bavayia* habitats. A) Lowland forest on southwestern Maré, Loyalty Islands, habitat of *Bavayia loyaltiensis*; B) Mid-elevation humid forest at Parc des Grandes Fougères, Province Sud, habitat of *Bavayia kanaky* sp. nov. and *B. caillou* sp. nov.; C) Interior view of mid-elevation humid forest at Parc des Grandes Fougères, Province Sud, habitat of *Bavayia kanaky* sp. nov. and *B. caillou* sp. nov.; D) Sclerophyll forest on Mé Maoya (400 m), Province Sud, habitat of *Bavayia pulchella*. Photo A by A.M. Bauer, photos B–D by R.A. Sadlier.

### *Bavayia centralis* Clade

**Content:** *Bavayia centralis* sp. nov.; *B. caillou* sp. nov.; *B. ashleyi* sp. nov.

**Definition:** Members of the *B. centralis* Clade are distinguished from other *B. sauvagii* Group taxa by their intermediate body size (maximum 59.5–66 mm SVL vs. 72 mm in *B. geitaina* and 60 mm or less in other clades) and the placement of the claw of digit I of the manus and pes lateral to a single medial apical scansor (vs. between a much larger medial and a much smaller lateral scansor in the *B. pulchella*, *B. exsuccida*, and *B. geitaina* Clades). The dorsum typically bears a pattern of four (rarely five) chevrons or blotches between limb insertions (vs. five or more in *B. geitaina*). These geckos are most similar in general appearance to members of the *B. sauvagii* Clade but are typically larger and more commonly exhibit fragmentation of the transverse dark dorsal pattern elements.

#### *Bavayia centralis* sp. nov.

Figures 2A, 12C–D, 13.

**Holotype:** MNHN-RA-2022.0041 (ex. AMS R.144183), Houailou–Bourail road, 4.6 km N of



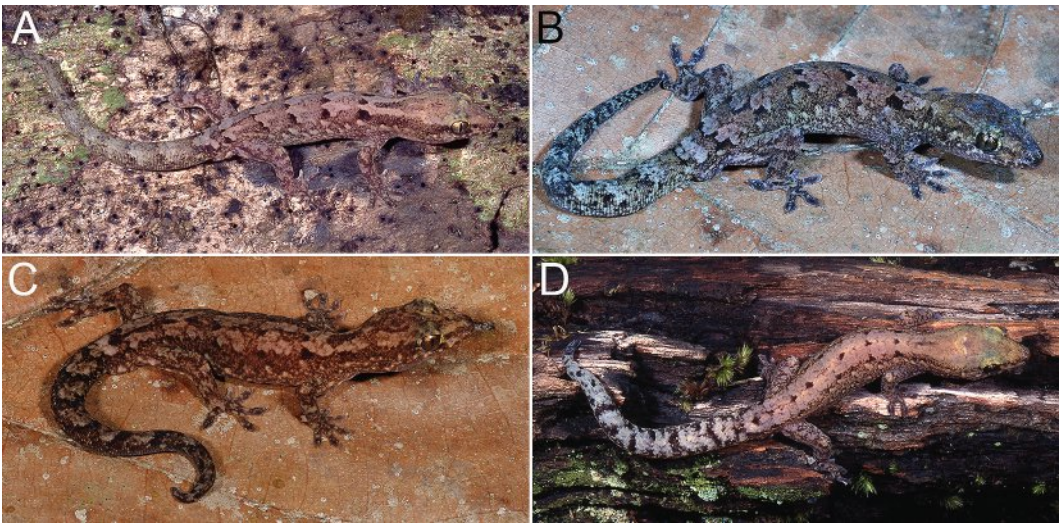


FIGURE 12. Life photographs of representatives of the *Bavayia centralis* Clade. A) *B. ashleyi* (non-type), Mt. Aoupinié; B) *B. caillou* (non-type), Parc des Grandes Fougères; C) *B. centralis* (non-type, AMS R.172742), Mé Meoya; D) *B. centralis* (paratype, CAS 265727, ex. AMS R.149851), Mé Adio. All photos by R.A. Sadlier.

Col des Roussettes on Houaïlou–Bourail road, Province Nord, New Caledonia, 21°24'11"S, 165°26'30"E, coll. R.A. Sadlier, 19 August 1994.

**Paratypes:** AMS R.144184, data as for holotype; AMS R.149852, AMS R.149854, CAS 265727 (ex. AMS R.149851), Néoua Area, Mé Adéo, Province Sud, New Caledonia, 21°28'52"S, 165°36'51"E, coll. R.A. Sadlier, 24 October 1996; AMS R.149863, CAS 265728\* (ex. AMS R.149864), CAS 265729 (ex. AMS R.149866), Néoua Area, Mé Adéo, Province Nord, New Caledonia, 21°28'S, 165°37'E, coll. R.A. Sadlier and A.H. Whitaker, 25 October 1996; CAS 265730 (ex. AMS R.149913), Néoua Area, Mé Adéo, Province Sud, New Caledonia, 21°29'41"S, 165°37'26"E, coll. R.A. Sadlier and A.H. Whitaker, 26 October 1996; AMS R.149928, same locality and collectors as previous, 1 November 1996.

**Referred Material:** NMBA 6991–92, Boréaré, Province Nord, 21°21'09"S, 165°28'13"E; AMS R.165821–23, Col de Roussettes on Houaïlou–Bourail road, Province Nord, 21°24'02"S, 165°26'27"E; AMS R.135076–77\*, R.135078–80, CAS 175526, Perlou (vic.), 8 km west of Coula on Bourail road, Province Nord, 21°23'S, 165°26'E; AMS R.77543–44, Bourail–Houaïlou road, 21 km N of junction with Poya–Bourail road, Province Nord, 21°24'11"S, 165°26'30"E; NMBA 6993–94, Ni (ca. 250 m), 21°26'S, 165°29"E; AMS R.172742, R.172743\*, R.172744–48, R.172749\*, R.172750, R.172751\*, R.172752, R.172791–93, Mé Maoya (site 1), Province Sud, 21°26'19.84"S, 165°21'15.39"E; SMF 9030, Ni, 21°26'S, 165°29'E; AMS R.149940, R. 149941\*, R.149942, Bourail area, ranges west of Mé Adéo, Province Sud, 21°28'S, 165°33'E; AMS R.144185, R.144186\* Houaïlou–Bourail road, 4.6 km N of Col des Roussettes on Houaïlou–Bourail road, Province Nord, 21°24'11"S, 165°26'30"E; AMS R.149850, R.149853\*, 149854–59, R.149914–16, Néoua Area, Mé Adéo, Province Sud, 21°28'52"S, 165°36'51"E; AMS R.149862, R.149865\*, Néoua Area, Mé Adéo, Province Nord, 21°28'S, 165°37'E; AMS R.149929\*, Néoua Area, Mé Adéo, Province Sud, 21°29'41"S, 165°37'26"E.

**Diagnosis:** A medium-sized member of the *B. centralis* clade (maximum SVL 60.1 mm, AMS R.149863) with a short, depressed body, long snout, large eyes and an estimated original tail length slightly greater than SVL; digits II–V relatively narrow, but expanded distally; 10–14 lamellae



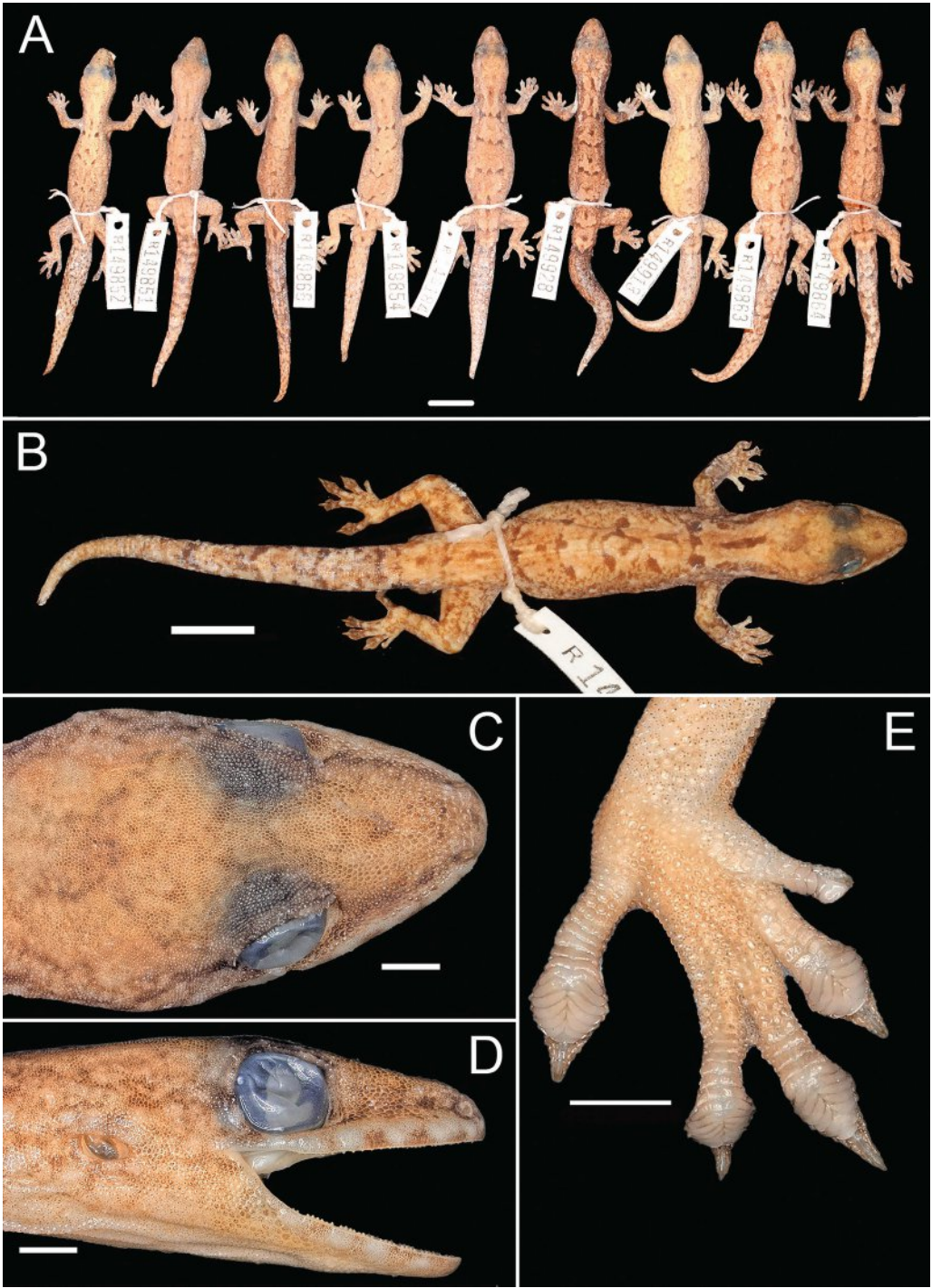


FIGURE 13. *Bavayia centralis* sp. nov. A) Paratype series. B–E) Holotype MNHN-RA-2022.0041 (ex. AMS R.144183): B) whole body dorsal view; C) dorsal view of head; D) right lateral view of head; E) ventral view of left pes. Scale bars: (A–B) = 10 mm, (C–E) = 2 mm.

beneath digit IV of hindfoot; claw of digit I of manus and pes borne lateral to a single medial apical scansor. Single row of 20–27 precloacal pores. Dorsal pattern of four weakly defined symmetrical to asymmetrical dark dorsal chevrons or transverse markings between limb insertions; paired pale streaks continuous or broken, extending from pale blotch over shoulders on to upper temporal region of head. Head with few if any markings besides a canthal stripe; a mid-sacral dark line often present, white spots on flanks.

Within the *B. centralis* Clade, *B. centralis* may be distinguished from *B. ashleyi* sp. nov. by its smaller size (60.1 vs. 66 mm maximum SLV) and from both *B. ashleyi* and *B. caillou* by the complete or partial continuity of the pale markings of the head and those of the shoulder.

**Description:** Based on holotype MNHN-RA-2022.0041 (ex. AMS R.144183), an adult male. Snout-vent length (SVL) 57.8 mm; trunk relatively long, gracile, depressed. Head oblong, moderately large (HeadL 25% SVL), moderately wide (HeadW 68% HeadL), not depressed (HeadD 34% HeadL), distinct from neck; interorbital/frontal region with slight midline depression, canthus well developed; snout long (EyeSn 43% HeadL), much less than twice eye diameter (OrbD 25% HL). Granular scales on anterior snout approximately two to four times diameter of those on occipital region. Pupil vertically oriented with crenelated margins; several superciliary scales in posterodorsal quadrant of orbit conical, moderately elongate, pointed. Ear opening approximately 1.5 times high as wide, canted posterodorsally to anteroventrally; eye to ear distance only slightly greater than the diameter with of eye (EyeEar 114% OrbD). Rostral rectangular, much broader than high, no median crease, contacted posteriorly by five small, roughly rectangular internasals and two slightly enlarged supranasals, contacted posteroventrally by first supralabial. Nostrils oval and anterolaterally oriented, surrounded by four postnasals, one supranasal, and the rostral; in broad contact with first supralabial. Mental subtriangular, slightly wider than deep; a single enlarged, median, elongate octagonal postmental in broad contact with apex of mental, separating first infralabials from one another; first infralabials each in contact posteriorly with median postmental and two smaller lateral postmentals. First three rows of chin shields larger than remaining throat scales. 10 L, 10 R enlarged supralabial scales, of which the 8th through 10th are beneath the eye; 10 L, 10 R infralabial scales; 47 interorbital scale rows between superciliaries at midpoint of orbit, 15 interorbitals between the orbital margins of the narrowest point of frontal bone.

Dorsal scales small, homogeneous, very slightly conical, granular; ventral scales slightly larger than dorsals, juxtaposed anteriorly becoming subimbricate and somewhat enlarged posteriorly on the body. Posterior abdominal scales rounded, mid-abdominal scales elongate, diamond-shaped. Approximately 131 scale rows around midbody. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Precloacal pores small and difficult to discern, in a single continuous row of 25. Forearm and crus short (12% and 14% of SVL, respectively), axillary pockets shallow. Digits long and moderately narrow, all bearing claws, those on digit I of both manus and pes reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital lamellae typically paired, except variably single or fragmented at the base of digits. Distalmost lamella of digits II–V, manus and pes, undivided. Claw of digit I positioned lateral to a single apical scansor. Lamellar counts from holotype: 6-10-10-12-12 right manus and 6-11-11-13-11 left pes.

TailL 54.4 mm (distal 21.4 mm regenerated), approximately 94% of snout-vent length, tapered, relatively slender, roughly oval in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, rectangular, arranged in regular rows. Surface of tail weakly segmented, caudal scale rows forming whorls, each whorl ~7 dorsal scale rows and 6 ventral scale rows long; midventral caudal scales not enlarged. Scales on pygal portion of tail much smaller ( $\frac{1}{2}$  to  $\frac{1}{3}$ ) than

postpygal scales. Cloacal spurs consisting of a pair of large, compressed, flattened, conical, posterodorsally directed scales, just posterolateral of the cloaca.

**Color in preservative:** Dorsum and flanks mottled light brown with small, irregularly distributed darker brown markings and vague, irregular, cream to whitish spots, with a bold pattern of five irregular, sometimes broken, medium brown transverse markings between the limb insertions, each preceded by a transverse series of tiny whitish spots, anterior to which lies a cream to beige-colored blotch with irregular margins, ill-defined anteriorly but more discrete laterally and posteriorly. Each blotch bears scattered medium brown markings centrally. Extensions of the transverse markings, or non-contiguous middorsal longitudinal markings give the impression of broken vertebral stripe on the anterior half of the body. The flanks bear somewhat irregular longitudinal series of brown-rimmed whitish spots extending forward to behind the orbit and posteriorly on to the ventrolateral margins of the original tail. The shoulder patch is the most prominent of the transverse dark markings and is divided into three squarish lobes connected to one another posteriorly. Anterior to this the shoulders, neck and head dorsum are chiefly beige, with a prominent middorsal, longitudinal, medium brown neck marking, a diffuse light brown blotch on the posterior part of the parietal table, diffuse light brown markings supraorbitally and at mid-snout, and a medium brown line passing from the snout, through and beneath the eye and on to the temporal region, where it continuous with a bolder, more well-defined medium brown streak on the dorsolateral margin of the neck. Limbs mottled like trunk, with cream to beige blotches and medium brown reticulations. Small beige to cream to ashy spots are present on the digits. Pygal portion of tail with an ill-defined bilobed, transverse, cream-colored marking that spans the tail base constriction. This is followed on the post-pygal part of the tail by a narrow light brown band followed by a short beige and cream transverse marking. Posterior to this is a bolder, longer medium brown band and then a series of three relatively elongate beige and cream markings, each followed by a much shorter medium brown band and with bold to diffuse light and medium brown internal markings. Distally the regenerated tail is a mottled light brown with no distinct patterning. Body venter beige to light brown throughout, with darker pigmentation under the limbs, around the cloaca, at the body margins and on the chin and throat. Subcaudal surfaces light to medium brown with scattered beige to cream markings.

**Color in life:** based on paratype CAS 265727 (ex. AMS R.149851, Fig. 12D). Body dorsum a pale dusky pinkish brown with pale elements dominating the dorsum. Dark brown transverse markings on trunk completely divided, yielding a median series and two lateral series of longitudinal dark markings, with the lateral markings connected by a line formed by dense mottling of medium to dark brown at the dorsal margin on the flanks. Immediately below this lateral line is an upper series of cream to pinkish-brown spots with incomplete brown borders, which forms a longitudinal series form behind the orbit onto the lateral margins of the tail; a second similar line of somewhat smaller spots below this extending between the limb insertions. Pale, roughly circular markings on the elbows and knees; remainder of limbs mottled with pale grayish-brown blotches and chocolate brown reticulations. Head dorsum a light brown on the crown with a weakly differentiated grayish brown from the neck on to the upper temporal regions. A dark brown line extending from the snout, through the eyes, and across the lower temporal region and on to the side of the neck, where it is continuous with the dark dorsal margin of the flanks. Dorsal rims of orbits pale yellowish. Iris coppery. Post-pygal part of tail alternating ashy gray and dark brown, with pale markings much longer than the darker. Regularity of banding decreasing distally. Regenerated portion of tail similar in color to original but with dark markings appearing as irregular short dashes and lines. Ventral coloration a beige to light brown. A second specimen for which life color is documented (AMS R.172742, Fig. 12C) is darker overall with light brown pale dorsal blotches on

a mottled medium brown background. It also has darker and more well-defined head patterning, featuring an X-shaped mark across the parietal table. The whitish spots on the flanks fall less discretely into two separate rows and the white spots bordering the lower margin of the lateral stripe are particularly evident. The markings on the dorsum of the original tail are gray-brown and discrete along the length of the tail with clear dark brown interspaces, six such markings on original portion of tail.

**Variation:** Mensural features of paratypes are presented in Table 3. Paratypes with 1–5 internasals contacting the rostral. First infralabials separated behind the mental in all paratypes by an enlarged median postmental chin shield; posterior apex of mental usually truncated forming a flat posterior margin and resulting in extensive contact with the postmental chin shield. Collectively the first infralabials border 2–4 enlarged postmental shields. Male paratypes with a single row of ~20–27 precloacal pores (number approximate as pores are very small and show little contrast with the scales in some individuals); no pores or dimpled scales in females. Longest partly regenerated tail 94% SVL (MNHN-RA-2022.0041 and CAS 265727). Color pattern variable but typically with darker dorsal transverse markings fragmented and often with the central components of these forming, with the brown middorsal neck streak, a broken vertebral marking on the anterior of the body. Four or five dark transverse markings present between limb insertions. Anterior margins of dorsal pale markings diffuse or even indiscernible. Pale markings on tail 6–10 in longer original tails, may be elongate and boldly margined (e.g., CAS 265729), or shorter and more irregular (e.g., CAS 265727) (Fig. 13A).

TABLE 3. Mensural data from the type series of *Bavayia centralis* sp. nov.; \*tail regenerated.

	Holotype	Paratypes								
	MNHN-RA 2022.0041	AMS R.149852	CAS 265728	CAS 265730	AMS R.149863	CAS 165727	CAS 265729	AMS R.149854	AMS R.144184	AMS R.149928
Sex	M	F	M	F	F	M	M	M	F	M
SVL	57.8	51.2	57.2	55.8	60.1	52.2	52.2	51.7	56.0	57.9
ForeaL	6.8	6.0	6.2	6.4	7.4	6.1	6.4	6.4	6.6	6.7
CrusL	8.1	7.5	7.4	7.9	9.3	7.0	7.3	7.2	7.8	8.4
TailL	54.4*	40.9*	47.2*	39.7*	49.3*	49.0	44.3*	38.3	41.5*	34.2*
HeadL	14.4	13.3	14.0	14	15.1	12.7	13.5	13.3	13.6	14.4
HeadW	9.8	9.3	10.1	9.3	10.6	9.7	9.5	9.4	9.2	10.0
HeadH	4.9	4.8	5.1	5.0	5.4	5.2	4.9	4.7	5.0	5.1
OrbD	3.6	3.0	3.7	3.7	3.6	3.1	3.1	3.2	3.3	3.5
EyeEar	4.1	4.2	4.3	4.3	4.7	4.2	4.3	4.0	4.5	4.5
SnEye	6.2	6.2	6.1	6.0	6.3	5.6	5.8	5.9	5.6	6.1
NarEye	5.0	4.3	4.7	4.7	4.7	4.6	4.8	4.5	4.3	4.2
InterOrb	5.9	5.7	5.4	5.9	6.0	5.4	5.7	5.8	5.6	5.8
EarL	1.5	1.5	1.7	1.7	1.8	1.5	1.4	1.4	1.6	1.8
InterNar	1.9	1.9	1.9	1.8	1.7	1.7	1.7	1.9	1.9	1.8

**Etymology:** The epithet *centralis* is a Latin adjective in the nominative feminine singular meaning central and referring to the distribution of this species in the Chaîne Centrale and in the approximate center of the Grande Terre.

**Distribution:** The range of this species straddles the border between the Province Sud and Province Nord. It ranges from Mé Maoya in the west, through the Col des Roussettes and across the Houaïlou River Valley to the area of Néoua (Fig. 14). The identity of specimens from Boréaré (NMBA 6991–92) needs to be confirmed, but the locality is only 6 km from the type locality of *B. centralis* and we have here tentatively accepted this identification.

**Natural History:** *Bavayia centralis* sp. nov. has only been recorded from within, or at the edge of, closed-forest habitat primarily on metamorphic surfaces. It has been found sheltering by day beneath loose rocks and fallen timber on the forest floor, and active at night on small trees and understory vegetation. The population at Mé Adéo lies within, or in close proximity to, forest



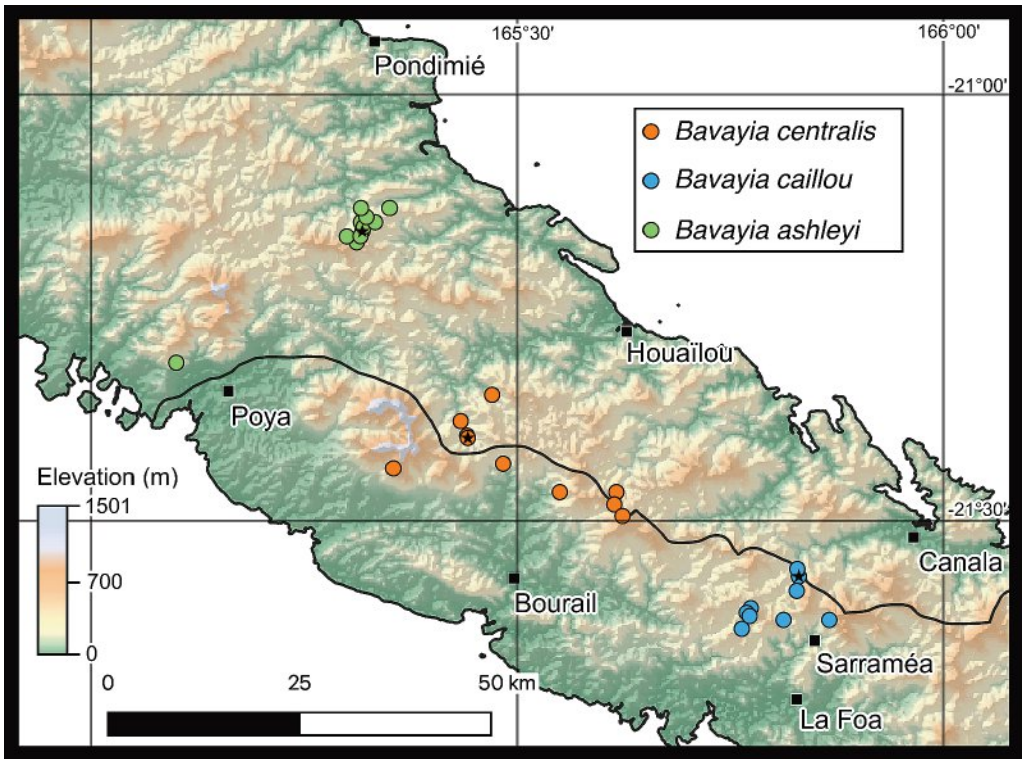


FIGURE 14. Map showing the distribution of members of the *Bavayia centralis* Clade. *Bavayia centralis* (orange), *B. caillou* (blue), *B. ashleyi* (green). Stars indicate type localities. Cartography by J. DeBoer.

habitat on ultramafic surfaces. Most females in a large series collected in late October 2009 were gravid.

**Conservation Status:** *Bavayia centralis* sp. nov. meets the criteria (B1ab(iii) + 2ab(iii)) to be categorized as Endangered on the IUCN Red List. It is restricted in distribution to a small area of the central ranges, with an estimated extent of occurrence of 400 km<sup>2</sup>. It is expected to have undergone a reduction in population size and extent as a result of past loss and degradation of forest habitat from wildfires in adjacent savannah woodland and maquis shrubland. Across its range it is considered to be at a high level of threat from ongoing loss and degradation of forest habitat from wildfires (Ibanez et al. 2019), and from the introduced Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from ground sheltering sites and arboreal foraging sites, and to affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001). The population on ultramafic surfaces (Mé Adéo) is at risk from the potential for expansion of the nickel mining industry (Pascal et al. 2008).

**Remarks:** Specimens from Mine Pinpin and Mt. Krapé in the Poya area (AMS R.175805, R.175807, R.175826–28, R.179512–15) and from Bourail (AMS R.135663, R.175874–76) require examination as both *B. centralis* sp. nov. and *B. pulchella* occur in the region. *Bavayia sauvagii* from Ni referenced by Roux (1913) and from Mé Adéo cited by Bauer et al. (1998) are assignable to *B. centralis*. Note that Roux's locality Ni is inland from Bourail and should not be confused by the Ni River on the east coast.

***Bavayia caillou* sp. nov.**

Figures 12B, 15.

**Holotype:** MNHN-RA-2022.0040\* (ex. AMS R.144155), La Foa road, 5.4 km from Kouaoua/Canala Road intersection, Province Sud, New Caledonia, 21°33'56"S, 165°49'51"E, coll. R.A. Sadlier, 18 August 1994.

**Paratypes:** CAS 265721–22 (ex. AMS R.144156–57, AMS R.144158, R.144160–61, data as for holotype; AMS R.135071, La Foa road, 8.3 km from Kouaoua/Canala Road intersection, Province Sud, New Caledonia, 21°33'56"S, 165°49'51"E, coll. R.A. Sadlier and A.M. Bauer, 6 March 1990; AMS R.135056, CAS 265719\* (ex. AMS R.135057), CAS 265720 (ex. AMS R.135059), vicinity Col d'Amieu, 7.9 km (by air) NW Sarraméa, Canala road, Province Sud, New Caledonia, 21°37'00"S, 165°48'46"E, coll. R.A. Sadlier and A.M. Bauer, 3 March 1990; CAS 265718\* (ex. AMS R.147858), Plateau de Dogny (track below plateau to Sarraméa), 21°37'S, 165°52'E, coll. R.A. Sadlier and G. Shea, 16 September 1995.

**Referred Material:** (all localities in Province Sud) AMS R.144151, R.144159, R.144162, data as for holotype; NMW 19671, Rivière Negropo at Koh, 21°33'24.68"S, 165°49'44.52"E; AMS R.135072, R.135177, CAS 175533 La Foa road, 8.3 km from Kouaoua/Canala Road intersection, 21°33'56"S, 165°49'51"E; AMS R.174530, R.174559–63, CAS 264282–84, Parc des Grandes Fougères, Pic Vincent, 21°36'10.08"S, 165°46'27.08"E; AMS R.174564, R.174565\*, R.174566, CAS 264203\*, CAS 264204, CAS 264279\*, Parc des Grandes Fougères, Aire du Carpolepis, 21°36'43.42"S, 165°46'22.08"E; AMS R.174634–36, Parc des Grandes Fougères, Aire du Houp, 21°36'29.88"S, 165°46'9.41"E; AMS R.174656, CAS 264281, Parc des Grandes Fougères, entrance, 21°37'37.38"S, 165°45'49"E; AMS R.135055\*, R.135058, R.135060, CAS 175523–24, USNM 267842, vicinity Col d'Amieu, 7.9 km (by air) NW Sarraméa, Canala road, 21°37'00"S, 165°48'46"E.

**Diagnosis:** A medium-sized member of the *B. centralis* clade (maximum SVL 59.5 mm, AMS R.135056) with a short, depressed body, long snout, large eyes and an estimated original tail length slightly greater than SVL; digits II–V relatively narrow, but expanded distally; 10–13 lamellae beneath digit IV of hindfoot; claw of digit I of manus and pes borne lateral to a single medial apical scansor. Single row of 24–30 precloacal pores. Dorsal pattern of four weakly to moderately well defined symmetrical to asymmetrical dark dorsal chevrons or transverse markings between limb insertions; dorsum of head pale, without prominent dorsal markings and usually separated from the pale blotch over the shoulders (i.e., without continuous pale streaks from shoulder to upper temporal region). Mid-sacral dark line present or absent, white spots on flanks.

Within the *B. centralis* Clade, *B. caillou* may be distinguished from *B. ashleyi* sp. nov. by its smaller size (60.1 vs. 66 mm maximum SLV) and from *B. centralis* by its part or complete separation of the pale markings of the head from those of the shoulder, yielding a dark collar or diamond-shaped marking over the nape.

**Description:** Based on holotype MNHN-RA-2022.0040 (ex. AMS R.144155), an adult male. Snout-vent length (SVL) 51.8 mm; trunk relatively long, gracile, depressed. Head oblong, moderately large (HeadL 24% SVL), moderately wide (HeadW 71% HeadL), not depressed (HeadD 37% HeadL), distinct from neck; interorbital/frontal region with midline depression, canthus well developed; snout very long (EyeSn 46% HeadL), approximately twice eye diameter (OrbD 28% HeadL). Granular scales on anterior snout approximately two to three times diameter of those on occipital region. Pupil vertically oriented with crenelated margins; several superciliary scales in posterodorsal quadrant of orbit conical, moderately elongate, pointed. Ear opening approximately 1.5 times high as wide, canted posterodorsally to anteroventrally; eye to ear distance same as diameter of eye (EyeEar 100% OrbD). Rostral rectangular, much broader than high, no median crease, contacted

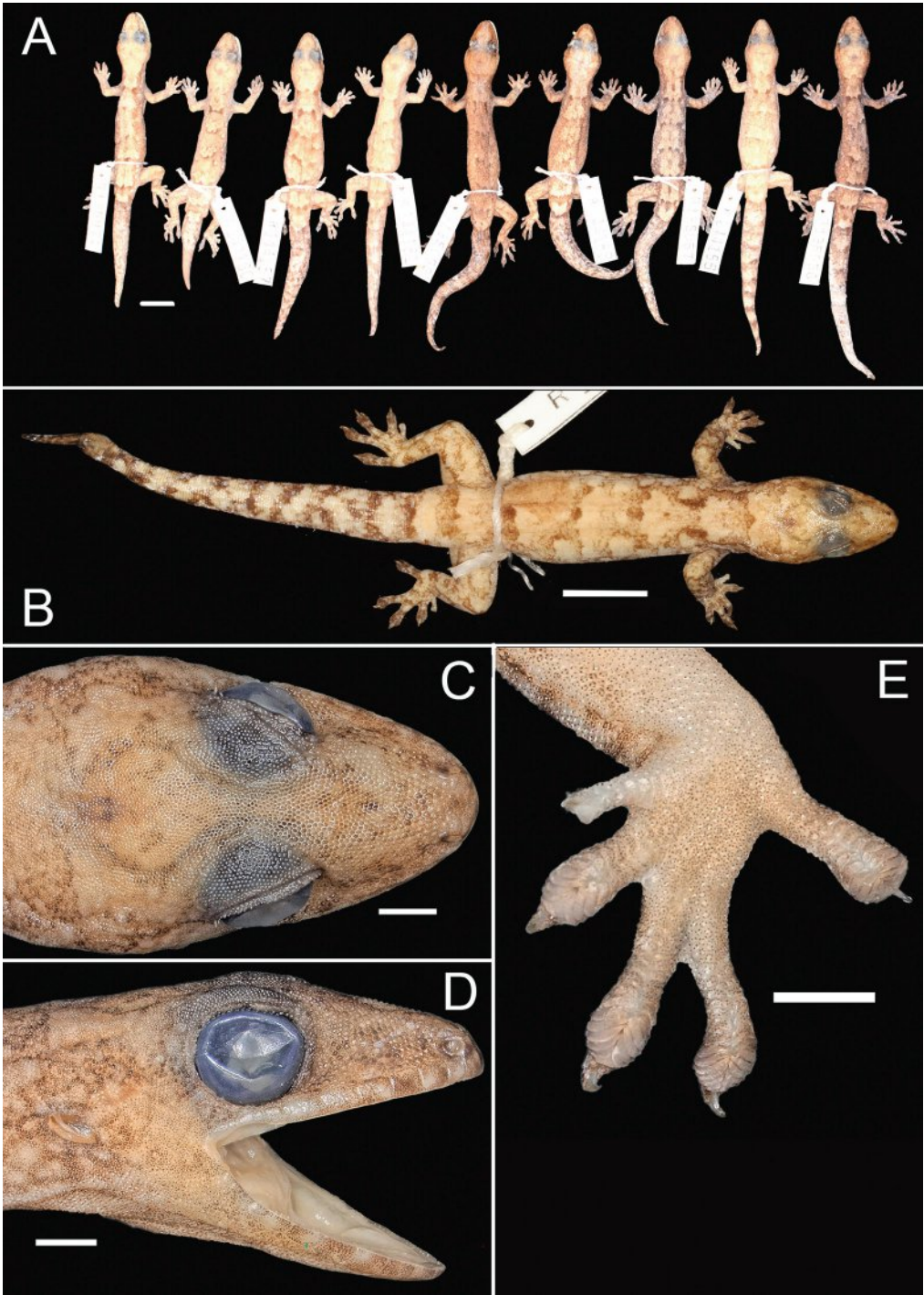


FIGURE 15. *Bavayia caillou* sp. nov. A) Paratype series. B–E) Holotype MNHN-RA-2022.0040 (ex. AMS R.144155): B) whole body dorsal view; C) dorsal view of head; D) right lateral view of head; E) ventral view of right pes. Scale bars: (A–B) = 10 mm, (C–E) = 2 mm.



posteriorly by three small, roughly circular internasals and two slightly enlarged supranasals, contacted posteroventrally by first supralabial. Nostrils oval and anterolaterally oriented, surrounded by three postnasals, one supranasal, and the rostral; in broad contact with first supralabial. Mental subtriangular, approximately as wide as deep; a single enlarged, median, elongate octagonal postmental in broad contact with apex of mental, separating first infralabials from one another; first infralabials each in contact posteriorly with median postmental and two (left) or one (right) smaller lateral postmental chin shields. First three to four rows of chin shields larger than remaining throat scales. 10 L, 9 R enlarged supralabial scales, of which the 7<sup>th</sup> through 9<sup>th</sup> are beneath the eye on the right side; 9 L, 10 R infralabial scales; 47 interorbital scale rows between superciliaries at midpoint of orbit, 15 interorbitals between the orbital margins at narrowest point of frontal bone.

Dorsal scales small, homogeneous, very slightly conical, granular; ventral scales slightly larger than dorsals, juxtaposed anteriorly becoming subimbricate and somewhat enlarged posteriorly on the body. Posterior abdominal scales rounded, mid-abdominal scales elongate, diamond-shaped. Approximately 142 scale rows around midbody. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Precloacal pores small and difficult to discern, in a single continuous row of 25. Forearm and crus short (12% and 15% of SVL, respectively), axillary pockets shallow. Digits long and moderately narrow, all bearing claws, those on digit I of both manus and pes reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital lamellae typically paired, except variably single or fragmented at the base of digits. Distalmost lamella of digits II–V, manus and pes, undivided. Claw of digit I positioned lateral to a single apical scissor. Lamellar counts from holotype: 4-9-10-11-9 left manus and 6-10-11-12-11 right pes.

TailL 49.5 mm (distal 10.0 mm regenerated), approximately 96% of snout-vent length, tapered, moderately stout, roughly oval in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, rectangular, arranged in regular rows. Surface of tail weakly segmented, caudal scale rows forming whorls, each whorl ~7 dorsal scale rows and 6 ventral scale rows long; midventral caudal scales not enlarged. Scales on pygal portion of tail much smaller ( $\frac{1}{2}$  to  $\frac{1}{3}$ ) than postpygal scales. Cloacal spurs consisting of three large, compressed, flattened, conical, posterodorsally directed scales, just posterolateral of the cloaca.

**Color in preservative:** Dorsum and flanks mottled light brown with small, irregularly distributed darker brown markings and vague, irregular, cream to whitish spots or blotches, with a relatively bold pattern of four irregular, mostly broken, medium to dark brown transverse markings between the limb insertions, each preceded by a cream (medial) to beige-colored (lateral) blotch with irregular margins, ill-defined anteriorly and laterally and more discretely posteriorly. Each blotch bears scattered medium brown markings centrally. The midline portions of the dark transverse markings are mostly partly or completely separated from their lateral components and yield a series of middorsal spots down the trunk. Laterally a series of large whitish to cream spots with diffuse brown borders extend from just lateral to the paired dark shoulder markings to the hind limb insertion; two series of smaller such spots run down the flanks more ventrally. Dark shoulder markings contiguous with a scalloped nape band and enclosing a bilobed cream blotch between them. Head dorsum anterior to nape band mostly cream to beige with diffuse brown markings on the posterolateral corners of the parietal table, mid-parietal table, and antorbitally. A medium brown streak runs from the snout, through the eye and on to the lower temporal region, from whence it is contiguous with the lateral connectors between the nape band and dark shoulder patches. Labial scales mostly brown with white, pigmentless or nearly pigmentless patches within individual scales, particularly anteriorly; posterior labials, especially supralabials, mostly whitish. Limbs



mottled like trunk, with cream to beige blotches and medium brown reticulations or banding. Small beige to cream to whitish spots are present on the digits. Pygal portion of tail with a well-defined, transverse, cream-colored marking that spans the tail base constriction. This is followed on the post-pygal part of the tail by a narrow light brown band followed on the post-pygal portion of the tail by a series of nine alternating sets of whitish and medium brown markings, the former longer than the latter, becoming more irregular posteriorly. Regenerated portion of tail grayish brown and with no defined pattern for a short distance then constricting and bent for its last ~7 mm with dark brown markings. Body venter beige with darker pigmentation under the limbs, around the cloaca, and on the chin and throat. Subcaudal surfaces light to medium brown with scattered beige to cream markings.

**Color in life:** (based on non-type specimen, see Fig. 12B). Body dorsum a grayish- to pale olive brown with four broken bands of transverse dark brown markings between limb insertions, each preceded by a row of whitish granules and a light dorsal blotch, ashy to pale pinkish brown in color. Flanks bearing two irregular longitudinal series of whitish spots with incomplete dark brown borders, extending cranially to the lower temporal region and caudally on to the ventrolateral margins of the original tail. Snout dark, with a radiating streak to and through the eye and on to the temporal region on both sides. Labial scales dark brown with distinct bright white spots or flecks that are in line with those at the lower margin of the dark temporal streak. Portions of orbital rims, bright whitish; iris coppery. Limbs similar to trunk, with irregular grayish-brown, medium to dark brown, and dusky pinkish-brown mottling and banding. Pygal portion of tail with a transverse ashy marking with a thin dark brown margin straddling the tail constriction. Post-pygal tail grayish brown with six whitish dorsal markings separated by shorter interspaces and each bordered posteriorly by an irregular dark brown margin. Ventrolateral margin to tail with a longitudinal series of whitish spots continuous with those on flanks but become indistinct caudally. Regenerated tail with irregular narrow banding. Ventral surfaces light brown with darker areas around the cloaca, under the limbs and tail and on the throat and chin.

**Variation:** Mensural features of paratypes are presented in Table 4. Paratypes with 2–4 (usually 3) internasals contacting the rostral. First infralabials separated behind the mental in all paratypes by an enlarged median postmental chin shield; broadly separated in most, more narrowly so in AMS R.144161 and AMS R.144158. Collectively the first infralabials border 3 enlarged chin shields (four in CAS 265721, in which the left first infralabial contacts the median and two, instead of one, smaller lateral chin shields). Male paratypes with a single row of ~24–30 precloacal pores (number approximate as pores are very small and show little contrast with the scales in some individuals); no pores or dimpled scales in females. Longest partly regenerated tail 97% SVL

TABLE 4. Mensural data from the type series of *Bavayia caillou* sp. nov.; \*tail regenerated.

	Holotype		Paratypes								
	MNHN-RA 2022.0040	AMS R.135071	CAS 265719	CAS 265721	AMS R.144158	AMS R.144161	CAS 265720	AMS R.144160	AMS R.135056	CAS 265722	CAS 265718
Sex	M	F	M	F	M	M	F	M	F	F	F
SVL	51.8	54.4	56.0	52.34	53.5	50.9	58.2	53.5	59.5	54.5	58.8
ForeaL	6.4	6.4	7.0	6.5	6.3	6.2	6.4	5.7	6.8	6.3	8.2
CrusL	7.8	7.8	9.2	7.7	8.1	7.5	8.7	7.8	8.1	7.7	9.4
TailL	49.5*	36.9*	37.2*	50.6	31.7*	38.9*	42.8*	21.4*	54.4*	38.6*	46.3*
HeadL	12.3	13.8	14.8	12.8	14.1	11.6	14.3	13.6	14.7	13.6	6.7
HeadW	8.7	9.6	10	8.8	10.0	9.0	9.6	9.0	10.0	8.8	16.4
HeadH	4.5	4.6	5.3	4.4	4.6	4.4	4.8	4.5	5.3	4.7	10.1
OrbD	3.4	3.8	3.6	3.3	3.6	3.2	3.5	3.5	3.8	3.3	6.2
EyeEar	3.4	3.6	3.8	3.6	3.8	3.7	3.75	3.8	4.1	3.7	3.8
SnEye	5.7	5.8	6.4	5.6	6.4	5.2	6.9	5.9	6.7	6.1	4.9
NarEye	4.0	4.2	4.9	4.6	4.7	3.6	5.2	4.3	4.8	4.1	6.4
InterOrb	5.2	5.5	5.7	5.4	5.8	5.6	5.8	5.9	6.7	5.7	4.8
EarL	1.7	1.7	1.7	1.5	1.7	1.6	1.9	1.7	1.6	1.5	6.6
InterNar	1.5	1.7	2.1	1.6	1.8	1.8	2.0	2.1	2.0	1.8	1.8

(CAS 265721). Color pattern variable but always with four or five darker dorsal transverse markings, either entire or partly or largely fragmented (Fig. 15A). Pale dorsal markings of trunk indistinct or moderately well demarcated from the dorsal ground color. Dark nape band usually present and dorsum of head mostly pale with diffuse darker markings. Dark streak from snout through eye invariably present, although not always continuous with dark shoulder markings. Pale markings on original tails longer than brown interspaces; regenerated tails mostly grayish-brown with medium to dark brown longitudinal dashes and short stripes.

**Etymology:** The epithet *caillou* is a masculine noun in French meaning pebble or small stone. New Caledonia is locally often referred to as *le Grand Caillou*. With this colloquial term we honor our many friends and colleagues who are lucky enough to live in *l'île la plus proche du paradis*.

**Distribution:** This species is distributed in a relatively small area of the Chaîne Centrale near the Col d'Amieu, including the Parc des Grandes Fougères and the southern slopes of the Plateau de Dogny (Fig. 14), all very close to the border with the Province Nord, where it is also expected to occur (see Remarks).

**Natural History:** *Bavayia caillou* sp. nov. has only been recorded from closed-forest habitat (Figs. 11B–C). It has been found sheltering by day beneath loose rocks and fallen timber on the forest floor, and active at night on small trees and understory vegetation. Like all congeners the species produces eggs in clutches of two and is a generalist insectivore.

**Conservation Status:** *Bavayia caillou* sp. nov. meets the criteria (B1ab(iii, v) + 2ab(iii, v)) to be categorized as Endangered on the IUCN Red List. It is restricted in distribution to a small area of the central ranges, with an estimated extent of occurrence of ~400 km<sup>2</sup>. It is expected to have undergone a reduction in population size and extent as a result of past loss and degradation of habitat by fire and clearing for agriculture and forestry. There is an ongoing high level of threat from fire (Ibanez et al. 2019) through the loss or degradation of forest edge habitat from wildfires in adjacent savannah woodland. The species is also at a high level of threat from habitat degradation by introduced deer and pigs which threaten forest habitat quality (damaging ground daytime sheltering sites and the abundance and structure of understory shrubs used for foraging) (de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-Wichatitsky 2006), from predation by introduced cats (Palmas et al. 2017), and from the introduced Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from ground sheltering sites and arboreal foraging sites, and to affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001).

**Remarks:** Specimens of “*B. sauvagii*” from La Foa (AMS 6678, NMBA 9681–85, 9687; NMW 14745:1, USNM 268761) and the Canala area (Negropo Valley, Mia, Canala, Mt. Canala, NMBA 7001–7006) require further investigation, as either *B. caillou* sp. nov. or *B. stephenparki* sp. nov. could be represented in these areas.

### ***Bavayia ashleyi* sp. nov.**

Figures 12A, 16.

**Holotype:** MNHN-RA-2022.0043\* (ex. AMS R.149392), Mt. Aoupinié (between forestry camp and tower), Province Nord, New Caledonia, 21°09'39"S, 165°19'06"E, coll. R.A. Sadlier, 17 June 1996.

**Paratypes:** AMS R.77662–63, CAS 265726 (ex. AMS R.77664), Mt. Aoupinié (forestry camp), Province Nord, New Caledonia, 21°09'12"S, 165°19'19"E, coll. R.A. Sadlier and P.R. Rankin, 12 December 1978; AMS R.77802, Mt. Aoupinié (creek crossing 1 km NE of forestry camp by road), Province Nord, New Caledonia, 21°08'S, 165°19'E, coll. R.A. Sadlier and P.R. Rankin, 14 December 1978; AMS R.149408, CAS 265723–25 (ex. AMS R.149405–07), Mt. Aoupinié (between forestry camp and tower), Province Nord, New Caledonia, 21°09'39"S,

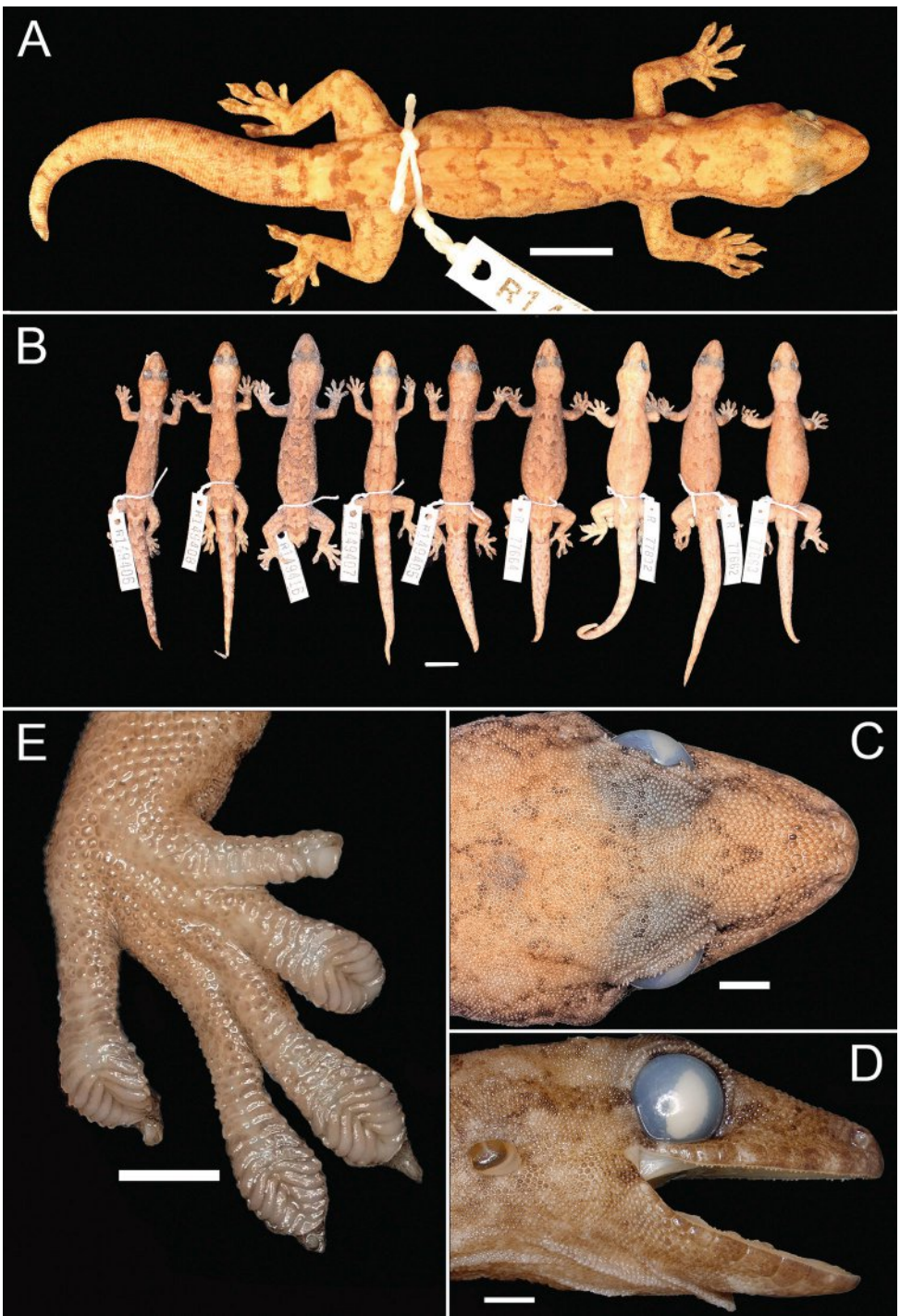


FIGURE 16. *Bavayia ashleyi* sp. nov. A) Holotype MNHN-RA-2022.0043, whole body dorsal view; B) Paratype series; C–E) Holotype MNHN\_RA\_2022.0043 (ex. AMS R.149392): C) dorsal view of head; D) right lateral view of head; E) ventral view of left pes. Scale bars: (A–B) = 10 mm, (C–E) = 2 mm.

165°19'06"E, coll. R.A. Sadlier 19 June 1996; AMS R.149416\*, Mt. Aoupinié (between forestry camp and tower), 21°10'S, 165°18'E, coll. R.A. Sadlier 19 June 1996.

**Referred Material:** (all localities in the Province Nord) AMS R.77660–61, R.77782, Mt. Aoupinié (forestry camp), 21°09'12"S, 165°19'19"E; AMS R.77687, Mt. Aoupinié (creek crossing 2 km NE of forestry camp by road) 21°08'S, 165°21'E; AMS R.77721, R.77801, 77803–04, R.149426–27, R.149428\*, R.148429–30, UMMZ 219092, Mt. Aoupinié (creek crossing 1 km NE of forestry camp by road), 21°08'S, 165°19'E; AMS R.146370–72, CAS 198735, CAS 208535, Mt. Aoupinié (creek 1.3 km below logging camp) 21°08'S, 165°19'E; AMS R.149390–91\*, R.149409, Mt. Aoupinié (between forestry camp and tower), Province Nord, New Caledonia, 21°09'39"S, 165°19'06"E; QM J43981–82, Mt. Aoupinié, 21°10'S, 165°18'E; AMS R.163224\*, Mine St. Louis, Pic Poya, Massif du Boulinda, 4 km NW Basse Poya, 21°18'53.3"S, 165°05'56.9"E.

**Diagnosis:** The largest member of the *B. centralis* clade (maximum SVL 66 mm, AMS R.149416) with a short, depressed body, long snout, large eyes and an original tail length of 104% SVL; digits II–V relatively narrow, but expanded distally; 10–14 lamellae beneath digit IV of hind-foot; claw of digit I of manus and pes borne lateral to a single medial apical scansor. Single row of 21–28 precloacal pores. Dorsal pattern of four weakly to moderately well defined, thin to thick, symmetrical to asymmetrical dark dorsal chevrons or transverse markings between limb insertions; head with dark canthal stripe and dark blotch or dash in the midline of the posterior snout region; pale bifid marking on occiput usually mostly or entirely separated from the pale blotch over the shoulders (i.e., without continuous pale streaks from shoulder to upper temporal region). Mid-sacral dark line present or absent, white spots on flanks.

Within the *B. centralis* Clade, *B. ashleyi* may be distinguished from both *B. centralis* sp. nov. and *B. caillou* sp. nov. by its larger size (66 vs. <61 mm maximum SLV) and from the former by its part or complete separation of the pale markings of the head from those of the shoulder, yielding a dark collar or diamond-shaped marking over the nape.

**Description:** Based on holotype MNHN-RA-2022.0043 (ex. AMS R.149392), an adult male. Snout-vent length (SVL) 61.0 mm; trunk relatively long, gracile, depressed. Head oblong, moderately large (HeadL 24% SVL), moderately wide (HeadW 70% HeadL), not depressed (HeadD 37% HeadL), distinct from neck; interorbital/frontal region with midline depression, canthus well developed; snout very long (EyeSn 47% HeadL), slightly less than twice eye diameter (OrbD 25% HeadL). Granular scales on anterior snout approximately two to three times diameter of those on occipital region. Pupil vertically oriented with crenelated margins; several superciliary scales in posterodorsal quadrant of orbit conical, moderately elongate, pointed. Ear opening approximately 1.3 times wider than high; eye to ear distance greater than diameter of eye (EyeEar 116% OrbD). Rostral rectangular, much broader than high, median dorsal crease present, contacted posteriorly by a single, small, roughly circular internasal and two much enlarged supranasals, contacted posteroventrally by first supralabial. Nostrils oval and anterolaterally oriented, surrounded by two postnasals, one supranasal, and the rostral; in broad contact with first supralabial. Mental subtriangular, approximately as wide as deep; a single enlarged, median, elongate septagonal postmental in broad contact with mental, separating first infralabials from one another; first infralabials each in contact posteriorly with median postmental and one smaller lateral postmental chin shields. First four to five rows of chin shields larger than remaining throat scales. 11 L, 10 R enlarged supralabial scales, of which the 8<sup>th</sup> through 11<sup>th</sup> and 7<sup>th</sup> through 10<sup>th</sup>, respectively, are beneath the eye on the right side; 10 L, 9 R infralabial scales; 43 interorbital scale rows between superciliaries at midpoint of orbit, 17 interorbitals between the orbital margins across the narrowest part of frontal bone.

Dorsal scales small, homogeneous, very slightly conical, granular; ventral scales slightly



larger than dorsals, juxtaposed anteriorly becoming subimbricate and somewhat enlarged posteriorly on the body. Posterior abdominal scales rounded, mid-abdominal scales elongate, diamond-shaped. Approximately 147 scale rows around midbody. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Precloacal pores small and difficult to discern, in a single continuous row of 28. Forearm short and crus moderately long (11% and 15% of SVL, respectively), axillary pockets shallow. Digits long and moderately narrow, all bearing claws, those on digit I of both manus and pes reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital lamellae typically paired, except variably single or fragmented at the base of digits. Distalmost lamella of digits II–V, manus and pes, undivided. Claw of digit I positioned lateral to a single apical scissor. Lamellar counts from holotype: 7-11-9-13-12 right manus and 8-9-12-13-12 left pes.

TailL 44.0 mm (distal 36.0 mm regenerated), approximately 72% of snout-vent length, tapered, stout, roughly oval in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, square (basal original portion of tail) to rectangular, arranged in regular rows. Scales on pygal portion of tail much smaller ( $\frac{1}{2}$  to  $\frac{1}{3}$ ) than postpygal scales. Cloacal spurs consisting of 3–4 large, compressed, flattened, conical, posterodorsally directed scales, just posterolateral of the cloaca.

**Color in preservative:** Dorsum and flanks mottled light brown to pinkish brown with small, irregularly distributed darker brown markings and a relatively bold pattern of four irregular, medium to dark brown transverse markings between the limb insertions, each preceded by a cream (on shoulders) or beige to pale pinkish-brown blotch with irregular margins, ill-defined anteriorly and laterally (except for shoulder blotch) and more discretely posteriorly, and few if any internal markings. Bands of ground color slightly shorter than the pale patches following it. Lateral margins of pale blotches confluent with large pale spots of the same color along the dorsolateral margins of the trunk. Dark shoulder marking divided into three, with a small middorsal spot and larger lateral markings. Pale shoulder blotch bilobed, with well-defined lateral and anterior margins, bordered anteriorly by a nape band with bold medium brown anterior and posterior margins and the central portion of ground color; posterolaterally the nape band joins with the anterolateral projections of the shoulder band to enclose the pale shoulder blotch, anterolaterally it connects to a brown streak extending from the nostrils, through the eye and on to the lower temporal region. Dorsum of head and neck anterior to the nape band pale, most of head beige to cream-colored with diffuse medium brown markings on the upper temporal region, between the orbits and across the snout just anterior to the orbits; the neck and posteromedial parietal table slightly darker than head color and separated from it by a one-granule thick wavy border. Labial scales mostly brown with scattered white, pigmentless or nearly pigmentless patches within individual scales, particularly posteriorly. Limbs mottled like trunk, with cream to beige blotches and medium brown reticulations or banding. Pygal portion of tail with a well-defined, transverse, cream-colored marking that spans the tail base constriction. This is followed on the post-pygal part of the tail by a small cream rhomboidal marking with an incomplete dark brown border; regenerated tail grayish- to pinkish brown with scattered diffuse medium to dark brown spots and blotches. Body venter beige to light brown with darker pigmentation under the limbs, around the cloaca, on the throat and especially on the chin. Subcaudal surfaces light to medium brown with scattered beige to cream markings.

**Color in life:** (based on non-type specimen, see Fig. 12A). Body dorsum a grayish- to pale pinkish brown with four broken or continuous, wavy bands of transverse dark brown markings between limb insertions, each preceded by a row of whitish granules and a light dorsal blotch, ashy to pale pinkish brown in color. Flanks bearing two irregular longitudinal series of pale pinkish-brown spots with incomplete dark brown borders, extending cranially to the lower temporal region

and caudally on to the ventrolateral margins of the original tail. Snout dark, with a radiating streak to and through the eye and on to the temporal region on both sides. Labial scales dark brown with distinct bright white spots or flecks that are in line with those at the lower margin of the dark temporal streak. Portions of orbital rims, pale yellowish; iris coppery. Limbs similar to trunk, with irregular grayish-brown, medium to dark brown, and dusky pinkish-brown mottling and banding. Pygal portion of tail with a transverse gray marking with a thin (anteriorly) to thick (laterally) dark brown margin straddling the tail constriction. Post-pygal tail similar to flanks with five ill-defined gray dorsal markings separated by shorter ground color interspaces and each bordered posteriorly by an irregular dark brown margin. Regenerated tail dull gray with scattered irregular dark brown markings. Ventral surfaces light brown with darker areas around the cloaca, under the limbs and tail and on the throat and especially chin.

**Variation:** Mensural features of paratypes are presented in Table 5. Paratypes with 2–5 (usually 3) internasals contacting the rostral. Rostral crease present or absent. First infralabials separated behind the mental in all paratypes by an enlarged median postmental chin shield (except in narrow contact with one another in AMS R.77802). Collectively the first infralabials border 3 enlarged chin shields (rarely two). Male paratypes with a single row of 21 (AMS R.77802) or 27 (AMS R.77662) small, difficult to discern precloacal pores; no pores or dimpled scales in females. Longest nearly complete original tail 104% SVL (AMS R.77662). Color pattern variable but always with four darker dorsal transverse markings, either entire or partly fragmented. Pale dorsal markings of trunk indistinct or moderately well demarcated from the dorsal ground color (Fig. 16A). Dark nape band usually continuous (but interrupted in AMS R.149416) and dorsum of head mostly pale with diffuse darker markings. Dark streak from snout through eye invariably present, although not always continuous with dark shoulder markings. Pale spots lateral to large pale blotches smaller in paratypes than in holotype, forming a longer series between the temporal region and the tail base and a more ventral shorter series between the limb insertions. Pale markings on original tails longer than brown interspaces, at least 10 present in original tail.

TABLE 5. Mensural data from the type series of *Bavayia ashleyi* sp. nov.; \*tail regenerated, \*\* broken.

	Holotype	Paratypes								
	MNHN-RA 2022.0043	AMS R.149408	CAS 265724	CAS 265726	CAS 265723	AMS R.77802	AMS R.77663	CAS 265725	AMS R.77662	AMS R.149416
Sex	M	F	F	F	F	M	F	F	M	F
SVL	61.0	55.1	53.7	63.1	60.6	58.6	61.4	55.6	58.8	66.0
ForeaL	6.9	6.6	6.3	6.9	7.3	7.0	6.1	7.0	6.9	8.1
CrusL	9.3	8.3	7.9	8.5	8.1	8.9	7.7	8.3	8.1	9.1
TailL	44.0*	52.3*	51.2*	42.3*	45.7*	59.7*	41.8*	51.4*	61.0*	5.6**
HeadL	14.6	13.5	13.7	14.6	14.8	14.8	13.9	14.4	14.8	14.2
HeadW	10.2	9.5	9.3	10.2	10.2	10.0	9.5	9.1	10.2	10.6
HeadH	5.4	4.8	4.6	5.2	5.1	5.0	4.7	4.6	5.1	5.6
OrbD	3.7	3.5	3.4	3.6	3.5	3.5	3.2	3.3	3.6	4.1
EyeEar	4.3	3.7	3.9	4.2	4.1	4.0	4.2	4.2	4.0	4.9
SnEye	6.9	5.9	6.1	6.8	6.9	6.7	6.8	6.0	6.7	7.1
NarEye	5.6	4.5	4.5	5.1	4.7	5.0	4.8	4.5	4.7	5.8
InterOrb	5.9	5.5	5.3	5.2	6.0	5.6	5.8	5.6	5.6	6.4
EarL	1.4	1.5	1.7	1.5	1.8	1.6	2.0	1.7	1.8	2.0
InterNar	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	1.9

**Etymology:** The specific epithet is a patronym honoring H. Bernard Walter “Bob” Ashley (1937–2006) whose family has long supported herpetological research and conservation.

**Distribution:** This species is known primarily from Mt. Aoupinié in the Chaîne Centrale of the southern Province Nord. A single locality represented by a sequenced specimen on the Massif du Boulinda is, however, more than 25 km southwest of Aoupinié, suggesting that this species may be continuously distributed across middle elevations (Fig. 14).

**Natural History:** On Mt. Aoupinié the species has been recorded from mid-elevation ~500 m) humid forest habitat. Here it was found sheltering by day beneath rocks and logs on the forest floor and was active at night on understory saplings. At Pic Poya on the Massif du Boulinda the single individual recorded from lower-mid elevation (360 m) closed forest habitat was located active at night on the foliage of a subcanopy tree. Clutch size is two.

**Conservation Status:** *Bavayia ashleyi* sp. nov. meets the criteria (B1ab(iii) + B2ab(iii)) to be categorized as Endangered on the IUCN Red List. Its known distribution comprises two disjunct populations, one on metamorphic surfaces at Mt. Aoupinié in the central ranges with an estimated extent of occurrence on the ranges of ~50 km<sup>2</sup>, and one on ultramafic surfaces on the lower-mid slopes of the Massif du Boulinda on the central-west coast with a potential extent of occurrence on that massif of ~50 km<sup>2</sup>. It is expected to have undergone a reduction in population size and extent of occurrence resulting from past loss and degradation of forest habitat by fire (Ibanez et al. 2019) at both locations, and from forestry activities on the central ranges. In the central ranges there is an ongoing high level of threat through the loss or degradation of forest edge habitat from wildfires (Ibanez et al. 2019) in adjacent savannah woodland, from ongoing logging of mid elevation forest habitat, and from habitat degradation by introduced deer and pigs which threaten forest habitat quality by damaging ground daytime sheltering sites and the abundance and structure of understory shrubs used for foraging (de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-Wichatitsky 2006). On the Massif du Boulinda there is likely to be an ongoing high level of threat to forest edge habitat from wildfires in adjacent maquis shrubland, and loss of habitat as a consequence of the rapidly expanding nickel mining industry (Pascal et al. 2008).

### *Bavayia pulchella* Clade

**Content:** *Bavayia pulchella* Bauer, Whitaker and Sadlier, 1998; *B. stephenparki* sp. nov.; *B. lepredourensis* sp. nov.

**Definition:** Members of the *B. pulchella* Clade are distinguished from other *B. sauvagii* Group taxa by their small size and the placement of the claw of digit I of the manus and pes between a larger medial and smaller lateral apical scansors (vs. no lateral scansor in the *B. sauvagii* and *B. centralis* clades). They are distinct from *B. geitaina* in their much smaller size (maximum 54.5 mm vs. 72 mm) and in possessing either no distinct dorsal pattern, a single wide vertebral stripe, or 3–5 dark transverse markings between the limb insertions (vs. 5 or more, usually 6) dark transverse markings between limb insertions (rarely striped but, if so, bearing two paravertebral stripes). *Bavayia pulchella* Clade members are most similar to geckos in the *B. exsuccida* Clade, differing slightly in having a more rounded snout tip shape.

### *Bavayia pulchella* Bauer, Whitaker and Sadlier, 1998

Figures 17A–C.

1998 *Bavayia pulchella* Bauer, Whitaker and Sadlier, Pacific Sci. 52:349; figs. 4A–B, 5A–D.

**Holotype:** AMS R.149873 (Fig. 17A), Mé Adéo, Néoua area, Province Sud (600 m elevation), New Caledonia, 21°28'52"S, 165°36'51"E, coll. R.A. Sadlier and A.H. Whitaker, 25 October 1996 [in the original description the type locality was stated to be in the Province Nord, however its coordinates place it 0.5 km into the Province Sud].

**Paratypes:** AMS R.149874–77, R.149878\*, data as for holotype; AMS R.149860–61, R.149917–18, MNHN-RA-1997.3682–83, same locality and collectors as holotype, 24 October 1996; AMS R.149953–54, same locality and collectors as holotype, 1 November 1996; AMS

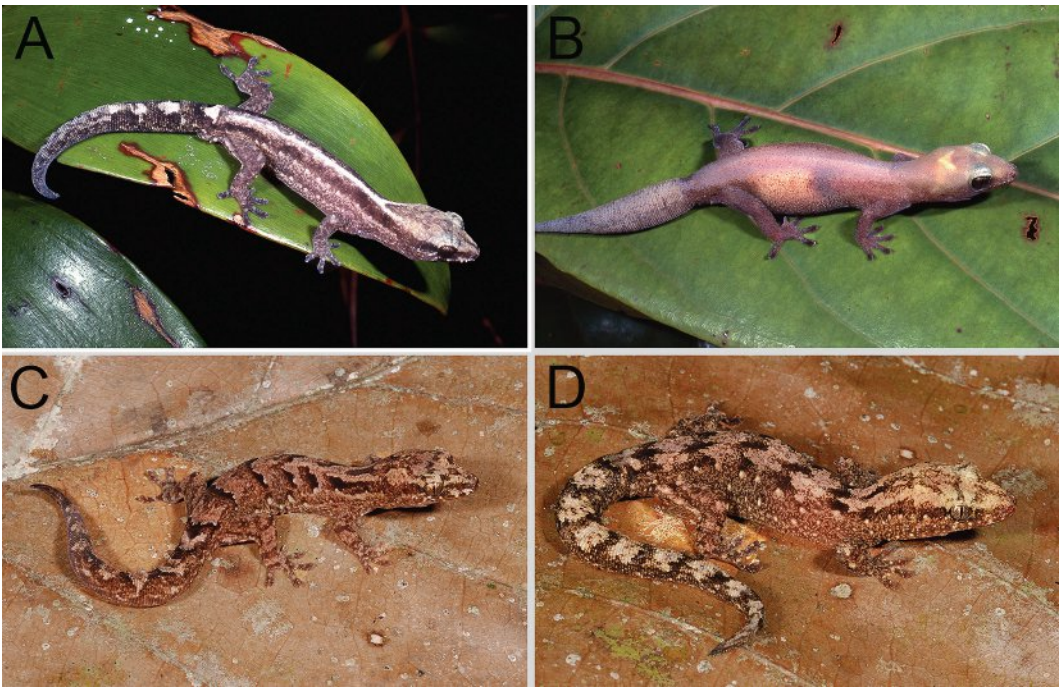


FIGURE 17. Life photographs of representatives of the *Bavayia pulchella* Clade. A) *B. pulchella* (holotype, AMS R.149873), dorsally striped, Mé Adéo. B) *B. pulchella* patternless, Mé Adéo. C) *B. pulchella* (AMS R.172787), chevron pattern. Mé Maoya. D) *B. stephenparki* (AMS R.172628), Pic Ouitchambo. All photos by R.A. Sadlier.

R.149931–32, R.149933–35\*, R.149936–39, ranges west of Mé Adéo, Bourail area, Province Sud, New Caledonia, 21°28'S, 165°33'E, coll. R.A. Sadlier and A.H. Whitaker, 31 October 1996.

**Referred Material:** AMS R.172753, Mé Maoya (site 1), Province Sud, 21°26'19.84"S, 165°21'15.39"E; AMS R.172757, R.172758–59\*, R.172782–86, R.172787\*, R.172788, Mé Maoya (campsite) 21°26'56.07"S, 165°20'56.95"E; AMS R.166219\*, AMS R.166228–33, Mouéara, Gouaro-Déva, 4.5 km NW Plage de Poé, Province Sud, 21°35'01.4"S, 165°20'03.3"E.

**Diagnosis:** An intermediate-sized member of the *B. pulchella* Clade (maximum SVL 49.3 mm) with a short, depressed body and short tail (approximately = SVL, based on regenerated tails of 83% SVL); digits II–V relatively narrow; 10–13 relatively slender lamellae beneath digit IV of hindfoot; claw of digit I of manus and pes borne between a larger medial apical scansor and a smaller lateral apical scansor. Single row of 18–23 precloacal pores. Dorsum virtually patternless, with minute scattered dark and light speckles on a pinkish or purplish-brown background, paler dorsally than laterally; or bearing two dark longitudinal stripes from the nostril, through the eye to the sacrum and onto the tailbase, with a bright white middorsal stripe in between, forked on the nape and fading rapidly into light speckling in the temporal regions; or bearing a series of alternating dark and light markings on the trunk (4–5 dark transverse markings between limb insertions) markings. Original portion of tail with discrete, well-defined cream to bright white dorsal markings on a dark brown background.

Within the *B. pulchella* Clade it may be distinguished from *B. lepredourensis* sp. nov. by its larger size (49.3 vs. 41.3 mm SLV) and from *B. stephenparki* sp. nov. by its smaller size (49.3 vs. 54.5 mm SVL). In comparison to its closest relatives it also has a shorter, wider head (HeadW to 70% HeadL or more vs. < 65% HeadL) and relatively larger eyes (OrbD ~25% HeadL vs. ~20%



HeadL). Individuals from the type locality are easily distinguished from both of these species by their characteristic patterning (two different morphs), but specimens from Mé Maoya approach these species in pattern (Fig. 17). However, at this locality, specimens typically have a bolder pattern than either of these other species, and also lack the nearly patternless head dorsum of *B. lepredourensis*. They also exhibit 2 (vs. 3) dark spots (dominant features in the dark transverse markings of the trunk) just posterior to the forelimb insertions, differing from *B. stephenparki* sp. nov. in this regard.

**Remarks:** AMS R.172753 was collected at about 600 m on Mé Maoya at a humid forest site, whereas all others from Mé Maoya were from about 400 m elevation in mixed forest. This anomalous occurrence requires further investigation. Several specimens from Paéoua, near the Kopeto Massif (AMS R.168200–201, AMS R.168217–220) are similar in general appearance to *B. pulchella*, but have not yet been genotyped. These may be referable to this species or could represent an undescribed species. Osteological information was provided by Bauer et al. (1998).

**Distribution:** This species is known from central New Caledonia from near sea level on the west coast to elevations of 500–600 m in association with maquis and closed humid forest habitats in the Chaîne Centrale near Mé Adéo and on the ultramafic Mé Maoya Massif (Fig. 18).

**Natural History:** In central New Caledonia *Bavayia pulchella* has been recorded from the ecotonal boundary between mid-elevation humid forest and maquis vegetation (Mé Adéo), from the interface of closed forest habitat and semicleared land (Bourail ranges) and from sclerophyll forest on Mé Maoya (Fig. 11D). On the central west coast (Gouaro–Déva) it was recorded from mesophyll forest. It is presumed to be a generalist arthropod feeder. Clutch size is fixed at two eggs

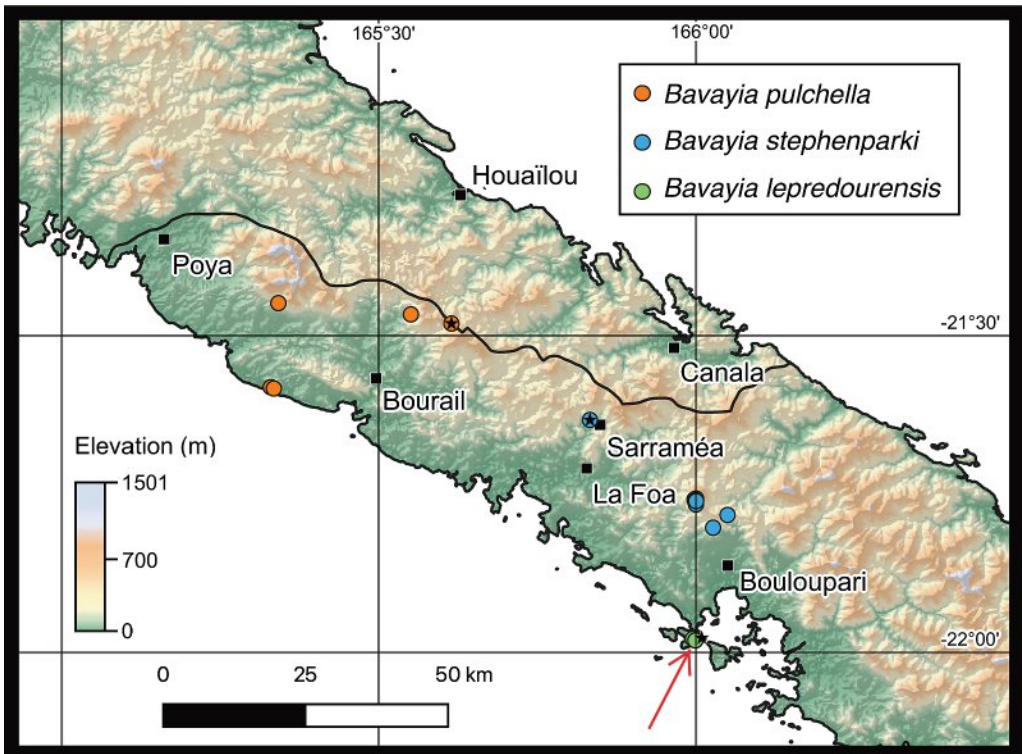


FIGURE 18. Map showing the distribution of members of the *Bavayia pulchella* Clade. *Bavayia pulchella* (orange), *B. stephenparki* (blue), *B. lepredourensis* (green, see arrow). Stars indicate type localities. Cartography by J. DeBoer

and gravid females have been found in late October and early November (Bauer et al. 1998), but sampling is inadequate to determine the extent of the breeding season, or if multiple clutches occur in a single year.

**Conservation Status:** *Bavayia pulchella* meets the criteria (B1ab(iii, v) + 2ab(iii, v)) to be categorized as Endangered on the IUCN Red List (Sadlier et al. 2021b). It is restricted in distribution being known from two locations within a small area of the main dividing range to the north-east of Bourail between 500–600 m above sea level, and from a single low elevation site at Gouaro-Déva just north of Plage de Poé. The extent of occurrence is broadly estimated at around 350 km<sup>2</sup>, and the area of occupancy are estimated at ~10 km<sup>2</sup>, reflecting the limited distribution at each three sites. It is presumed to have suffered some reduction in extent as a result of habitat loss on the western slopes from wildfires and clearance for agriculture, at higher elevation on the ranges from mining exploration (Pascal et al. 2008), and significant loss of habitat at the coastal site from clearing for agriculture. The greatest threat to *B. pulchella* are the loss and degradation of habitat from clearance for agriculture, wildfires (Ibanez et al. 2019), and the impact of introduced deer and pigs (de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-Wichatitsky 2006).

**Remarks:** Specimens from Mine Pinpin and Mt. Krapé in the Poya area (AMS R.175805, R.175807, R.175826–28, R.179512–15) and from Bourail (AMS R.135663, R.175874–76) require examination as both *B. centralis* sp. nov. and *B. pulchella* occur in the region. *Bavayia pulchella* was discussed and illustrated as *Bavayia* sp. 1 by Whitaker et al. (2005).

***Bavayia stephenparki* sp. nov.**

Figures 17D, 19.

**Holotype:** MNHN-RA-2022.0038 (ex. AMS R.135063), vic. Guesthouse (Evasion 130) at Sarraméa, Province Sud, New Caledonia, 21°38'S, 165°50'E, coll. R.A. Sadlier and A.M. Bauer, 7 March 1990.

**Paratypes:** AMS R.135062\*, CAS 265715 (ex. AMS R.135061), same data as holotype; AMS R.144107\*, CAS 265716 (ex. AMS R.144108), CAS 265717\* (ex. AMS R.144109), same locality as holotype, coll. R.A. Sadlier 15 August 1994; AMS R.135050, AMS R.135052\*, Mt. Do, 0.6 km along Mt. Do road from turnoff on Bouloupari-Thio road, Province Sud, New Caledonia, 21°47'S, 166°03'E, coll. R.A. Sadlier and A.M. Bauer, 5 March 1990; AMS R.146445\*, Mt. Do (1.7 km by road from summit), Province Sud, New Caledonia, 21°45'41"S, 166°00'00"E, coll. R.A. Sadlier and A.M. Bauer, 9 January 1995.

**Referred Material:** (all localities in Province Sud) AMS R.135064–65, R.144106, CAS 175537–38, vic. Guesthouse (Evasion 130) at Sarraméa, 21°38'S, 165°50'E; CAS 198777, 1.3 km from summit of Mt. Do, ca. 870 m, 21°45.85'S, 165°59.48'E; AMS R.135051\*, AMS R.135053–54, Mt. Do, 0.6 km along Mt. Do road from turnoff on Bouloupari-Thio road, 21°47'S, 166°03'E; AMS R.146449\*, Mt. Do (2.2 km by road from summit), 21°46'S, 166°00'E; AMS R.168224, Mt. Do, 21°45'26.78"S, 166°00'00.4"E; AMS R.168225–26, Mt. Do, 21°45'32.11"S, 165°59'51.29"E; AMS R.168227, Mt. Do, 21°45'35.21"S, 165°59'52.12"E; AMS R.168228–29, Mt. Do, 21°45'37.91"S, 165°59'57.3"E; AMS R.168230–35, Mt. Do, 21°45'40.5"S, 165°59'59.71"E; CAS 175528–29, Col de Nassirah, 0.6 km along Mt. Do road from turnoff on Bourail-Thio road, 21°47'S, 166°03'E; AMS R.172628–30\*, R.172635–36, R.172639, Pic Wicabo (Quitchambo), 21°48'12.31"S, 166°01'37.42"E.

**Diagnosis:** A large member of the *B. pulchella* Clade (maximum SVL 54.5 mm) with a short, depressed body and short tail (maximum 105% SVL); digits II–V relatively narrow; 10–13 relatively slender lamellae beneath digit IV of hindfoot; claw of digit I of manus and pes borne between

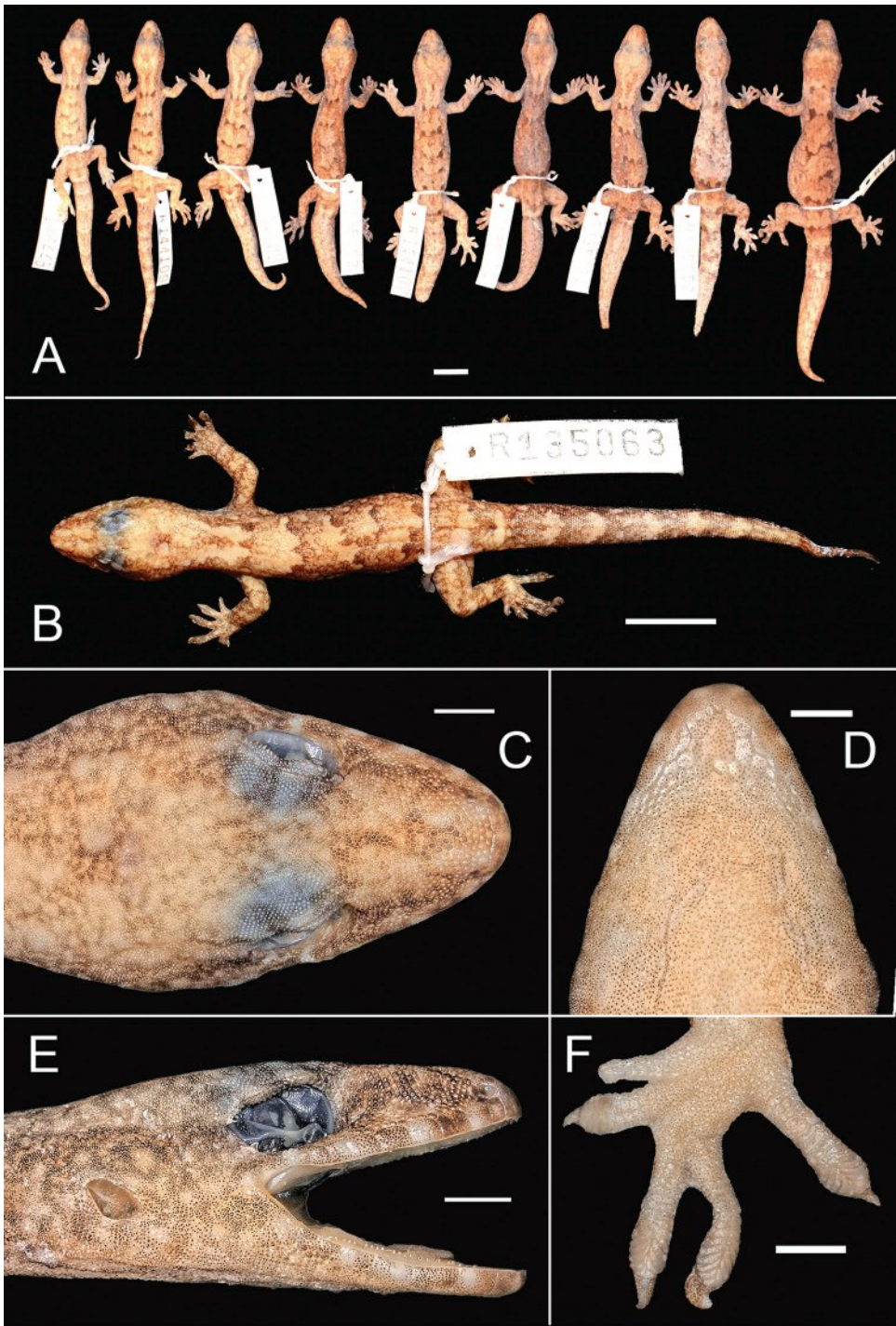


FIGURE 19. *Bavayia stephenparki* sp. nov. A) Paratype series. B–F) Holotype MNHN-RA-2022.0038 (ex. AMS R.135063): B) whole body dorsal view; C) dorsal view of head; D) right lateral view of head; E) ventral view of head; F) ventral view of right pes. Scale bars: (A–B) = 10 mm, (C–F) = 2 mm.



a larger medial apical scensor and a smaller lateral apical scensor. Single row of 20–24 precloacal pores. Dorsal pattern of 5 (rarely 4) dark transverse markings or chevrons and 4 (rarely 3) pale blotches between limb insertions; anteriormost of the dark markings forming a trio of prominent spots across the dorsum above the shoulders; flanks usually bearing large spots.

Within the *B. pulchella* clade it may be distinguished from both *B. lepredourensis* sp. nov. and *B. pulchella* by its larger size (54.5 vs. 41.3 and 49 mm maximum SLV, respectively) and from the latter by its relatively longer, more slender head and relatively smaller eyes (see *B. pulchella* account). The typical pattern of 4 pale blotches between the shoulder and sacrum distinguishes it from topotypical *B. pulchella* and from *B. lepredourensis*, which bears only 2–3 such blotches. Patterning on the head is also more extensive than in *B. lepredourensis* and the presence of 3 (vs. 2) dark spots (dominant features in the dark transverse markings of the trunk) just posterior to the forelimb insertions differs from both chevron-patterned *B. pulchella* and *B. lepredourensis* sp. nov.

**Description:** Based on holotype MNHN-RA-2022.0038 (ex. AMS R.135063), an adult male. Snout-vent length (SVL) 48.1 mm; trunk relatively short, depressed. Head oblong, large (HeadL 30% SVL), relatively narrow (HeadW 63% HeadL), depressed (HeadD 32% HeadL), distinct from neck; interorbital/frontal region broad, flat with a slight interorbital depression, canthus weakly developed; snout relatively short (EyeSn 37% HeadL), less than twice eye diameter (OrbD 20% HeadL). Granular scales on snout approximately twice diameter of those on occipital region. Pupil vertically oriented with crenelated margins; posteriormost superciliary scales slender, moderately elongate, pointed. Ear opening approximately 1.5 times high as wide, canted posterodorsally to anteroventrally; eye to ear distance greater than the diameter of eye (EyeEar 118% OrbD). Rostral rectangular, much broader than high, divided by a partial groove running downward for a distance of 20% of the rostral height, contacted posteriorly by eight small internasals and two slightly enlarged supranasals, contacted posteroventrally by first supralabial. Nostrils oval and anterolaterally oriented, surrounded by three postnasals, one supranasal, and the rostral, in relatively broad contact with first supralabial. Eight similarly sized, rounded internasal scales between supranasals. Mental subtriangular, somewhat deeper than wide; a single enlarged, hexagonal, median postmental in narrow contact with apex of mental; first infralabials each in contact posteriorly with median postmental and two much smaller lateral postmentals. First three to five rows of chin shields larger than remaining throat scales. Ten enlarged supralabial scales, of which the 7<sup>th</sup> through 10<sup>th</sup> are beneath the eye; 9L, 7 R infralabial scales; 39 interorbital scale rows between superciliaries at midpoint of orbit, 18 interorbitals between the orbital margins of the frontal bone.

Dorsal scales small, homogeneous, very slightly conical, granular; ventral scales slightly larger than dorsals, subimbricate, enlarged posteriorly on the body. Posterior abdominal scales rounded, mid-abdominal scales elongate, diamond-shaped. Approximately 134 scale rows around mid-body. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Precloacal pores small and difficult to distinguish, in a single row, ten pores on either side of 1–2 poreless scales. Forearm and crus relatively short (13% and 15% of SVL, respectively), axillary pockets shallow. Digits short and narrow, all bearing claws, those on digit I of both manus and pes greatly reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital lamellae typically paired, except variably single or fragmented at the base of digits. Distalmost lamella of digits II–V, manus and pes, undivided. Apical plates of digit I of manus and pes asymmetrical, with claw positioned in a notch between a larger medial and smaller lateral scensor. Lamellar counts from right side of holotype 7-10-10-10-9 manus and 6-9-12-13-11 pes.

TailL 50.3 mm (of which the last 15.8 mm is regenerated), approximately 105% of snout-vent



length, tapered, stout, roughly oval in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, rectangular, arranged in regular rows. Surface of tail weakly segmented, caudal scale rows forming whorls, each whorl 7–8 dorsal scale rows and 6 ventral scale rows long; mid-ventral caudal scales not enlarged. Scales on pygal portion of tail much smaller ( $\frac{1}{2}$  to  $\frac{1}{3}$ ) than post pygal scales. Cloacal spurs comprising a radiating set of 3–4 conical scales directed posterodorsally and borne on a raised mound adjacent to the cloaca.

**Color in preservative:** Dorsum and flanks mottled brown, with a pattern consisting of highly contrasting dark and light markings. Five dark transverse markings and four asymmetrical cream transverse blotches between limb insertions, with a smaller intercalary blotch between the second and third markings on the right side only. Each pale marking bordered posteriorly by a well-defined, thin dark brown border grading into the mottled base color band which, in turn, gives way to the next pale transverse marking. The dark transverse marking behind the forelimb insertion forming three prominent spots across the dorsum. A pair of thick, beige paravertebral stripes extend forward from the level of the shoulder and fuse on the occiput. Occiput and crown mostly pale with scattered brown markings, most evident in the midline. An irregular row of small, pale spots, each mostly or entirely surrounded by a thin dark brown rim runs longitudinally along the dorsolateral margin of the head and trunk from the supralabials to the tail base and a second row extends along the ventrolateral margin from the level of the eye to the posterior margin of the hindlimb insertion. The mottled base pattern covers the remainder of the flanks. Medium brown dark stripes with irregular borders extend posteriorly from the snout, along the canthus, through the eye and above the ear to the shoulder region. Another diffuse brown stripe connects the rostral to a dark arc running between the supraorbital midpoints on each side. The limbs are mottled with predominantly pale areas banded with irregular brown markings. The tail has a darker brown base color than the trunk and bears a series of cream-colored blotches, each bordered behind by a very dark and well-defined border and anteriorly by a paler and less-well demarcated edge. Brown interspaces between blotches slightly longer than blotches themselves and bearing a pair of small dorsolateral pale spots near their midpoints; six well-developed pale blotches on original portion of tail. Body venter beige, with no speckling or dark pigmentation, although the mottled pattern of the flanks extends onto the lateral margins of the ventral surface; hemipenial bulge whitish. Tail venter mid-brown with mottling of the dorsal surfaces visible along the lateral margins.

**Color in life:** (based on life photo of non-type AMS R.172628, Fig. 17D). A finely mottled mid-brown base pattern with tinges of reddish brown. Dorsum bearing four irregular cream to beige blotches from the shoulder to sacrum, each separated by a much narrower dark brown marking. A pair of beige longitudinal markings continue anteriorly from the shoulder region across the nape and onto the crown of the head, separated posteriorly by a bold dark midline stripe and more anteriorly by diffuse, roughly symmetrical midline markings. A thin dark brown line extending from the midline to the middle of the supraorbital region; a diffuse dark midline stripe from the rostrum to the level of the anterior corner of the orbit, where it intersects a thicker incomplete brown transverse band. Dorsal surface of the head overall predominantly beige. A thick speckled stripe extending from the posterior corner of eye to the nape. This bordered below by a series of small bright white spots that continue posteriorly along the dorsolateral margin of the trunk to the sacrum. A similar, though more irregular, line of spots along the ventrolateral margins of the gular region and flanks. Limbs mottled with numerous small white spots, particularly on the autopodia and digits. Postaxial surface of thighs bearing a more-or-less continuous white line from the junction with the tail base to the popliteal region. Tail a mottled cream and mid-brown bearing a series of cream-colored irregular-edged blotches separated by much narrower darker brown interspaces.

**Variation:** Mensural features of paratypes are presented in Table 6. The holotype is excep-

TABLE 6. Mensural data from the type series of *Bavayia stephenparki* sp. nov.; \*tail regenerated, \*\*tail broken.

	Holotype	Paratypes							
	MNHN-RA 2022.0038	AMS R.135050	CAS 265715	AMS R.135052	CAS 265716	AMS R.144107	CAS 265717	AMS R.146445	AMS R.135062
Sex	M	F	M	F	M	F	M	M	M
SVL	48.1	54.5	51.6	52.6	47.7	52.9	47.8	43.2	51.6
ForeaL	6.1	6.7	6.3	6.9	6.2	6.7	6.7	5.3	6.1
CrusL	7.3	8.8	7.2	7.5	7.7	8.6	7.3	6.6	7.3
TailL	50.3*	30.0*	29.6*	27.6*	34.8*	24.1**	48.7	42.9	35.2*
TailW	4.6	5.2	6.2	5.5	4.8	5.2	4	4.4	5.9
HeadL	14.2	12.6	14.6	14.8	13.1	13.3	13.8	11.6	14.4
HeadW	8.9	9.2	9.9	9.4	9	10	8.3	8	9.3
HeadH	4.6	4.6	4.9	4.7	4.6	4.6	4.6	4.4	4.9
OrbD	2.8	3.2	2.9	3.3	2.6	2.9	2.8	2.6	3.1
EyeEar	3.3	3.9	3.8	3.8	4.5	4.3	4.1	3.6	3.8
SnEye	5.2	5	5.6	5.3	5.1	5.4	5.8	5.3	5.1
NarEye	4.1	4.2	4.7	4.3	3.8	4.3	4.1	3.8	3.9
InterOrb	5	5.3	5.5	5.4	5	6	5.2	4.6	0.1
EarL	1.8	2	1.8	1.7	1.3	1.7	1.3	1.8	1.6
InterNar	2.4	2.9	2.4	2.4	2.2	2.5	2.3	1.8	2.2

tional in its large number of small internasals. The paratypes have from one to four larger internasals. Male paratypes with 20–24 precloacal pores, left and right series divided by one or two poreless median scales; no pores or dimples in females. Longest original tail 102% SVL (AMS R.144109). Color pattern highly variable, but always with a series of 4–5 dark transverse markings between the limb insertions and a pair of pale paravertebral markings from the shoulders onto the head, and numerous small pale spots on the flanks.

**Etymology:** Named in honor of Stephen Park of Inverness, Illinois, USA in recognition of his interest in and support of herpetology.

**Distribution:** Known from the vicinity of Mt. Do and Sarraméa in the north central interior of the Province Sud from ~400m to at least 870 m (Fig. 18). However, the species may have a wider distribution (see Remarks). Recent photographs from the vicinity of Nakéty confirm the species’ occurrence there.

**Natural History:** *Bavayia stephenparki* sp. nov. has only been recorded from closed-forest habitat, but across a broad altitudinal range. It has been found sheltering by day beneath loose rocks and fallen timber on the forest floor, and active at night on small trees and understory vegetation. Like all its congeners for which data are available, it is likely insectivorous and produces clutches of two eggs.

**Conservation Status:** *Bavayia stephenparki* sp. nov. meets the criteria (D2) to be categorized as Vulnerable on the IUCN Red List. It has a small distribution, being known only from the vicinity of Sarraméa and Mt. Do on the central ranges, with an estimated extent of occurrence of ~450 km². It is presumed to have suffered a reduction in population size and extent from past loss and degradation of humid forest habitat through clearance for agriculture and from wildfires (Ibanez et al. 2019). It is considered to be at a low level of threat from fire, from degradation to the quality of habitat by introduced deer and activities of pigs damaging ground daytime sheltering sites (de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-Wichatitsky 2006), and is further at a low level of threat from the introduced Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from ground sheltering sites and arboreal foraging sites, and to affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001).

**Remarks:** Specimens of “*B. sauvagii*” from La Foa (AMS 6678, NMBA 9681–85, 9687; NMW 14745:1, USNM 268761) and the Canala area (Negropo Valley, Mia, Canala, Mt. Canala,

NMBA 7001–7006) require further investigation, as either *B. caillou* sp. nov. or *B. stephenparki* sp. nov. could be represented in these areas. AMS R.175832–37 from the Nakéty area have not been re-examined in light of this revision but are likely referable to either *B. stephenparki* sp. nov. or potentially to an undescribed species recently signaled from this region.

***Bavayia lepredourensis* sp. nov.**

Figure 20.

**Holotype:** MNHN-RA-2022.0050 (ex. AMS R.166253), Île Leprédour, Baie de St. Vincent, 14 km SW Bouloupari, Province Sud, New Caledonia, 21°58'39"S, 166°00'33"E, coll. A.H. Whitaker and V.A. Whitaker, 5 February 2004.

**Paratypes:** AMS R.166251\*, R.166252, CAS 265759\* (ex. AMS R.166250), data as for holotype; AMS R.166248, CAS 265757–58 (ex. AMS R.166247, R.166249), locality and collectors as for holotype, 4 February 2004; AMS R.144363, Île Leprédour, off Bouloupari, Province Sud, New Caledonia, 21°58'45"S, 165°59'45"E, coll. J. Chazeau, 17 August 1994.

**Diagnosis:** A small member of the *B. pulchella* Clade and smallest of all species of *Bavayia* (maximum SVL 41.3 mm) with a short, depressed body and short tail (maximum likely approximately equal to SVL based on regenerated tails of up to 79% SVL); digits II–V relatively narrow; 10–13 relatively slender lamellae beneath digit IV of hindfoot; claw of digit I of manus and pes borne between a larger medial apical scissor and a smaller lateral apical scissor. Single row of 18–21 precloacal pores. Dorsal pattern of 3–4 dark transverse markings or chevrons and 2–3 pale blotches between limb insertions; anteriormost of the dark markings forming a pair of prominent dorso-lateral spots above the shoulders; flanks usually bearing large spots.

Within the *B. pulchella* clade it may be distinguished from both *B. stephenparki* sp. nov. and *B. pulchella* by its much smaller size (41.3 vs. 54.5 and 49 mm maximum SVL, respectively) and from the latter by its relatively longer, more slender head and relatively smaller eyes (see *B. pulchella* account). The pattern of 2–3 pale markings between the shoulder and sacrum distinguishes it from topotypical *B. pulchella* and from *B. stephenparki* sp. nov., which bears 4 (rarely 3) such blotches. The presence of 2 (vs. 3) dark spots (dominant features in the dark transverse markings of the trunk) just posterior to the forelimb insertions distinguishes *B. lepredourensis* sp. nov. from *B. stephenparki* sp. nov. and its relatively patternless head dorsum is diagnostic relative to both of its other clade members.

**Description:** Based on holotype MNHN-RA-2022.0050 (ex. AMS R.166253), adult male. Snout-vent length (SVL) 40.2 mm; trunk relatively short, depressed. Head oblong, large (HeadL 29% SVL), relatively narrow (HeadW 66% HeadL), depressed (HeadD 33% HeadL), weakly distinct from neck; parietal region broad, flat; interorbital/frontal region with a slight median depression, canthus moderately well developed; snout relatively short (EyeSn 38% HeadL), longer than eye diameter (OrbD 20% HeadL). Granular scales on anterior snout approximately twice diameter of those on occipital region. Pupil vertically oriented with crenelated margins; posteriormost superciliary scales slender, moderately elongate, pointed. Ear opening approximately 1.7 times high as wide, canted posterodorsally to anteroventrally; eye to ear distance greater than the diameter of eye (EyeEar 117% OrbD). Rostral rectangular, much broader than high, divided by a partial groove extending ventrally for ~20% of rostral height, contacted posteriorly by three internasals and two slightly enlarged supranasals, contacted posteroventrally by first supralabial. Nostrils oval and anterolaterally oriented, surrounded by three postnasals, one supranasal, and the rostral, in relatively broad contact with first supralabial. Three larger, rounded internasal scales and several smaller granules between supranasals. Mental subtriangular, somewhat deeper than wide; a single enlarged, hexagonal, median postmental in narrow contact with apex of mental; first infralabials



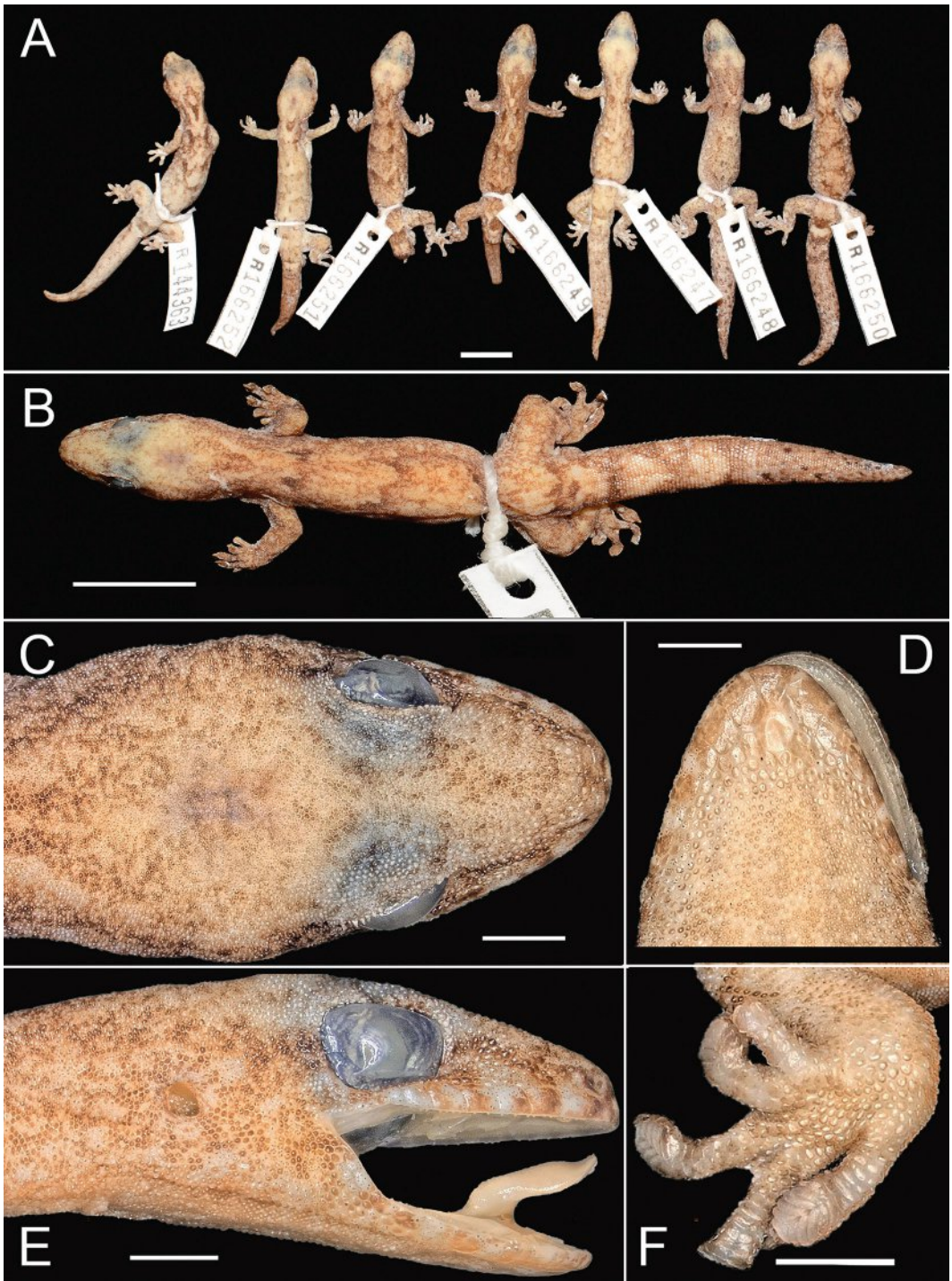


FIGURE 20. *Bavayia lepredourensis* sp. nov. A) Paratype series. B–F) Holotype MNHN-RA-2022.0050 (ex. AMS R.166253): B) whole body dorsal view; C) dorsal view of head; D) ventral view of head; E) right lateral view of head; F) ventral view of right pes. Scale bars: (A–B) = 10 mm, (C–F) = 2 mm.



each in contact posteriorly with median postmental and two much smaller lateral postmentals. First three to four rows of chin shields larger than remaining throat scales. Eight enlarged supralabial scales, of which the 5<sup>th</sup> through 8<sup>th</sup> are beneath the eye; 7L, 9R infralabial scales; 36 interorbital scale rows between superciliaries at midpoint of orbit, 23 interorbitals between the orbital margins of the frontal bone.

Dorsal scales small, homogeneous, very slightly conical, granular; ventral scales slightly larger than dorsals, subimbricate, enlarged posteriorly on the body. Posterior abdominal scales rounded, mid-abdominal scales elongate, diamond-shaped. Approximately 129 scale rows around mid-body. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Precloacal pores small and difficult to distinguish, in a single row, 8 (left) and 10 (right) on either side of a median poreless scale. Forearm and crus relatively short (12% and 15% of SVL, respectively), axillary pockets shallow. Digits short and moderately dilated distally, all bearing claws, those on digit I of both manus and pes greatly reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital lamellae typically paired, except variably single or fragmented at the base of digits. Distalmost lamella of digits II–V, manus and pes, undivided. Apical plates of digit I of manus and pes asymmetrical, with claw positioned in a notch between a larger medial and smaller lateral scensor. Lamellar counts from holotype: 6-9-11-14-9 left manus and 9-11-12-13-11 right pes.

TailL 29.4 mm (of which the last 12.3 mm is regenerated), approximately 73% of snout-vent length, stout, depressed, roughly oval in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, rectangular, arranged in regular rows. Surface of tail weakly segmented, caudal scale rows forming whorls, each whorl ~7 scale rows and 6 ventral scale rows long; midventral caudal scales not enlarged. Scales on pygal portion of tail much smaller ( $\frac{1}{2}$  to  $\frac{1}{3}$ ) than post pygal scales. Cloacal spurs consisting of a radiating set of 3–4 conical scales directed posterodorsally and borne on a raised mound adjacent to the cloaca.

**Color in preservative:** Dorsum and flanks mottled brown, with a pattern consisting of highly contrasting dark and light markings. Two large asymmetrical beige transverse blotches and three transverse dark markings between the limb insertions. Each pale marking containing light brown veining and speckling and bordered posteriorly by a more-or-less complete, well-defined, thin dark brown border. The dark transverse marking behind the forelimb insertion forming two prominent dorsolateral spots. A pair of thick, beige diverging stripes extend forward from the level of the shoulder forming a fork on the nape and continuous with the more-or-less patternless pale crown. Dorsum of crown, interorbital region and snout with only small scattered, irregular brown markings. An irregular row of small, pale spots, some mostly or entirely surrounded by a thin dark brown rim runs longitudinally along the dorsolateral margin of the head and trunk from the supralabials to the tail base and a second row extends along the ventrolateral margin from the level of the eye to the posterior margin of the hindlimb insertion. The mottled base pattern covers the remainder of the flanks. Medium brown dark stripes with irregular borders extend posteriorly from the snout, along the canthus, through the eye and above the ear to the shoulder region. The limbs are mottled and bear pale blotches. The tail has a somewhat darker brown base color than the trunk and bears a series of large cream-colored blotches, each bordered posteriorly by a well-defined dark chevron or scalloped margin and anteriorly by a paler and less-well demarcated edge. Brown interspaces between blotches shorter than blotches themselves; three well-developed pale blotches on original portion of tail. Body venter beige, with no speckling or dark pigmentation, although the mottled pattern of the flanks extends marginally onto the lateral margins of the ventral surface; hemipenial bulge whitish. Tail venter with a mosaic of whitish, beige and light brown scales.

**Color in life** (based on life photo in Whitaker et al. 2005): Ground color grayish to pinkish brown, dorsum of head ashy. A small number of diffuse white spots on flanks, more extensive small white spots on labials and lateral surface of head.

**Variation:** Mensural features of the paratypes are presented in Table 7. Tails of all specimens are broken or regenerated. Male paratypes with 18–21 precloacal pores, left and right series divided by one or two poreless median scales; no pores or dimples in females. Longest regenerated tail 79% SVL (AMS R.166248). Color pattern highly variable, but usually with a series of 2–3 large, often asymmetrical transverse blotches and 3–4 dark transverse markings between the limb insertions. However, the dorsal pattern ranges from very regular and well-defined (e.g., AMS R.166251) to highly irregular (e.g., CAS 265757). The pale fork on the nape is variably expressed but always evident, as are the small pale spots on the flanks. The dorsum of the head is always predominantly pale and any darker markings on the snout or interorbital region are relatively ill-defined, although a dark marking extending anteriorly from between the pale fork on the nape reaches the parietal table.

TABLE 7. Mensural data from the type series of *Bavayia lepredourensis* sp. nov.; \*tail regenerated, \*\*tail broken.

	Holotype	Paratypes						
	MNHN-RA 2022.0050	AMS R.R144363	CAS 265758	AMS R.166248	AMS R.166252	CAS 265757	AMS R.166251	CAS 265759
Sex	M	F	F	F	M	M	M	M
SVL	40.3	38.7	40.1	38.5	39.9	39.7	41.3	39.9
ForeaL	5.0	4.5	4.6	4.7	4.5	4.7	4.7	4.6
CrusL	6.1	5.4	5.4	5.6	5.6	5.7	5.5	6
TailL	29.4*	27.3*	15.7*	30.6*	17.3*	29.7*	5.4**	31.0*
TailW	4.3	3.7	3.2	4.2	3.2	3.9	3.8	4.2
HeadL	11.7	10.9	11.4	11.8	11.8	11.7	11.9	11.9
HeadW	7.4	7.0	6.8	6.9	7.3	7.2	7.4	7.3
HeadH	3.9	4.0	3.4	3.7	3.7	3.8	3.7	3.8
OrbD	2.4	2.3	2.3	2.2	2.3	2.1	2.3	2.2
EyeEar	2.8	3.1	3.7	3.1	3.1	3.5	3.3	3.4
SnEye	4.4	4.6	4.5	4.7	4.7	4.1	4.4	4.5
NarEye	3.0	2.9	2.8	3.2	3.1	2.8	2.8	3.1
InterOrb	4.5	5.1	4.5	4.2	4.5	4.8	4.7	4.5
EarL	1.1	1.3	0.9	1.1	1.2	0.9	1.1	1.1
InterNar	1.8	1.5	1.5	1.6	1.6	1.4	1.8	1.6

**Etymology:** Named for Île Leprédour, the only known place of occurrence of the species.

**Distribution:** Known only from Île Leprédour, at the northeastern entrance to the Baie de Saint Vincent, 0.25 km off the coast of Bourake and approximately 12.5 km south-southwest of Bouloupari, Province Sud, New Caledonia (Fig. 18). The island is a terrestrial nature preserve of 580 ha within the protected areas network of the Province Sud and supports about 30 ha of forêt sèche.

**Natural History:** *Bavayia lepredourensis* sp. nov. has only been recorded from a small area of degraded remnant dry forest around the top of the island.

**Conservation Status:** *Bavayia lepredourensis* sp. nov. meets the criteria (B1ab(iii)+2ab(iii)) to be categorized as Critically Endangered on the IUCN Red List. It has an extremely restricted distribution being known from Ile Leprédour in the Baie de St. Vincent, the size of which is ~5.5 km². The island has been severely degraded due to the activities of introduced deer and rabbits (Bouchet et al. 1995; de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-Wichatitsky 2006). The species has only been recorded from a single area of degraded remnant dry forest, and the total area of this forest type remaining on the island comprises three patches totaling ~5 ha. It is regarded as at a high level of threat from habitat degradation by wildfire (Ibanez et al. 2019) and from introduced deer which threaten habitat quality by damaging the structure of understory shrubs

used for foraging, and from the introduction of the Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from ground sheltering sites and arboreal foraging sites, and to affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001).

**Remarks:** This species was discussed and figured as *Bavayia* aff. *sauvagii* sp. 2 by Whitaker et al. (2005).

### *Bavayia exsuccida* Clade

**Content:** *Bavayia exsuccida* Bauer, Whitaker and Sadlier, 1998; *B. nehoueensis* sp. nov., *B. astrongatti* sp. nov.; *B. endemia* sp. nov.; *B. menazi* sp. nov.

**Definition:** Members of the *B. exsuccida* Clade are distinguished from other *B. sauvagii* Group taxa by their mostly small size and the placement of the claw of digit I of the manus and pes within a notch between a larger medial and smaller lateral apical scansor (vs. no lateral scansor in the *B. sauvagii* and *B. centralis* clades). They are distinct from *B. geitaina* in their much smaller size (maximum 59.5 mm vs. 72 mm) and in possessing a distinct V-shaped pale marking on the nape and 3–5 dark transverse markings (exceptionally more in some *B. menazi* sp. nov.) between the limb insertions (vs. 5 or more, usually 6 dark transverse markings) or 2–3 pale longitudinal stripes with a pale transverse marling on tail base (vs. rarely striped but, if so, bearing only two paravertebral stripes and without transverse pale marking on tail base). *Bavayia exsuccida* Clade members are most similar to geckos in the *B. pulchella* Clade, differing slightly in having a more angular snout tip shape.

### *Bavayia exsuccida* Bauer, Whitaker and Sadlier, 1998

Figures 21A–B.

1998 *Bavayia exsuccida* Bauer, Whitaker and Sadlier, Pacific Sci. 52:343; figs. 1A–B, 2A–D.

**Holotype:** CAS 202787, “Pindaï forest, Pindaï Peninsula, Province Nord (20 m elevation), New Caledonia, 21°19'57"S, 164°58'14"E,” coll. A.M. Bauer, R.A. Sadlier and S.A. Smith, 10 February 1997.

**Paratypes:** AMS R.147794, 147796, same locality as holotype, coll. H. Jourdan, 22 February 1995; AMS R.149362–63, same locality as holotype, coll. A.H. Whitaker, 9 June 1996; AMS R.150657, R.150658\*, R.150659, CAS 202759–61, MNHN 1997.3277, same locality as holotype, coll. A.M. Bauer, R.A. Sadlier and S.A. Smith, 8 February 1997; AMS R.150667–68\*, R.150669, CAS 202786, 202788–89, MNHN 1997.3276, same locality as holotype, coll. A.M. Bauer, R.A. Sadlier and S.A. Smith, 10 February 1997.

**Referred Material:** (all localities in Province Nord) CAS 205542–43, 205544–46, Pindaï, 21°19'57"S, 164°58'14"E; AMS R.150667–68\*, R.150669, Pindaï, 21°20'02"S, 164°58'21"E.

**Diagnosis:** An average-sized member of the *Bavayia exsuccida* Clade (maximum SVL 47.2 mm) with a short, depressed body and moderately long, thick tail (108% SVL); digits II–V relatively narrow; 9–13 mostly divided lamellae beneath digit IV of hindfoot; claw of digit I of manus and pes borne between a larger medial apical scansor and a smaller lateral apical scansor. Single row of 16–23 precloacal pores. Dorsum typically light brown with a prominent cream to white “V”-shaped marking with slender tips on the nape and shoulders, followed by a series of 3–4 symmetrical to asymmetrical, dark transverse markings of variable boldness and thickness. Flanks scattered with small, white spots.

Within the *B. exsuccida* clade it may be distinguished from all other species by its distinctive nape marking (see Figs. 21A–B). From *B. endemia* sp. nov. it is further distinguished by its much smaller size (47.2 vs. 59.5 mm maximum SLV) and from *B. menazi* sp. nov. by its lack of chiefly longitudinal pattern elements.



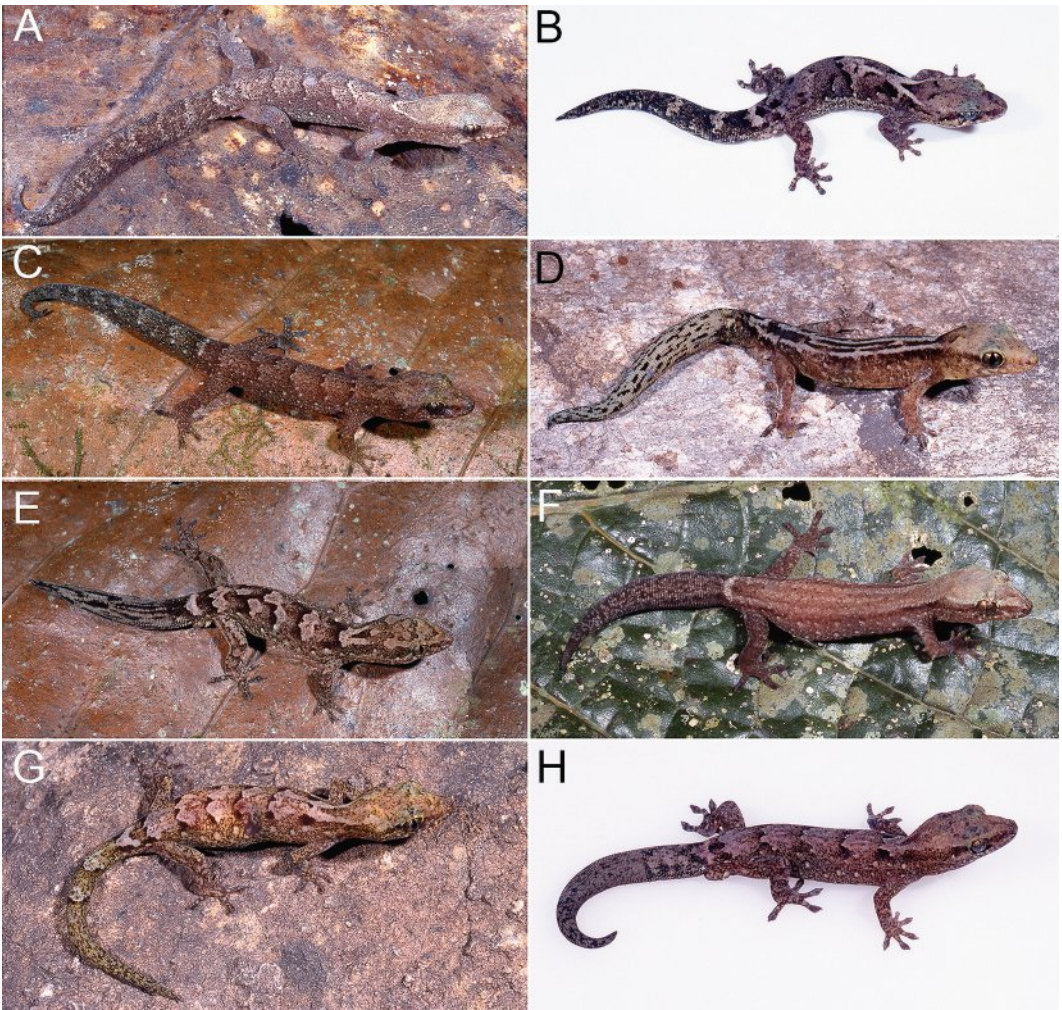


FIGURE 21. Life photographs of representatives of the *Bavayia exsuccida* Clade. A) *B. exsuccida* (paratype, AMS R.149362), Pindaï; B) *B. exsuccida* (paratype, AMS R. 149363), Pindaï; C) *B. astrongatti* (holotype, MNHN-RA-2022.0059 [ex. AMB 7810]), Massif d'Ouazangou-Taom; D) *B. astrongatti* (paratype AMS R.153717), 5.8 km N Oacao; E) *B. nehoueensis* (paratype CAS 265767, ex. AMB 7794), Rivière Nêhoué; F) *B. menazi* (paratype, AMS R.167170), Mt. Menazi; G) *B. endemia* (non-type CAS 265784, ex. AMB 7922), Pic d'Amoa; H) *B. endemia* (non-type), Kaala-Gomen. All photos by R.A. Sadlier.

**Distribution:** Known only from the sclerophyll forest of the Pindaï Peninsula, on the southwestern coast of the Province Nord (Fig. 22).

**Natural History:** Occupies low canopied (usually <10 m), *Acacia spirorbis* dominated sclerophyll forest habitats. Night active on slender branches and twigs. Drops to the ground as a defensive behavior (Bauer et al. 1998). Its generalist arthropod diet includes beetles, spiders, ants and dipterans. Clutch size is fixed at two eggs and gravid females have been found in February. Captive husbandry and reproduction have been documented (Frank 2017, 2018). Trombiculid mites have been found between the digits in this species (Bauer et al. 1998).

**Conservation Status:** *Bavayia exsuccida* meets the criteria (B1ab(ii, iii, v) + 2ab(ii, iii, v)) to be categorized as Critically Endangered on the IUCN Red List (Sadlier et al. 2021c). It has an



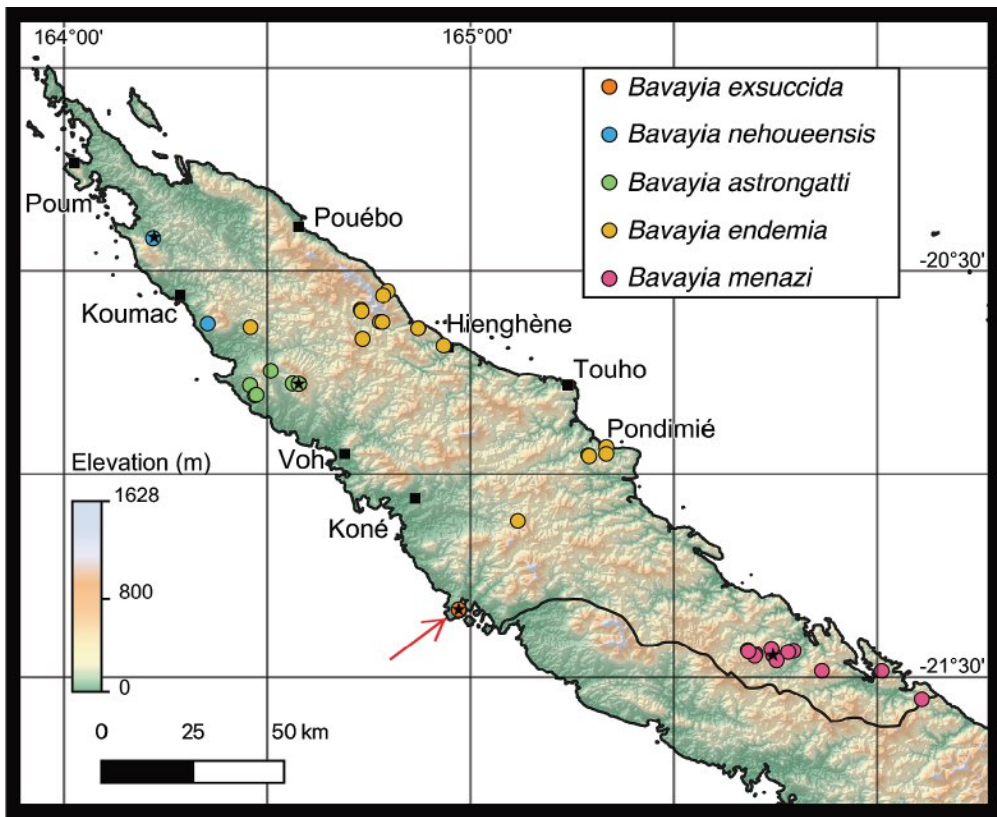


FIGURE 22. Map showing the distribution of members of the *Bavayia exsuccida* Clade. *Bavayia exsuccida* (orange, see arrow), *B. nehoueensis* (blue), *B. astrongatti* (green), *B. endemia* (mustard), *B. menazi* (pink). Stars indicate type localities. Cartography by J. DeBoer.

extremely restricted distribution being known from a single locality on the Presqu'île de Pindai with an estimated extent of occurrence and area of occupancy of 8 km<sup>2</sup>. This species occurs in sclerophyll forest and is assumed to have suffered substantial reduction in population size and extent from past habitat loss resulting from wildfires (Ibanez et al. 2019) and clearing for agriculture. It is further threatened by degradation to the quality of habitat by introduced deer (de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-Wichatitsky 2006), and from the introduced Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from ground sheltering sites and arboreal foraging sites, and to affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001).

**Remarks:** Osteological information was provided by Bauer et al. (1998).

***Bavayia nehoueensis* sp. nov.**

Figures 21E, 23.

**Holotype:** MNHN-RA-2022.0058 (ex. AMB 7795), Rivière Néhoué, Province Nord, New Caledonia, 20°25'03"S, 164°13'15"E, coll. A.M. Bauer, 22 January 2003.

**Paratypes:** AMS R.188634\* (ex. AMH 52717), Rivière Néhoué, 20 km NW Koumac, Province Nord, New Caledonia, 20°25'12.3"S, 164°13'04.5"E, coll. A.H. Whitaker and V.A. Whitaker, 28 September 2001; CAS 265767–69 (ex. AMB 7794, 7821–22), AMS

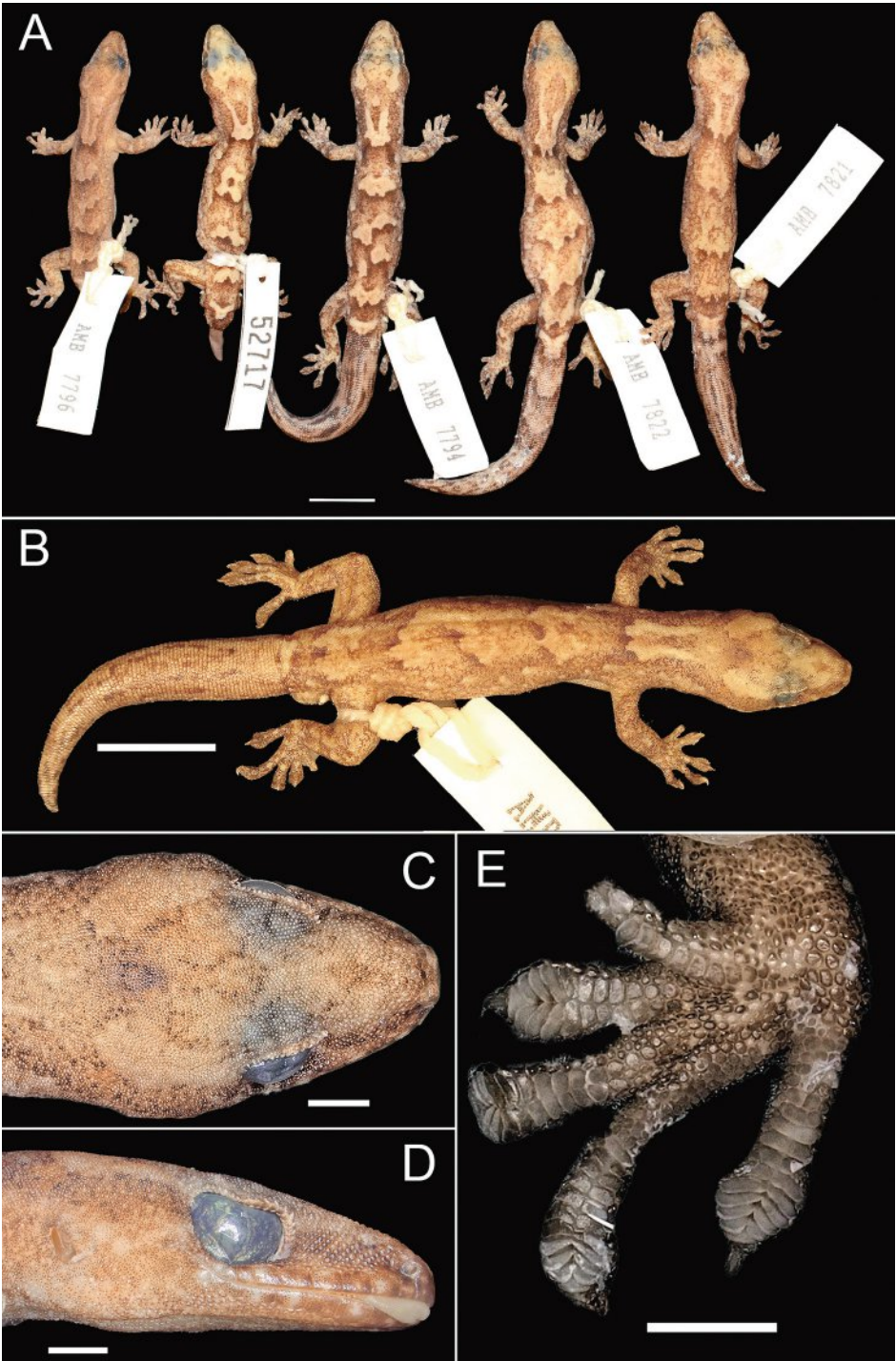


FIGURE 23. *Bavayia nehoueensis* sp. nov. A) Paratype series. B–E) Holotype MNHN-RA-2022.0058 (ex. AMB 7795): B) whole body dorsal view; C) dorsal view of head; D) right lateral view of head; E) ventral view of right pes. Scale bars: (A–B) = 10 mm, (C–E) = 2 mm.

R.188659 (ex. AMB 7796), Rivière Néhoulé, Province Nord, 20°25'03"S, 164°13'15"E, coll. A.M. Bauer, 22 January 2003.

**Referred Material:** CAS 265879\*, Mt. Kaala, Oue Injob (stream), west side of Kaala Mas-sif, Province Nord, 20°37'45.1"S, 164°21'10.4"E.

**Diagnosis:** An average-sized member of the *Bavayia exsuccida* Clade (maximum SVL 46.4 mm, CAS 265769), only slightly smaller than most other clade members, with a short, depressed body and likely with a moderately long, thick tail (105–110% SVL); digits II–V relatively narrow; 11 mostly divided lamellae beneath digit IV of hindfoot; claw of digit I of manus and pes borne between a larger medial apical scansor and a smaller lateral apical scansor. Single row of 18–20 small, indistinct precloacal pores in males. Dorsum with a generally boldly contrasting dorsal pattern of 3–4 dark, often asymmetrical, transverse bars between the limb insertions, each preceded by a strongly delineated pale blotch. A prominent pair of pale lines extending forward from a pale shoulder blotch confluent, or nearly so, with pale temporal markings, enclosing a brown occipital patch with a small pale central marking. A longitudinal series white spots on speckled flanks; similar white spots incorporated into the lateral margins of the pale dorsal blotches; a cream-colored chevron or bifid marking on the pygal portion of the tail and extending on to base of post-pygal region.

Within the *B. exsuccida* Clade it may be distinguished from *B. endemia* sp. nov. by its much smaller size (46.4 vs. 59.5 mm maximum SLV), from *B. menazi* sp. nov. by its lack of chiefly longitudinal pattern elements, from *B. exsuccida* by its thicker, duller nape markings (vs. bright white, slender "V"-shaped marking, and from *B. astrongatti* sp. nov. by its generally bolder pale trunk blotches and prominent upper temporal markings.

**Description:** Based on holotype MNHN-RA-2022.0058 (ex. AMB 7795), an adult male. Snout-vent length (SVL) 42.9 mm; trunk relatively long, gracile, depressed. Head oblong, large (HeadL 29% SVL), narrow (HeadW 62% HeadL), depressed (HeadD 32% HeadL), distinct from neck; interorbital/frontal region broad, flat with very slight midline depression, canthus weakly developed; snout relatively long (EyeSn 36% HeadL), more than twice eye diameter (OrbD 17% HeadL). Granular scales on anterior snout approximately twice diameter of those on occipital region. Pupil vertically oriented with crenelated margins; several superciliary scales in posterodorsal quadrant of orbit conical, moderately elongate, pointed. Ear opening approximately twice as high as wide, canted slightly posterodorsally to anteroventrally; eye to ear distance approximately 1.5 times diameter eye (EyeEar 150% OrbD). Rostral rectangular, much broader than high, no median crease, contacted posteriorly by three subequal, roughly pentagonal internasals and two slightly enlarged supranasals, contacted posteroventrally by first supralabial. Nostrils oval and anterolaterally oriented, surrounded by three postnasals, one supranasal, and the rostral; in broad contact with first supralabial. Mental triangular, approximately as deep as wide; a single enlarged, septagonal, median postmental in narrow contact with apex of mental, separating infralabials from one another; first infralabials each in contact posteriorly with median postmental and one smaller lateral postmental. First three to five rows of chin shields larger than remaining throat scales. 10L, 10R enlarged supralabial scales, of which the 6<sup>th</sup> through 10<sup>th</sup> are beneath the eye; 8L, 9R infralabial scales; 47 interorbital scale rows between superciliaries at midpoint of orbit, 19 interorbitals between the orbital margins across the narrowest point of frontal bone.

Dorsal scales small, homogeneous, very slightly conical, granular; ventral scales slightly larger than dorsals, juxtaposed anteriorly becoming subimbricate and somewhat enlarged posteriorly on the body. Posterior abdominal scales rounded, mid-abdominal scales elongate, diamond-shaped. Approximately 133 scale rows around midbody. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Precloacal pores small and very difficult to discern,

in a single continuous row of ~18. Forearm and crus relatively long (13% and 16% of SVL, respectively), axillary pockets shallow. Digits short and moderately narrow, all bearing claws, those on digit I of both manus and pes reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital lamellae typically paired, except variably single or fragmented at the base of digits. Distalmost lamella of digits II–V, manus and pes, undivided. Claw of digit I positioned lateral to a single apical scansor. Lamellar counts from right side of holotype 7-9-12-12-10 manus and 7-11-11-11-10 pes.

Tail entirely regenerated (24.1 mm), approximately 56% of snout-vent length, tapered, stout, roughly oval in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, rectangular, arranged in regular rows. No tail segmentation on regenerate. Scales on pygal portion of tail much smaller ( $\frac{1}{2}$  to  $\frac{1}{3}$ ) than postpygal scales. Cloacal spur comprising a single, very large, compressed, keeled, flattened, conical scale with several smaller subtending scales, directed posterodorsally and borne on a raised mound adjacent to the cloaca.

**Color in preservative:** Dorsum and flanks mottled light brown with small, irregularly distributed darker brown markings and vague, irregular, cream to whitish spots, with a pattern consisting of contrasting dark and light markings. Three somewhat asymmetrical cream to beige transverse blotches between shoulder and anterior point of hind limb insertion, each with an anterior border with two main anteriorly projecting points or bulges and a scalloped posterior edge. The second and third trunk blotches are fused on the left side of the body only. Each anterior edge with a weakly-differentiated narrow brown margin and each posterior edge bordered by a thicker, darker brown margin. A similar pale blotch, partly divided into left and right lobes, lies over the sacrum. A pair of brighter pale markings extends anteriorly from a dark brown transverse marking at the level of the shoulders along the neck to the level of the occiput; following a short gap, these pale markings extend onto the upper temporal region, over the top of the orbit and on to the snout. Areas of mottled ground color are present between the pale markings on the neck, on the postero-medial border of the parietal table, and over the center of the nasal bones. A slightly darker streak passes from the snout, through the eye and across the lower temporal region, where its margins are well defined, and is confluent posteriorly with the ground color at the dorsal margin of the flank. Additionally, there is a midline circular series of medium brown dots at the posterior level of the orbits and several other scattered brown markings on the crown. The labial scales are mostly medium brown with pigment-free areas producing white spots within individual labial scales. A series of distinct, whitish spots are present on the upper flanks, just lateral to the stripe of ground color which itself lies lateral to the pale blotches of the trunk.

The limbs are mottled like the body dorsum with paler blotches and darker reticulations and irregular markings. Small whitish spots are present on the digits. The pygal portion of the tail bears a cream-colored marking at the tail base constriction; the regenerated tail is light brown with numerous, darker, mostly longitudinal dashes and lines running to the tip. Body venter brownish throughout, with darker pigmentation under the limbs, around the cloacal and under the tail; some irregular whitish markings on the hemipenial bulge.

**Color in life:** (based on paratype CAS 265727). Body dorsum mottled grayish brown, pale dorsal markings a dusty pinkish brown, bordered posteriorly by a transverse series of tiny white dots and by dark chocolate brown transverse markings, gradually fading posteriorly to ground color mottling. Three such markings between limb insertions, posterior one fragmented, middle one partly divided and narrowed at mid-dorsum. An additional pale marking across posterior sacrum and another, just anterior to the forelimb insertions, bifurcating and enclosing a chocolate brown marking in the resulting V-shaped notch. Dorsum of head mostly light brown with medium brown mark-



ings from the snout, through the eye and on to the temporal region, across the occiput, between the orbits, and antorbitally. A series of small bright white spots from the ventral margin of the temporal streak to the hindlimb insertion. Limbs with dusky pinkish brown blotches, digits grayish brown with ashy spots. Pygal portion to tail with a pinkish-white transverse marking with a dark chocolate brown posterior border coinciding with the tail base constriction and extending on to the short original portion of post-pygal tail. Regenerated tail grayish brown with scattered, irregular, longitudinal dark brown markings. Body venter beige to light brown with some darker pigmentation on lateral margins. Cloacal spurs white. Iris silvery to coppery.

**Variation:** Mensural features of paratypes are presented in Table 8. Paratypes with 1–3 internasals contacting the rostral, none with median rostral crease. First infralabials typically separated behind the mental by an enlarged median postmental chin shield (except in AMS R.188634 where there is broad contact behind the nasals). Collectively the first infralabials border 3–4 enlarged chin shields. Male paratypes with ~18–20 precloacal pores (number approximate as the pores are very small and show little contrast with the scales); no pores or dimpled scales in females. Longest regenerated tail 88% SVL (CAS 265769). Color pattern variable, but always with a series of three pale dorsal markings between shoulder and hindlimb insertion, although these may be fragmented (CAS 265767) or fused (AMS R.188634). Pale markings on neck always clearly marked as are pale upper temporal markings. In specimen with longest original tail pale marking on pygal portion of tail extends past tail constriction onto post-pygal tail. This marking is followed by a thick medium to dark brown border and then by further two similar pale (cream-colored) markings.

TABLE 8. Mensural data from the type series of *Bavayia nehoueensis* sp. nov.; \*tail regenerated.

	Holotype	Paratypes				
	MNHN-RA 2022.0058	CAS 265768	CAS 265769	AMS R.188634	CAS 265767	AMS R.188659
Sex	M	M	F	M	M	F
SVL	42.9	42.8	46.4	40.9	44.6	36.3
ForeaL	5.5	5.5	5.5	4.6	5.2	4.5
CrusL	6.7	6.6	6.4	5.8	6.2	5.4
TailL	24.1*	33.8*	40.8*	10.3*	27.1*	3.1*
HeadL	12.6	12.4	12.9	11.6	12.7	10.7
HeadW	7.8	7.9	8.0	7.5	7.8	6.4
HeadH	4.1	3.9	4.2	3.9	4.2	3.5
OrbD	2.2	2.3	2.5	2.4	2.2	2.0
EyeEar	3.3	3.2	3.4	3.2	3.3	3.2
SnEye	4.5	4.6	4.9	4.6	4.8	3.8
NarEye	3.2	3.2	3.5	3.1	3.5	2.3
InterOrb	4.4	4.4	4.9	4.5	4.9	3.6
EarL	1.2	1.3	1.3	1.3	1.2	0.9
InterNar	1.3	1.2	1.8	1.6	1.6	1.4

**Etymology:** Named for the type locality along the Rivière Néhoué in the Province Nord.

**Distribution:** Known from the Rivière Néhoué and from the west side of the Kaala Massif (Fig. 22). The two localities are approximately 28 km distant from one another. The species likely is present in forested habitats throughout the intervening area.

**Natural History:** *Bavayia nehoueensis* sp. nov. has been recorded from riverine forest at Rivière Néhoué (Fig. 24A), whereas the individual from Mt. Kaala was foraging on a streamside shrub at night. The species is presumed to produce two-egg clutches and to be insectivorous, as are all *Bavayia* for which data are available.

**Conservation Status:** *Bavayia nehoueensis* sp. nov. meets the criteria (B1ab(ii, iii) + 2ab(ii, iii)) to be categorized as Endangered on the IUCN Red List. It is known only from two disjunct

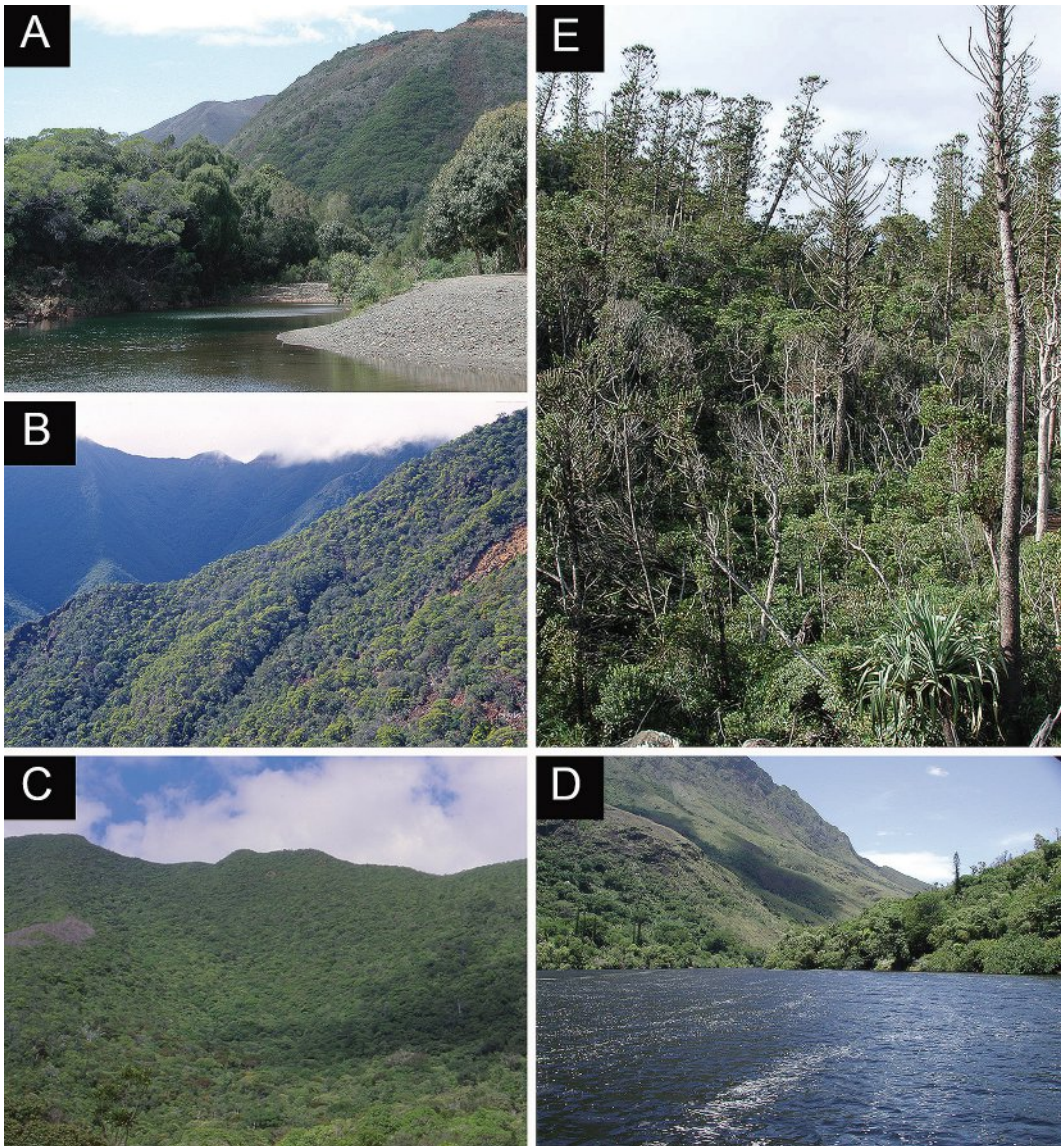


FIGURE 24. *Bavayia* habitats. A) Riverine forest along Rivière Néhoué, Province Nord, habitat of *Bavayia nehoueensis* sp. nov. and *B. borealis* sp. nov.; B) Mt. Taom, Province Nord. Maquis formations in the foreground; gullies in the background support closed forest habitat of *Bavayia astrongatti* sp. nov. and an isolated population of *B. montana*; C) Panié Massif, Province Nord, which supports a diverse representation of *Bavayia* spp., mostly in closed forest formations. *Bavayia ornata* occurs only at mid-elevations, *B. montana* occupies forests from mid- to high elevation, *B. borealis* sp. nov. is present from sea level to mid-elevation and *B. endemia* sp. nov. occurs at a range of elevations; D) Ouaième River mouth between the Panié Massif and Hienghène, Province Nord; degraded lowland forest habitat of *Bavayia borealis* sp. nov., *Bavayia endemia* sp. nov. also occurs in closed forest habitats from low elevation to ~1000 m in this area; E) High elevation *Araucaria* forest on Mt. Ménazi, Province Nord, habitat of *Bavayia menazi* sp. nov. and *B. kanaky* sp. nov.). Photos A, C, D by A.M. Bauer, photo B by A.H. Whitaker, photo E by R.A. Sadlier.

populations in the northwest of Grande Terre, one at the Rivière Néhoué and one on Mt. Kaala, with an estimated extent of occurrence of 5–10 km<sup>2</sup> and 30 km<sup>2</sup> respectively. The species is presumed to have suffered a reduction in population size and extent from past loss and degradation of habitat through clearance for agriculture and from wildfires (Ibanez et al. 2019). The most serious threat to the species is from the expansion of nickel mining on Mt. Kaala (Pascal et al. 2008), from disturbance and habitat degradation by introduced deer and pigs (de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-Wichatitsky 2006) at Rivière Néhoué, and at both sites from the introduced Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from ground sheltering sites and arboreal foraging sites, and to affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001).

**Remarks:** Referred to as *Bavayia* aff. *exsuccida* by Whitaker Consultants Limited (2002).

***Bavayia astrongatti* sp. nov.**

Figures 21D, 25.

**Holotype:** MNHN-RA-2022.0059 (ex. AMB 7810), Massif d'Ouazangou-Taom (alt. 870 m), Province Nord, New Caledonia, 20°46'40"S, 164°34'38"E, coll. A.M. Bauer and R.A. Sadlier, 23 January 2003.

**Paratypes:** CAS 265774 (ex. AMB 7809), data as for holotype; AMS R.161167–68, Massif d'Ouazangou-Taom, Mt. Taom, Gomen Mine, Province Nord, New Caledonia, 20°46'36"S, 164°33'45"E, coll. A.H. Whitaker and V.A. Whitaker, 12 and 11 June 2002, respectively; AMS R.153717, 5.8 km N Ouaco (RPN1), Province Nord, New Caledonia, 20°46'51"S, 164°27'26"E, coll. R.A. Sadlier, M. Christy and M. Thurlow, 5 December 1998; CAS 265770–73 (ex. AMB 7674–75, 7677–78), Siba, near communications tower, Province Nord, New Caledonia, 20°48'16"S, 164°28'23"E, coll. A.M. Bauer and R.A. Sadlier, 18 January 2003; AMS R.161274\* Siba (peak), Tinip, 30 km NW Voh, Province Nord, New Caledonia, 20°48'23"S, 164°28'10"E, coll. A.H. Whitaker and V.A. Whitaker, 22 October, 2001.

**Referred Material:** (all localities in Province Nord) AMS R.175811, Ouaco (Mt. Ouazangou), 20°44'44.3081"S, 164°30'20.9642"E; CAS 265781, data as for holotype; AMS R.161155\*, R.161169–72, Massif d'Ouazangou-Taom, Mt. Taom, Gomen Mine, 20°46'36"S, 164°33'45"E; AMS R.153718–19\*, 5.8 km N Ouaco (RPN1), 20°46'51"S, 164°27'26"E; CAS 265775–80, Siba, near communications tower, 20°48'16"S, 164°28'23"E; AMS R.161275\*, R.161276–77, Siba (peak), Tinip, 30 km NW Voh, 20°48'23"S, 164°28'10"E.

**Diagnosis:** An average-sized member of the *Bavayia exsuccida* Clade (maximum SVL 47.4 mm, MNHN-RA-2022.0059) with a short, depressed body and a moderately long, thick tail (107% SVL); digits II–V relatively narrow; 10–14 mostly divided lamellae beneath digit IV of hindfoot; claw of digit I of manus and pes borne between a larger medial apical scensor and a smaller lateral apical scensor. Single row of 8–26 small, indistinct precloacal pores in males. Dorsum with a generally weakly to moderately contrasting dorsal pattern of 4–5 dark, usually symmetrical, transverse bars between the limb insertions, each preceded by a poorly to moderately delineated pale blotch. A pair of pale lines may or may not extend forward from a pale shoulder blotch, but are usually not confluent with pale temporal markings, which may be absent or weakly delineated.

A longitudinal series white spots on speckled flanks; similar white spots incorporated into the lateral margins of the pale dorsal blotches; a cream-colored chevron or bifid marking on the pygal portion of the tail and extending on to base of post-pygal region.

Within the *B. exsuccida* Clade, *B. astrongatti* may be distinguished from *B. endemia* sp. nov. by its much smaller size (47.4 vs. 59.5 mm maximum SLV), from *B. menazi* sp. nov. by its lack of chiefly longitudinal pattern elements (AMS R.153717 is exceptional in having a striped pattern, but



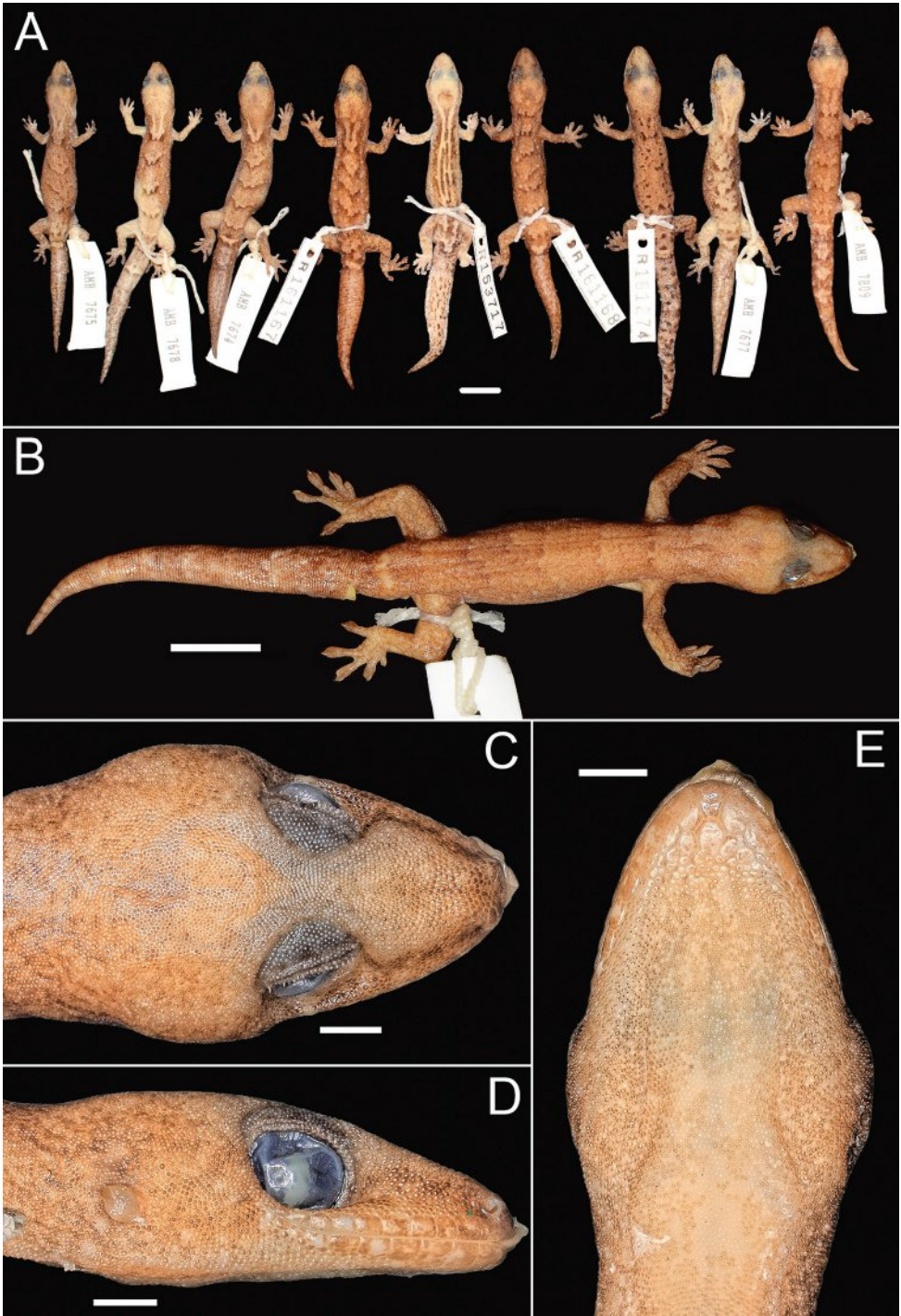


FIGURE 25. *Bavayia astrongatti* sp. nov. A) Paratype series. B–E) Holotype MNHN-RA-2022.0059 (ex. AMB 7810): B) whole body dorsal view; C) dorsal view of head; D) right lateral view of head; E) ventral view of head. Scale bars: (A–B) = 10 mm, (C–E) = 2 mm.



differs from *B. menazi* in the boldness of its dorsal stripes), from *B. exsuccida* by its lack of a bright white, slender “V”-shaped nape marking, and from *B. nehoueensis* sp. nov. by its generally less bold pale trunk blotches and less prominent upper temporal markings.

**Description:** Based on holotype MNHN-RA-2022.0059 (ex. AMB 7810), an adult male. Snout-vent length (SVL) 47.4 mm; trunk relatively long, gracile, depressed. Head oblong, moderately large (HeadL 27% SVL), wide (HeadW 70% HeadL), not depressed (HeadD 39% HeadL), distinct from neck; interorbital/frontal region with slight midline depression, canthus well developed; snout long (EyeSn 44% HeadL), much less than twice eye diameter (OrbD 25% HeadL). Granular scales on anterior snout approximately twice diameter of those on occipital region. Pupil vertically oriented with crenelated margins; several superciliary scales in posterodorsal quadrant of orbit conical, moderately elongate, pointed. Ear opening approximately 1.3 times high as wide, canted slightly posterodorsally to anteroventrally; eye to ear distance greater than the diameter with of eye (EyeEar 122% OrbD). Rostral rectangular, much broader than high, no median crease, contacted posteriorly by three, roughly rectangular internasals and two slightly enlarged supranasals, contacted posteroventrally by first supralabial. Nostrils oval and anterolaterally oriented, surrounded by three postnasals, one supranasal, and the rostral; in broad contact with first supralabial. Mental triangular, slightly wider than deep; a single enlarged, hexagonal, median postmental in narrow contact with apex of mental, separating first infralabials from one another; first infralabials each in contact posteriorly with median postmental and two (left) or one (right) smaller lateral postmental. First three to four rows of chin shields larger than remaining throat scales. 11 L, 11 R enlarged supralabial scales, of which the 8<sup>th</sup> through 11<sup>th</sup> are beneath the eye; 10 L, 10 R infralabial scales; 46 interorbital scale rows between superciliaries at midpoint of orbit, 16 interorbitals between the orbital margins at the narrowest point of frontal bone.

Dorsal scales small, homogeneous, very slightly conical, granular; ventral scales slightly larger than dorsals, juxtaposed anteriorly becoming subimbricate and somewhat enlarged posteriorly on the body. Posterior abdominal scales rounded, mid-abdominal scales elongate, diamond-shaped. Approximately 132 scale rows around midbody. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Precloacal pores small and very difficult to discern, in a single continuous row of 11. Forearm and crus relatively long (13% and 15% of SVL, respectively), axillary pockets shallow. Digits long and moderately narrow, all bearing claws, those on digit I of both manus and pes reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital lamellae typically paired, except variably single or fragmented at the base of digits. Distalmost lamella of digits II–V, manus and pes, undivided. Claw of digit I positioned lateral to a single apical scissor. Lamellar counts from holotype: 6-10-11-14-11 left manus and 5-11-12-14-10 right pes.

TailL 43.3 mm (distal 9.5 mm regenerated), approximately 91% of snout-vent length, tapered, stout, roughly oval in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, rectangular, arranged in regular rows. No tail segmentation on regenerate. Scales on pygal portion of tail much smaller ( $\frac{1}{2}$  to  $\frac{1}{3}$ ) than postpygal scales. Cloacal spurs comprising a pair of large, compressed, flattened, conical, posterodorsally directed scales, just posterolateral of the cloaca.

**Color in preservative:** Dorsum and flanks mottled light brown with small, irregularly distributed darker brown markings and vague, irregular, cream to whitish spots, with a faint pattern of five slightly darker transverse markings between the shoulder and sacrum, each preceded by a transverse series of vague whitish spots extending on to the flanks, where they form a longitudinal series and are more evident than on the dorsum. Intervening areas between sequential dark bars mottled, darker anteriorly and becoming paler posteriorly between shoulder and midbody, but more

uniform posteriorly. Anterior to dark shoulder bar is a beige blotch that bifurcates into a pair of thick parallel longitudinal markings that meet behind the occiput and are contiguous with the similarly colored dorsum of the head. A narrow, middorsal ground color streak occupies the space between the pale longitudinal markings on the neck, there are small, scattered, medium brown markings on the interorbital region, and a narrow medium brown streak runs from the front of the snout to approximately the midpoint of the snout. An irregular darker brown stripe runs from the nostrils, through and beneath the eye and on to the cheek and temporal region, becoming more diffuse behind the eye and confluent with an ill-defined stripe extending from the nape on to the upper flanks. Labial scales mostly brown anteriorly with some pigmentless areas and predominantly white posteriorly but with some scales partly or wholly brown. Limbs mottled, similar to trunk dorsum with vague reticular network of thin light brown lines. Pygal portion of tail with a prominent and well-defined transverse cream marking followed by a more diffuse dark brown marking at the tail base constriction. Original tail mottled light and medium brown with six narrow, irregular, whitish dorsal blotches, each narrower than the mottled interspaces. Anteriormost two whitish blotches with a thick medium brown posterior border; edges of more posterior markings ill defined. Body venter beige throughout, with darker pigmentation under the limbs, around the cloaca and on the chin and throat. Subcaudal surfaces light to medium brown with scattered beige to cream markings, generally each smaller than an individual scale.

**Color in life:** based on holotype MNHN-RA-2022.0059 (ex. AMB 7810). Body dorsum light and medium brown mottled with beige to cream, with five relatively narrow, medium to chocolate brown transverse markings from shoulder to sacrum, each preceded by a border of white dots ranging from a single granule to several granules in extent; that crossing the shoulders with the posterior projections of pale bifurcating neck marking interrupting the bar in paravertebral position. The posterior portion of each trunk segment between dark bars decidedly paler than the anterior. Two series of small bright white spots extending from behind and below the orbit, below the temporal streak, above the forelimb insertion and along the flanks and continuing above the hindlimb insertion and on to the lateral margin of the original tail. Head dorsum weakly patterned, with scattered, ill-defined markings on the parietal table, and a narrow stripe passing along the midline of the anterior portion of the snout, paralleled posterolaterally by a pair of cream-colored spots. Limbs mottled like dorsum, with numerous small, whitish to beige punctations. Pygal portion of tail with a small, ill-defined pale patch followed by a chocolate brown band crossing the tail base on to the post-pygal part of the tail. The remainder of the original tail strongly set off in color, mottled grayish-brown with a series of six white to ashy gray dorsal markings on the original portion of the tail, each with an irregular dark posterior border; regenerated tail similar but without discrete pale markings. Venter beige to light brown with some more pigmentation along lateral margins of body. In AMS R.153757 the dorsal pattern is dominated by two ashy gray stripes extending from the nape to the tail base, with a third, median stripe restricted entirely to between the limb insertions. Spaces in between stripes, as well as the lateral border of the stripes are quite a dark brown. White flank spots less bright than in holotype. Head mostly unpatterned, beige.

**Variation:** Mensural features of paratypes are presented in Table 9. Paratypes with 3–6 internasals contacting the rostral, none with median rostral crease. First infralabials separated behind the mental in all paratypes by an enlarged median postmental chin shield. Collectively the first infralabials border 3–4 enlarged chin shields. Male paratypes with a single row of ~8–26 precloacal pores (number approximate as the pores are very small and show little contrast with the scales), with breaks in the series near the midline common; no pores or dimpled scales in females. Longest adult tail (tip only regenerated) 95% SVL (AMS R.161274); original tail length in juvenile AMS R.161171 (31.0 mm SVL) 107% SVL. Digits III and IV of right pes anomalously fused in paratype

TABLE 9. Mensural data from the type series of *Bavayia astrongatti* sp. nov.; \*tail regenerated.

	Holotype	Paratypes								
	MNHN-RA 2022.0059	CAS 265774	AMS R.161167	CAS 265771	CAS 265772	AMS R.161168	AMS R.161274	CAS 265770	CAS 265773	AMS R.153717
Sex	M	M	M	F	F	M	M	M	F	M
SVL	47.4	46.3	46.1	42.4	43.1	46.1	46.1	42.2	43.1	43.0
ForeaL	6.0	5.8	5.4	4.6	5.4	5.2	5.4	5.1	5.0	5.4
CrusL	7.1	7.0	6.3	5.4	6.2	6.4	6.6	6.4	6.2	6.3
TailL	43.3	39.9*	33.3*	26.0*	30.8*	24.4*	43.8	26.8*	31.6	33.5*
HeadL	12.6	12.5	12.2	10.5	10.9	11.7	11.3	10.9	11	11.3
HeadW	8.8	8.6	8.2	7.2	7.9	8.4	8.4	7.8	7.5	7.9
HeadH	4.9	4.6	4.4	3.6	4.4	4.2	4.1	3.96	3.9	4.2
OrbD	3.1	3.4	3.1	2.8	3.1	3.1	3.0	2.86	2.6	2.9
EyeEar	3.8	4.1	3.8	3.0	3.7	3.6	3.7	3.6	3.2	3.4
SnEye	5.6	5.3	5.1	4.9	5.0	5.4	5.5	4.7	4.3	4.7
NarEye	3.8	3.6	3.6	3.2	3.6	3.9	3.7	3.3	3.2	3.4
InterOrb	4.9	4.6	4.4	4.5	4.8	4.9	4.5	4.8	4.5	4.6
EarL	1.7	1.5	1.4	1.3	1.5	1.8	1.6	1.3	1.3	1.3
InterNar	1.6	1.4	1.7	1.5	1.7	1.6	1.6	1.7	1.4	1.7

AMS R.153717. Color pattern extremely variable, usually with five dark transverse markings preceded by a row of small white dots between shoulder and sacrum but may be highly fragmented (AMS R.161274) or with a series of longitudinal pale dorsal stripes (AMS R.153717). Head variably weakly patterned but always predominantly pale, contiguous or not with bifurcating pale marking on neck. Markings on original tails similar to holotype, or with pale markings more diamond-shaped (CAS 265774) or extremely irregular (AMS R.161274).

**Etymology:** The specific epithet is a patronym honoring our friend and colleague Stéphane Astrongatt (born 1973), an accomplished naturalist specializing in the lizard fauna of New Caledonia.

**Distribution:** Endemic to the Province Nord of New Caledonia where it occurs on the Massif d’Ouazangou-Taom and the adjacent Onajiele and Siba peaks, from which it is separated by the Taom River Valley (Fig. 22). NMBA 6998–99 from Koné may be attributable to this species or to *B. endemia* sp. nov. but require reexamination.

**Natural History:** *Bavayia astrongatti* sp. nov. has been recorded from high elevation (~900 m) maquis, closed-forest and the margin of forest on Mt. Taom (Fig. 24B), and low elevation (200–240 m) closed forest on Siba. This species has a clutch size of two eggs and the smallest juvenile collected (AMS R.153719) had an SVL of 22.3 mm. Presumably insectivorous like its congeners.

**Conservation Status:** *Bavayia astrongatti* sp. nov. meets the criteria (B1ab(ii, iii) + 2ab(ii, iii)) to be categorized as Critically Endangered on the IUCN Red List. It is restricted in distribution to a very small area on the northwest coast of Grande Terre that includes the Massif d’Ouazangou-Taom and the adjacent Onajiele and Siba peaks, with an estimated extent of occurrence of ~10 km². It occurs primarily in maquis habitat and is expected to have suffered a reduction in population size and extent as a result of past loss and degradation of habitat from wildfires (Ibanez et al. 2019). It is considered to be at a high level of threat from loss and degradation of habitat from wildfires, and from the introduced Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from ground sheltering sites and arboreal foraging sites, and to affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001).

**Remarks:** Referred to as *Bavayia* aff. *exsuccida* by Whitaker Consultants Limited (2002) and as *Bavayia* aff. *exsuccida* sp. 1 by Whitaker et al. (2004).



***Bavayia endemia* sp. nov.**

Figures 21G–H, 26.

**Holotype:** MNHN-RA-2022.0060 (ex. AMB 7921), Nemeretina, 6.2 km from coast road on track to Pic d'Amoa, Province Nord, New Caledonia, 20°57'11"S, 166°17'19"E (alt. 405 m), coll. A.M. Bauer and R.A. Sadlier, 27 January 2003.

**Paratypes:** CAS 265783 (ex. AMB 7920), 265784 (ex. AMB 7922), data as for holotype; CAS 265782 (ex. AMB 7723), locality and collectors as for holotype, 19 January 2003; AMS R.153720–21\* Kaala–Gomen (vic.), 8.4 km NE Kaala–Gomen on Hienghène (via Ouyaguette) road, Province Nord, New Caledonia, 20°38'16"S, 164°27'30"E, coll. R.A. Sadlier and A.H. Whitaker, 5 December 1998; AMS R.149466\*, R.149467, R.149470–71, Forêt Plate, Province Nord, New Caledonia, 21°06'56"S, 165°06'54"E, coll. R.A. Sadlier, 19 June 1996.

**Referred Material:** (all localities in Province Nord) AMS R.146363\*, Cascade de Tao, 20°32'57.84"S, 164°47'42.72"E; AMS R.149372, R.149373–74\*, Mt. Panié, 20°33'35"S, 164°47'03"E; CAS 265892, 265893\*, AMS R.174676, Wewec (transect 3), 20°35'42.50"S, 164°43'44.11"E (alt. 401 m); CAS 265894, AMS R.174723, R.174730–32, La Guen (camp), 20°37'30.50"S, 164°46'56.0"E (alt. 570 m); CAS 265895–96, La Guen (transect 4), 20°37'25.6"S, 164°46'53.5"E (alt. 594 m); CAS 265898–99, AMS R.174740, La Guen (transect 1), 20°37'29.21"S, 164°46'34.71"E (alt. 747 m); CAS 265880\*, Mt. Kaala, Oue Injob (stream), west side of Kaala Massif, 20°37'45.1"S, 164°21'10.4"E; CAS 265887\*, AMS R.174657\*, Roche de la Wayem (camp), 20°38'23.64"S, 164°52'16.79"E (alt. 591 m); CAS 265888\*, 265889, AMS R.174658, R.174660, Roche de la Wayem (camp transect 2), 20°38'26.48"S, 164°52'13.4"E (alt. 617 m); CAS 265890\*, Roche de la Wayem (camp transect 5), 20°38'32.4"S, 164°51'37.7"E (alt. 960 m); AMS R.174668\* Wewec (camp) 20°35'54.5"S, 164°43'50.7"E (alt. 359 m); CAS 265891, AMS R.174707, R.174709, R.174711, Wewec (transect 2), 20°35'26.48"S, 164°52'13.40"E (alt. 602 m); CAS 157711–13, Vallée de Hienghène, Route de Ouayaguette, Campement Vanhalle, 20°40'S, 164°44'E; NMBA 6997, Hienghène, 20°41'S, 164°56'E; CAS 157705, 157707, 157709, Poindimié Valley (forest behind Bernier house), 20°56'S, 165°20'E; CAS 265785–88, Nemeretina, 6.2 km from coast road on track to Pic d'Amoa (alt. 405 m), 20°57'11"S, 166°17'19"E; AMS R.138504–05, R.138506–07\*, R.138508, Mt. Koyaboa, 20°57'S, 165°20'E; CAS 157918, 157927–28, Poindimié (auxiliary trail off track behind Poindimié), 20°57'S, 165°20'E; CAS 158504–05, Poindimié, NE slope of Mt. Koyaboa, 20°57'S, 165°20'E; CAS 159516–17, 159524, 159534, 165880, 165889, Poindimié, lower slope of Mt. Koyaboa, 20°57'S, 165°20'E; CAS 162215, Poindimié, lower E slope Mt. Koyaboa (ca. 50 m), 20°57'S, 165°20'E; CAS 182063–64, 182066, 182069, 182210, Poindimié, Mt. Koyaboa, 20°57'S, 165°20'E; NMBA 6996, Tiwaka Valley (no precise locality); AMS R.149468, R.149469\*, R.149472–77, UMMZ 217125, Forêt Plate, 21°06'56"S, 165°06'54"E.

**Diagnosis:** A large, relatively gracile-bodied member of the *B. exsuccida* clade (maximum SVL 59.5 mm, CAS 265782) a depressed body and a moderately long, thick tail (107% SVL); digits II–V relatively narrow; 10–14 mostly divided lamellae beneath digit IV of hindfoot; claw of digit I of manus and pes borne between a larger medial apical scansor and a smaller lateral apical scansor. Single row of 19–27 small, indistinct precloacal pores in males. Dorsum with a generally moderately to strongly contrasting dorsal pattern of 4–5 dark, usually symmetrical, transverse bars between the limb insertions, each preceded by a poorly to moderately delineated pale blotch. The lateral margins of the dark transverse markings often enlarged and conspicuous, forming a series of paired dark spots on the dorsum. A pair of pale lines may or may not extend forward from a pale shoulder blotch, and may or may not be confluent with pale temporal markings, which may be

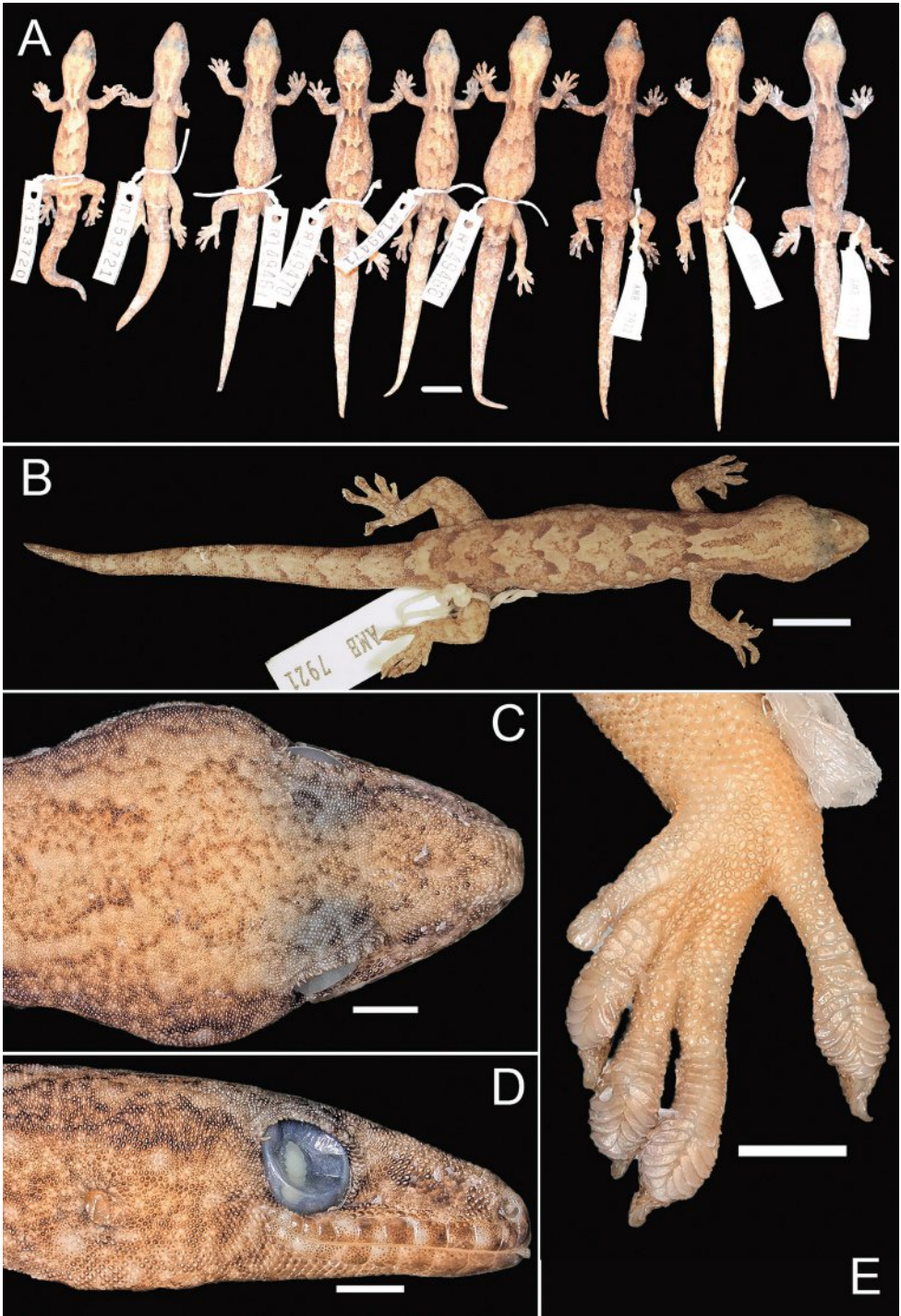


FIGURE 26. *Bavayia endemia* sp. nov. A) Paratype series. B–E) Holotype MNHN-RA-2022.0060 (ex. AMB 7921): B) whole body dorsal view; C) dorsal view of head; D) right lateral view of head; E) ventral view of right pes. Scale bars: (A–B) = 10 mm, (C–E) = 2 mm.

strongly or weakly delineated. Flanks bearing longitudinal series of relatively large whitish spots, many of which are surrounded by a thin dark brown border.

Within the *B. exsuccida* Clade, *B. endemia* may be distinguished from all other species by its much larger size (59.5 vs. <51 mm maximum SLV), and further from *B. menazi* sp. nov. by its lack of chiefly longitudinal pattern elements, from *B. exsuccida* by its lack of a bright white, slender “V”-shaped nape marking, from *B. nehoueensis* sp. nov. by its generally less bold pale trunk blotches and less prominent upper temporal markings, and from *B. astrongatti* sp. nov. by its larger, more closely juxtaposed pale markings on the tail dorsum (vs. pale markings thin and widely spaced).

**Description:** Based on holotype MNHN-RA-2022.0060 (ex. AMB 7921), an adult male. Snout-vent length (SVL) 55.5 mm; trunk relatively long, gracile, depressed. Head oblong, moderately large (HeadL 25% SVL), wide (HeadW 70% HeadL), not depressed (HeadD 35% HeadL), distinct from neck; interorbital/frontal region with slight midline depression, canthus well developed; snout very long (EyeSn 47% HeadL), more than twice eye diameter (OrbD 23% HeadL). Granular scales on anterior snout approximately twice diameter of those on occipital region. Pupil vertically oriented with crenelated margins; several superciliary scales in posterodorsal quadrant of orbit conical, moderately elongate, pointed. Ear opening approximately 1.3 times high as wide, canted slightly posterodorsally to anteroventrally; eye to ear distance greater than the diameter with of eye (EyeEar 125% OrbD). Rostral rectangular, much broader than high, no median crease, contacted posteriorly by three, roughly rectangular internasals and two slightly enlarged supranasals, contacted posteroventrally by first supralabial. Nostrils oval and anterolaterally oriented, surrounded by three postnasals, one supranasal, and the rostral; in broad contact with first supralabial. Mental subtriangular, slightly wider than deep; a single, enlarged, hexagonal, median postmental in broad contact with apex of mental, separating first infralabials from one another; first infralabials each in contact posteriorly with median postmental and two (left) or one (right) smaller lateral postmentals. First four to five rows of chin shields larger than remaining throat scales. 10 L, 9 R enlarged supralabial scales, of which the eighth through eleventh are beneath the eye; 9 L, 10 R infralabial scales; 47 interorbital scale rows between superciliaries at midpoint of orbit, 15 interorbitals between the orbital margins at the narrowest point of frontal bone.

Dorsal scales small, homogeneous, very slightly conical, granular; ventral scales slightly larger than dorsals, juxtaposed anteriorly becoming subimbricate and somewhat enlarged posteriorly on the body. Posterior abdominal scales rounded, mid-abdominal scales elongate, diamond-shaped. Approximately 142 scale rows around midbody. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Precloacal pores small and difficult to discern, in a single continuous row of 20. Forearm and crus, respectively short and relatively long (11% and 15% of SVL, respectively), axillary pockets shallow. Digits long and moderately narrow, all bearing claws, those on digit I of both manus and pes reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital lamellae typically paired, except variably single or fragmented at the base of digits. Distalmost lamella of digits II–V, manus and pes, undivided. Claw of digit I positioned lateral to a single apical scensor. Lamellar counts from holotype: 6-10-12-13-10 left manus and 6-11-12-14-11 right pes.

TailL 47.5 mm (distal 9.3 mm regenerated), approximately 86% of snout-vent length, tapered, stout, roughly oval in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, rectangular, arranged in regular rows. Surface of tail weakly segmented, caudal scale rows forming whorls, each whorl ~8 dorsal scale rows and 6 ventral scale rows long; midventral caudal scales not enlarged. Scales on pygal portion of tail much smaller ( $\frac{1}{2}$  to  $\frac{1}{3}$ ) than postpygal scales. Cloacal

spurs consisting of three large, compressed, flattened, conical, posterodorsally directed scales, just posterolateral of the cloaca.

**Color in preservative:** Dorsum and flanks mottled light brown with small, irregularly distributed darker brown markings and vague, irregular, cream to whitish spots, with a bold pattern of six dark brown transverse markings between the shoulder and sacrum, each preceded by a transverse series of tiny whitish spots, anterior to which lies a cream-colored blotch with scalloped margins, ill-defined anteriorly but discrete laterally and posteriorly. Each blotch bears scattered medium brown markings centrally (forming a relatively regular chevron in the case of the sacral patch). The flanks bear somewhat irregular longitudinal series of brown-rimmed whitish spots extending forward to behind the orbit and posteriorly on to the ventrolateral margins of the original tail. The dark shoulder patch is interrupted by the posterior border of a bifurcating cream to beige marking that covers the dorsum of the neck and is contiguous with the similarly colored dorsum of the head. This pale dorsal region encloses a patch of ground color that expands from a narrow wedge on the neck to a much broader squarish marking near the occiput, as well as fainter medium brown markings on the crown, anterior to the orbits and across the snout. Laterally, the pale markings of the head and neck are bordered by a medium brown streak passing from the snout, around the orbit and on to the temporal region from whence it connects to the ground color markings along the dorsolateral margin of the trunk. The cheek and temporal regions are especially strongly mottled, with both small and larger poorly defined white spots; the labial scales are mostly medium brown with portions of individual scales pigment free and hence white. Limbs mottled like trunk, with cream to beige blotches and medium brown reticulations. Small beige to cream-colored spots are present on the digits. Pygal portion of tail with a prominent and well-defined bilobed, transverse, cream to whitish marking that spans the tail base constriction. This is followed by a series of approximately ten (less discrete after the proximal six) more-or-less triangular, cream markings with medium brown posterior border on the post-pygal tail. Each marking interdigitates with the next adjacent marking mid-dorsally but laterally there are brown interspaces occupied, at least basally, by the white spots continued from the flanks. The regenerated portion of the tail is similar to the original in color but has a more irregular pattern of dark and light markings. Body venter beige to light brown throughout, with darker pigmentation under the limbs, around the cloaca, at the body margins and on the chin and throat. Subcaudal surfaces light to medium brown with scattered beige to cream markings.

**Color in life:** (based on paratype CAS 265784, Fig. 21G). Body dorsum light and medium brown mottled with beige to cream, with six relatively narrow, medium to chocolate brown transverse markings from shoulder to sacrum, each preceded by a border of white dots ranging from a single granule to several granules in extent, that crossing the shoulders with the posterior projections of pale bifurcating neck marking interrupting the bar in paravertebral position. Pale dorsal markings beige with medium brown internal markings. Ground color relatively uniform between each dark transverse bar and following pale blotch. Whitish to cream-colored spots on upper flanks and adjacent lateral surfaces clearly outlined with partial dark brown borders. Dorsum of head and neck light brown, clearly distinguished from the cream coloration of the bifurcating neck markings and their continuation onto the upper temporal region. Lower temporal streak dark brown and bordered below by the cheek region, which bears the same color and pattern as the flanks. Rims of orbits pale straw. Limbs similar in color to trunk dorsum with ashy spots on the digits, especially of the pedes. Iris coppery. First pale marking on tail base ashy, bilobed with prominent posterolateral dark brown borders, more posteriorly the ground color of the original tail is a more grayish brown with straw-colored undertones and the pale markings are smaller, less well defined, especially anteriorly, and separated by interspaces equal to or greater than their own length. The regen-



erated portion of the tail has dark brown dashes that form a very irregular banding pattern on the distal portion of the tail. Venter light brown with some more pigmentation along lateral margins of body. In another figured specimen from Kaala-Gomen (see Fig. 21H) the color pattern is more purplish-brown and there are only five dark dorsal transverse markings. The white spots on the lateral surfaces are more conspicuous than in the previously described specimen.

**Variation:** Mensural features of paratypes are presented in Table 10. Paratypes with 1–3 inter-nasals contacting the rostral, some with short dorsal median rostral crease. First infralabials separated behind the mental in all paratypes by an enlarged median postmental chin shield, except AMS R.149470 (narrow contact of the first infralabials). Collectively the first infralabials border 3–5 enlarged chin shields. Male paratypes with a single row of ~19–27 precloacal pores (number approximate as the pores are very small and show little contrast with the scales), with breaks in the series near the midline common; no pores or dimpled scales in females. Longest original tail 107% SVL (CAS 265783). Color pattern relatively conservative, with five to six bold dark transverse markings preceded by a row of small white dots and a pale symmetrical or symmetrical, scalloped-edged blotch, between shoulder and sacrum. Pale paired neck markings and pale marking on head dorsum contiguous or nearly so (AMS R.149470). All tail markings brighter than those on trunk, may be interdigitating as in holotype, or with brown interspaces as long as the pale markings.

TABLE 10. Mensural data from the type series of *Bavayia endemia* sp. nov.; \*tail regenerated.

	Holotype	Paratypes								
	MNHN-RA 2022.0060	CAS 265784	CAS 265782	CAS 265783	AMS R.153720	AMS R.153721	AMS R.149466	AMS R.149470	AMS R.149471	AMS R.149467
Sex	M	M	F	F	M	M	F	M	M	M
SVL	55.5	53.6	59.5	54.9	45.1	46.7	56.0	52.8	48.5	51.3
ForeaL	6.3	6.3	6.9	6.4	5.7	5.8	6.2	5.9	5.4	5.8
CrusL	8.2	7.8	8.7	7.8	6.9	7.2	7.8	7.6	7.2	7.8
TailL	47.5	47.6*	39.6*	58.5	31.9*	35.9*	49.9*	50.6*	46.7*	47.4*
HeadL	13.9	13.5	14.9	13.8	12.2	11.7	13.5	12.9	11.9	13.1
HeadW	9.7	9.3	10.0	9.0	7.8	8.4	9.3	9.0	8.4	9.3
HeadH	4.9	5.1	5.1	4.8	4.3	4.6	5.0	4.7	4.3	4.7
OrbD	3.2	3.3	3.3	3.1	2.8	2.9	3.4	3.2	2.9	2.9
EyeEar	4.0	3.8	3.9	4.0	3.4	3.6	4.2	3.8	3.7	3.6
SnEye	6.6	5.9	6.1	6.0	4.9	5.3	5.5	5.9	5.8	5.8
NarEye	4.2	4.0	4.7	4.2	3.8	3.7	4.4	4.4	4.4	4.2
InterOrb	5.8	5.5	5.6	5.3	4.6	5.6	5.5	5.9	5.3	5.2
EarL	1.6	2.0	1.7	1.7	1.7	1.9	1.8	1.8	1.7	1.7
InterNar	1.9	1.9	1.9	1.9	1.9	2.0	1.7	2.0	1.7	1.8

**Etymology:** The specific epithet honors the non-profit New Caledonian organization Endemia (established 2001), which is dedicated to promoting knowledge of the native biodiversity of New Caledonia. In addition to being the local Red List Authority within the Species Conservation Commission of the IUCN for assessing New Caledonian flora, Endemia also organized the 2017 red listing workshop for New Caledonian lizards.

**Distribution:** *Bavayia endemia* is endemic to the Province Nord where it is widely distributed from Forêt Plate in the south through the Chaîne Centrale to the Hienghène Valley and beyond to the southern half of the Panié Massif in the east and to the Kaala Massif in the northwestern ultra-mafic massifs (Fig. 22). NMBA 6998–99 from Koné may be attributable to this species or to *B. astrongatti* sp. nov., but require reexamination. It is likely that they were actually collected some distance upstream along the Koné River. It extends nearly from coast to coast and has been found from near sea level to almost 1000 m.

**Natural History:** *Bavayia endemia* sp. nov. is only known from closed-forest habitat (24C–D). It shelters beneath rocks and boulders amid leaf litter on the forest floor (Bauer and Devaney 1987) or under fallen timber and is active at night on small trees and understory vegetation

(Richards et al. 2013). This species is broadly insectivorous with crickets making up a large part of the diet, at least on Mt. Koyaboa near Poindimié (Bauer and DeVaney 1987 [as *B. sauvagii*]). Clutch size is two eggs and most females in a large series collected in October–November 2010 on the Panié Massif were gravid.

**Conservation Status:** *Bavayia endemia* sp. nov. meets the criteria to be categorized as Near Threatened on the IUCN Red List. It has a broad distribution in northern Grande Terre occurring up to 960 m elevation, being known from ~7 locations with an estimated extent of occurrence of ~250 km<sup>2</sup>. It is expected to have undergone a reduction in population size and extent of occurrence as a result of past loss and degradation of habitat by fire, and from clearing for agriculture. There is an ongoing high level of threat from the loss or degradation of forest edge habitat from wildfires in adjacent savannah woodland (Ibanez et al. 2019). The species is at a high level of threat from habitat degradation by introduced deer and pigs which threaten forest habitat quality (damaging ground daytime sheltering sites and the abundance and structure of understory shrubs used for foraging) (de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-Wichatitsky 2006), and from the introduced Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from ground sheltering sites and arboreal foraging sites, and to affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001).

**Remarks:** *Bavayia sauvagii* from Hienghène and the “Vallée de la Tiouaca” (Tiwaka) reported by Roux (1913) are assignable to *B. endemia*. The species was treated as *Bavayia* aff. *sauvagii* by Richards et al. (2013).

***Bavayia menazi* sp. nov.**

Figures 21F, 27–28.

**Holotype:** MNHN-RA-2022.0052\* (ex. AMS R.167820\*), 0.6 km SW Mé Mwa, 21°26'40.88"S, 165°44'36.368"E, coll. A.H. Whitaker and V.A. Whitaker, 12 May 2007.

**Paratypes:** AMS R.167815, R.167816–17\*, R.167818, same data as holotype; AMS R.167170\*, Ménazi Massif, Mt. Ménazi, Province Nord, New Caledonia, 21°26'46"S, 165°41'53.16"E, coll. R.A. Sadlier and G.M. Shea, 25 January 2006; AMS R.167144, Ménazi Massif, Mt. Ménazi, Province Nord, New Caledonia, 21°26'32"S, 165°42'03"E, coll. R.A. Sadlier and G.M. Shea, 25 January 2006; AMS R.167491, Bwa Méyu, 1 km NW Bwa Méyu, 21°29'00.54"S, 165°51'49.38"E, coll. A.H. Whitaker and V.A. Whitaker, 6 May 2007; AMS R.172519, Chetorè Kwèdè, Haut Nakéty, 8 km E Nakéty, 21°33'13.13"S, 166°06'31.47"E, coll. A.H. Whitaker and V.A. Whitaker, 26 June 2009.

**Referred Material:** Province Nord: AMS R.167819\*, same data as holotype; AMS R.174935 Ménazi Massif, Vitörhué, 0.5 km NW Mé Mwa, 21°25'46.25"S, 165°44'20.23"E; AMS R.167821, 0.5 km NE Gwa Fanéchao, 21°26'02.193"S, 165°47'37.324"E; AMS R.174901–04, Ménazi Massif, Mé Pwêida, 2 km NW Gwâ Rùvianô, 21°26'06.98"S, 165°40'56.73"E; AMS R.167822–23\*, R.167824, Néwayéré, 0.3 km S Néwayéré, 21°26'13.541"S, 165°46'49.31"E; AMS R.167143\*, Ménazi Massif, Mt. Ménazi, Province Nord, New Caledonia, 21°26'32"S, 165°42'03"E; AMS R.174937–39, Ménazi Massif, Fa Nêjö, 2 km S Mé Mwa, 21°27'26.28"S, 165°45'06.30"E. Province Sud: AMS R.167489–90, R.167492–95, Bwa Méyu, 1 km NW Bwa Méyu, 21°29'00.54"S, 165°51'49.38"E; AMS R.172508–10, R.172518, R.172520–22, Chetorè Kwèdè, Haut Nakéty, 8 km E Nakéty, 21°33'13.13"S, 166°06'31.47"E.

**Diagnosis:** An average-sized member of the *B. exsuccida* clade (maximum SVL 50.8 mm, AMS R.167817) with a short, depressed body and a moderately long, thick tail (108% SVL); digits II–V relatively narrow; 10–14 mostly divided lamellae beneath digit IV of hindfoot; claw of

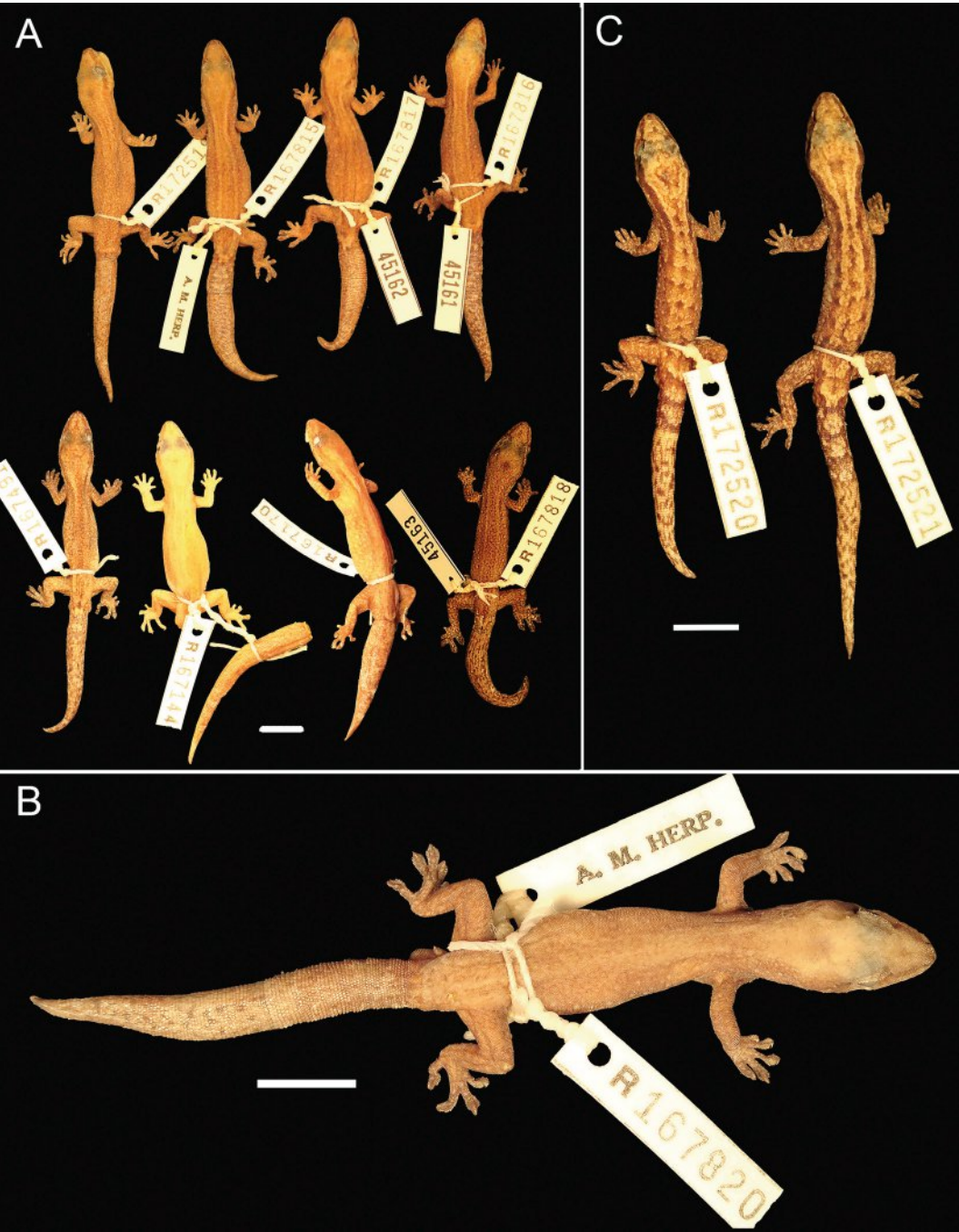


FIGURE 27. *Bavayia menazi* sp. nov. A) Paratype series. B) Holotype MNHN-RA-2022.0052 (ex. AMS R.167820), whole body dorsal view; C) Non-types AMS R.172520–21, from Haut Nakéty illustrating an atypical pattern for *B. menazi*. Scale bars = 10 mm.



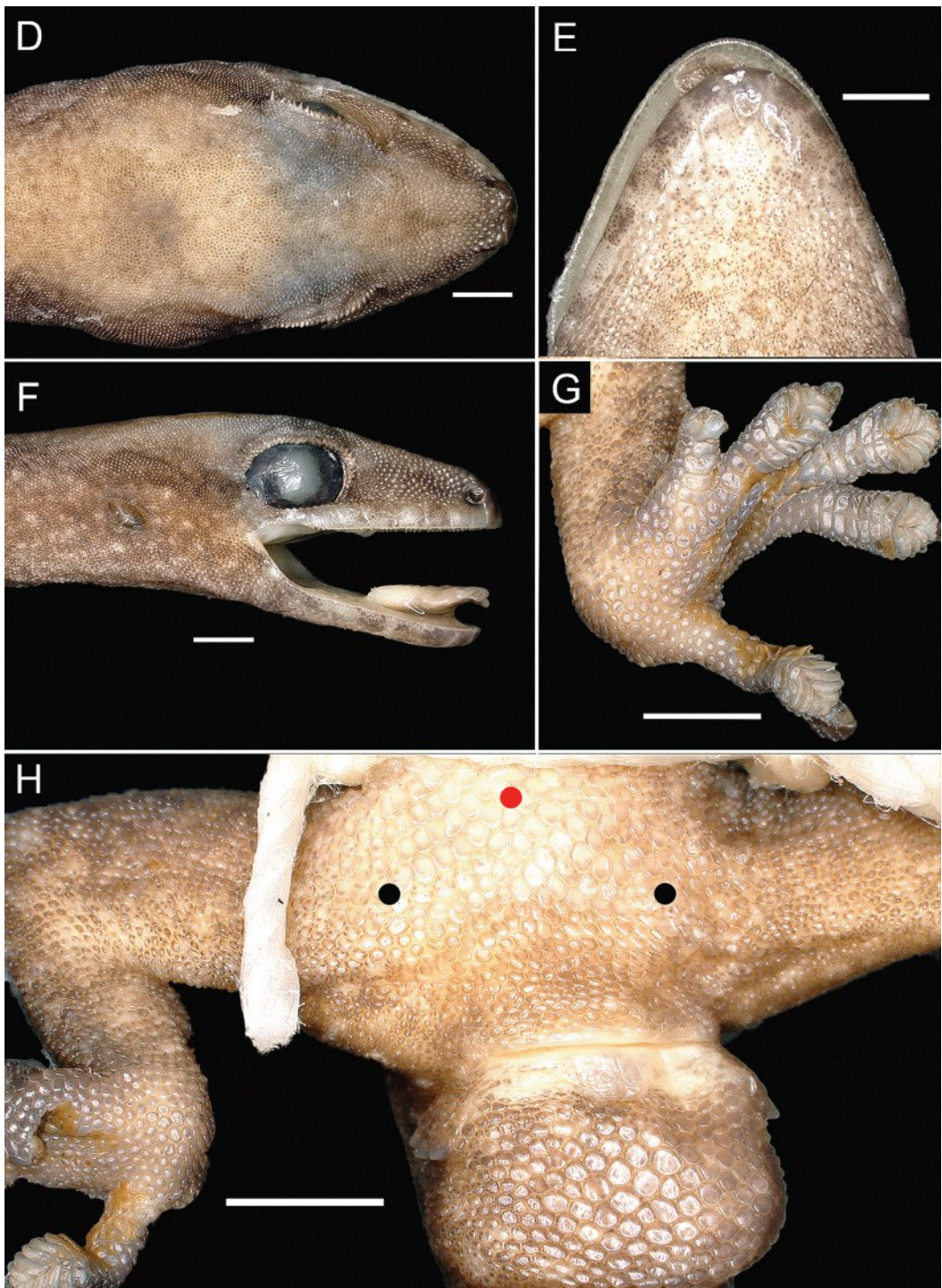


FIGURE 28. *Bavayia menazi* sp. nov. Holotype MNHN-RA-2022.0052 (ex. AMS R.167820): A) dorsal view of head; B) ventral view of head; C) right lateral view of head; D) ventral view of right pes; E) cloacal region (red dot indicates apex of precloacal pore row, black dots represent the lateralmost pored scales. Scale bars = 2 mm.



digit I of manus and pes borne between a larger medial apical scansor and a smaller lateral apical scansor. Single row of 12–16 small, indistinct precloacal pores in males. Dorsum dominated by longitudinal elements with two or three pale, diffuse to moderately bold pale stripes and a pair of dark lines from the eye to tail base and lateral to the outermost pale stripes. Flanks with longitudinal series of small white spots and a white chevron or transverse marking across the tail base.

Within the *B. exsuccida* Clade, *B. menazi* sp. nov. may be distinguished from all other species by its distinctive pattern of stripes (a single *B. astrongatti* with longitudinal pattern elements can be distinguished on other grounds, see that account). AMS R.172520–21, from Haut Nakéty, exhibit an exceptional pattern in which the pale stripes are interrupted by dark markings (Fig. 27C), but these dark markings are in 7 series between the limb insertions, greater than the maximum of 5 seen in any other clade members. *B. menazi* can also be distinguished from *B. endemia* sp. nov. by its much smaller size (50.8 vs. 59.5 mm maximum SVL), and its low number of precloacal pores (12–16) lies below the range or at least mean of all other *B. exsuccida* Clade members.

**Description:** Based on holotype — MNHN-RA-2022.0052, ex. AMS R.167820, an adult male. Snout-vent length (SVL) 50.5 mm; trunk relatively short, stout, depressed. Head oblong, moderately large (HeadL 26% SVL), wide (HeadW 68% HeadL), not depressed (HeadD 42% HeadL), distinct from neck; interorbital/frontal region with slight midline depression, canthus well developed; snout moderately long (EyeSn 39% HeadL), approximately 1.7 times eye diameter (OrbD 23% HeadL). Granular scales on anterior snout approximately twice diameter of those on occipital region. Pupil vertically oriented with crenelated margins; several superciliary scales in posterodorsal quadrant of orbit conical, moderately elongate, pointed. Ear opening approximately 1.5 times high as wide, canted posterodorsally to anteroventrally; eye to ear distance equal to diameter of eye (EyeEar 100% OrbD). Rostral rectangular, much broader than high, no median crease, contacted posteriorly by three rounder internasals and two enlarged supranasals; contacted posteroventrally by first supralabial. Nostrils oval and anterolaterally oriented, surrounded by three postnasals, one supranasal, and the rostral; in broad contact with first supralabial. Mental triangular, slightly deeper than wide; a single enlarged, teardrop-shaped, median postmental in contact with apex of mental, separating first infralabials from one another; first infralabials each in contact posteriorly with median postmental and a smaller lateral postmental. First four to five rows of chin shields larger than remaining throat scales. 11 L, 11 R enlarged supralabial scales, of which the 7<sup>th</sup> through 11<sup>th</sup> are beneath the eye; 8 L, 9 R infralabial scales; 50 interorbital scale rows between superciliaries at midpoint of orbit, 19 interorbitals between the orbital margins at the narrowest point of frontal bone.

Dorsal scales small, homogeneous, very slightly conical, granular; ventral scales slightly larger than dorsals, juxtaposed anteriorly becoming subimbricate and somewhat enlarged posteriorly on the body. Posterior abdominal scales rounded, mid-abdominal scales elongate, diamond-shaped. Approximately 139 scale rows around midbody. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Precloacal pores very difficult to discern, 16 in a single row; precloacal pores and pits absent in females. Forearm and crus, respectively short (12% and 15% of SVL, respectively), axillary pockets shallow. Digits long and moderately narrow, all bearing claws, those on digit I of both manus and pes reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital lamellae typically paired, except variably single or fragmented at the base of digits. Distalmost lamella of digits II–V, manus and pes, undivided. Claw of digit I positioned lateral to a single apical scansor. Lamellar counts from left side of holotype 5-10-12-10-9 manus and 5-9-10-10-8 pes.

TailL 42.3 mm (distal 24.3 mm regenerated), approximately 84% of snout-vent length, tapered, stout, roughly oval in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, rectangular, arranged in regular rows. Surface of tail weakly segmented, caudal scale rows forming whorls, each whorl ~7 dorsal scale rows and 6 ventral scale rows long; midventral caudal scales not enlarged. Scales on pygal portion of tail much smaller ( $\frac{1}{2}$  to  $\frac{1}{3}$ ) than postpygal scales. Cloacal spurs consisting of three large, compressed, flattened, conical, posterodorsally directed scales, just posterolateral of the cloaca.

**Color in preservative:** Ground color light brown with primarily longitudinal pattern elements. Mid-dorsum a pale beige to buff; anteriorly this is clearly bifurcated into two slender streaks continuous with the pale dorsum of the head, but behind the shoulders these fuse becoming distinct again only over the sacrum. Lateral to the pale mid-dorsum a darker medium brown line runs along dorsolateral margin of trunk from the posterior margin of the eye, above the ear and along the trunk to the tail base. This fades slightly more ventrally so that the flanks are somewhat lighter. The dorsum of the head is very pale and almost without markings; although a diffuse marking on the mid-snout and faint arcing lines extending posteromedially from the superciliary scales at mid-orbit are discernable. A medium brown canthal stripe passes from the snout to the anterior margin of the orbit. The labial scales are unevenly pigmented, with some areas of all scales whitish and others with speckled brown markings. Small, diffuse whitish spots are densely distributed from the corner of the mouth posteriorly above the forelimb insertions and on to the flanks, where they are larger and form more discrete longitudinal rows. Limbs similar in color to flanks with some lighter and darker mottling. Pale lines run on the outer margins of the sacrum, perpendicular to the thighs and join with the di-dorsal pale lines to converge on the tail base. Dorsum of original portion of tail weakly marked with paired paravertebral lines with a darker mid-dorsal line between them and similar lines bordering them laterally. Regenerated part of tail light brown with darker dots and dashes in roughly longitudinal lines. Body venter beige brown, somewhat lighter on throat and chest. Subcaudal surfaces darker brown than trunk venter.

**Color in life:** based on paratype AMS R.167170, see Fig. 21F. Pattern similar to that exhibited by the preserved holotype, but with clearer resolution of pale pattern elements. Trunk medium brown with darker flecks throughout. Three pale, diffuse longitudinal lines on dorsum; lateral pair of lines extending from posterior border of orbits to tail base, bordered laterally throughout its length by a darker brown line which is thickest, darkest and most well defined from the eye to the shoulder, and more diffuse posteriorly, becoming darker again from just anterior to the hindlimb insertion to the tail base. The third pale dorsal line is mid-dorsal but runs only from behind the shoulders to the front of the sacrum. The flanks bear two longitudinal rows of small, bright white spots, the upper of which borders the dark dorsolateral stripe and extends above the forelimb insertion on to the side of the head to the posteroventral margin of the orbit; posteriorly it continues over the hindlimb insertion and on to the tail base. The crown of the head is unpatterned, the rims of the orbits have a pale yellow margin and there is a roughly triangular dark marking running from the lateral margins of the orbit, just anterior to their midpoints, to the midpoint of mid-snout. The tip of the snout is a dark brown and confluent with a well-defined dark canthal stripe which aligns with the dorsolateral stripe behind the eye. The supralabial scales have bright whitish markings and a whitish dash runs diagonally from the anterior orbit to the middle of the supralabial scale row. The limbs are mottled with lighter and darker markings, the former forming a weak banding pattern on the forelimbs. Hindlimbs darker than the ground color of the trunk and mottled with light and dark spots, flecks and reticulations. Pale dorsolateral lines become ashy to white over sacrum and fuse into a transverse white chevron at the tail base constriction. Entire post-pygal tail regenerated, chocolate brown suffused with an ashy gray and yielding a relatively evenly distributed pattern of

mostly longitudinal dashes and spots along the length of the tail. Venter light brown with some more pigmentation along lateral margins of body.

**Variation:** Mensural features of paratypes are presented in Table 11. Paratypes with 3 or 5 (one specimen) internasals contacting the rostral, some with short dorsal median rostral crease. First infralabials separated behind the mental in all paratypes by an enlarged median postmental chin shield, except AMS R.172519 (narrow contact of the first infralabials). Collectively the first infralabials border 3–5 enlarged chin shields. Male paratypes with a single row of ~12–16 pre-cloacal pores (number approximate as the pores are very small and show little contrast with the scales), with breaks in the series near the midline common; no pores or dimpled scales in females. Longest original tail 108% SVL (AMS R.167144). Color pattern relatively conservative, with variation in the thickness and definition of the longitudinal elements of the dorsal pattern. Pale transverse pygal marking is always present but the post-pygal tail may be dominated by pale longitudinal lines, continuing the trunk pattern (e.g., MNHN-RA-2022.0052) or may have more discrete blotches, similar to most other congeners (e.g., AMS R.167491). AMS R.172520–21, from Haut Nakéty, are the only referred specimens that exhibit a relatively heavily-patterned dorsal trunk pattern (Fig. 27C). Aberrant color patterns occur in several *Bavayia* spp. but there is also the possibility that these represent an undescribed taxon co-occurring with *B. menazi* at this site (see Remarks). Non-type AMS R.167821 has a bifid regenerated tail.

TABLE 11. Mensural data from the type series of *Bavayia menazi* sp. nov.; \*tail regenerated.

	Holotype	Paratypes							
	MNHN-RA 2022.0052	AMS R.167491	AMS R.167170	AMS R.167144	AMS R.167815	AMS R.167816	AMS R.167817	AMS R167818	AMS R.172519
Sex	M	M	F	F	F	F	F	M	M
SVL	50.5	41.8	45.7	43.1	50.7	47.6	50.8	44.3	49.0
ForeaL	6.1	5.2	5.8	5.2	5.5	5.9	6.0	5.6	6.0
CrusL	7.5	6.0	7.0	6.4	7.1	6.9	7.4	6.5	6.9
TailL	42.3*	33.0*	32.6*	46.4*	38.8*	41.3*	32.3*	31.0*	38.4*
HeadL	13.2	12.8	12.8	12.4	14.0	12.4	14.0	12.1	12.8
HeadW	9.0	7.0	7.8	7.7	8.2	8.6	8.6	8.1	8.6
HeadH	5.5	5.1	4.7	4.6	6.6	5.7	9.1	4.6	5.4
OrbD	3.0	2.9	2.9	2.8	3.5	3.4	3.5	3.0	3.2
EyeEar	3.0	2.5	3.8	3.6	3.5	3.5	3.5	3.6	3.6
SnEye	5.2	4.3	4.9	4.4	5.0	5.4	5.1	4.9	5.0
NarEye	3.5	3.4	3.1	2.9	3.5	3.3	3.6	3.2	3.1
InterOrb	6.4	4.9	5.3	4.9	5.1	5.1	5.0	5.5	4.9
EarL	1.6	1.7	1.2	1.5	1.1	1.6	1.6	1.4	1.6
InterNar	1.8	1.3	1.7	1.5	1.6	1.6	1.4	1.4	1.5

**Etymology:** Named for the Ménazi Massif (Gwâ Rùvianô), from which most specimens have been obtained. The name is formed as a proper noun in apposition.

**Distribution:** Restricted to the eastern portions of central New Caledonia centered around the Ménazi Massif (Gwâ Rùvianô), southwest of Kouaoua. The most distant locality is from Haut Nakéty, approximately 37 km east-southeast of the massif and extends the distribution into the Province Sud by about 0.5 km (Fig. 22).

**Natural History:** On Mt. Ménazi *B. menazi* sp. nov. has been recorded primarily from closed forest habitat, including high elevation *Araucaria* forest (Fig 24E) but has also been found in maquis on cuirasse. It has been located sheltering under logs in closed forest. At Nakéty it was recorded from remnant closed forest habitat.

**Conservation Status:** *Bavayia menazi* sp. nov. meets the criteria (B1ab(ii, iii) + 2ab(ii, iii)) to be categorized as Critically Endangered on the IUCN Red List. It is restricted in distribution to ultramafic surfaces of central-east Grande Terre, and comprises two disjunct populations, one on



the Ménazi Massif, the other at Haut Nakéty 37 km southeast and separated by the Kouaoua River valley. It occurs in a range of maquis habitats but has likely suffered a significant reduction in population size and extent from past habitat loss from wildfires. It is considered to be at a high level of threat from loss and degradation of habitat from wildfires (Ibanez et al. 2019) and from the expansion of the nickel mining industry (Pascal et al. 2008), with the area on the Menazi Massif having already undergone significant disturbance.

**Remarks:** AMS R.175832–37 from the Nakéty area are possibly referable to *B. menazi* but have not been re-examined in light of the present revision and it is possible that they represent a northeastern extension of the distribution of *B. stephenparki* sp. nov. or are representative of a recently signaled undescribed species from the region.

### *Bavayia geitaina* Clade

**Content:** *Bavayia geitaina* Wright, Bauer and Sadlier, 2000.

**Definition:** This monotypic clade is distinguished from other *B. sauvagii* Group taxa by its large size (to 72 mm SVL vs. a maximum of 66 mm in other groups), gracile body, slender, elongate tail (to 110% SVL), and presence of 9 dorsal scale rows per tail whorl (verticile) vs. 6–7 in other clades. The placement of the claw of digit I of manus and pes in between a large medial and much smaller lateral apical scansor (vs. lateral to a single medial apical scansor) distinguishes it from members of the *B. sauvagii* and *B. centralis* clades. The presence of 5 or more (usually 6) dark transverse markings between the limb insertions and absence of a prominent, pale, V-shaped marking on the nape distinguishes it from all other *B. sauvagii* Group clades which are mostly characterized by 5 or fewer dark transverse markings, usually with nape-markings, or by unpatterned or striped dorsal surfaces (an uncommon striped morph of *B. geitaina*, see Fig. 29F), can be distinguished from *B. menazi* and striped morphs of other species on the basis of the other distinguishing features).

### *Bavayia geitaina* Wright, Bauer and Sadlier, 2000

Figure 29.

2000 *Bavayia geitaina*, Wright, Bauer and Sadlier, Pacific Sci. 54:42, figs. 1, 2, 3B.

**Holotype:** CAS 202733, “Mt. Koghis forest (approximately 500 m elevation), Province Sud, New Caledonia, 22°10'S, 166°30'E,” coll. A.M. Bauer, R.A. Sadlier, and S. Smith, 14 February 1997.

**Paratypes:** AMS R.144314\*, R.147843, R.148084\*, R.150752–54\*, R.150760, CAS 202726, 202730, 202734–35\*, 202762–63, 205850\* [given incorrectly as 202850 in original description] (cleared-and-stained); same data as holotype; AMS R.152661–63\*, CAS 205848 [given incorrectly as 250848 in description], MNHN 1997–6570, same locality as holotype, coll. R.A. Sadlier, A.M. Bauer and J.L. Wright, 23 May 1998.

**Referred Material:** (all localities in Province Sud) CAS 265931–38\*, 265939, 265940\*, Pic Ningua 21°44'36"S, 166°09'02"E; CAS 265941–50\*, Pic Ningua 21°44'25"S, 166°09'21"E; AMS R.171219–21\*, R.171222, R.171223–31\*, R.171390, Pic Ningua, 21°44'30.84"S, 166°09'20.16"E; AMS R.174952\*, Camp des Sapins, 21°45'58.16"S, 166°10'57.44"E; AMS R.153715\*, Massif du Kouâkoué, 21°57'S, 166°32'E; AMS R.148034\*, Mt. Vulcain, Mine Galliéni, 21°54'S, 166°20'E; AMS R.172561–64\*, Mine Galliéni, Mt. Vulcain, Tontouta Valley, 21°54'20.36"S, 166°20'57.06"E; AMS R.172568–69\*, Tontouta Valley, 21°56'24.83"S, 166°17'35.81"E; AMS R.172578\*, Tontouta Valley, 21°44'48.98"S, 166°17'29.97"E; CAS 202830–33\*, 202840\*, Mt. Dzumac, ca 900 m, forested ridge between Mt. Ouin summit and Mt. Dzumac 22°01'47.54"S,

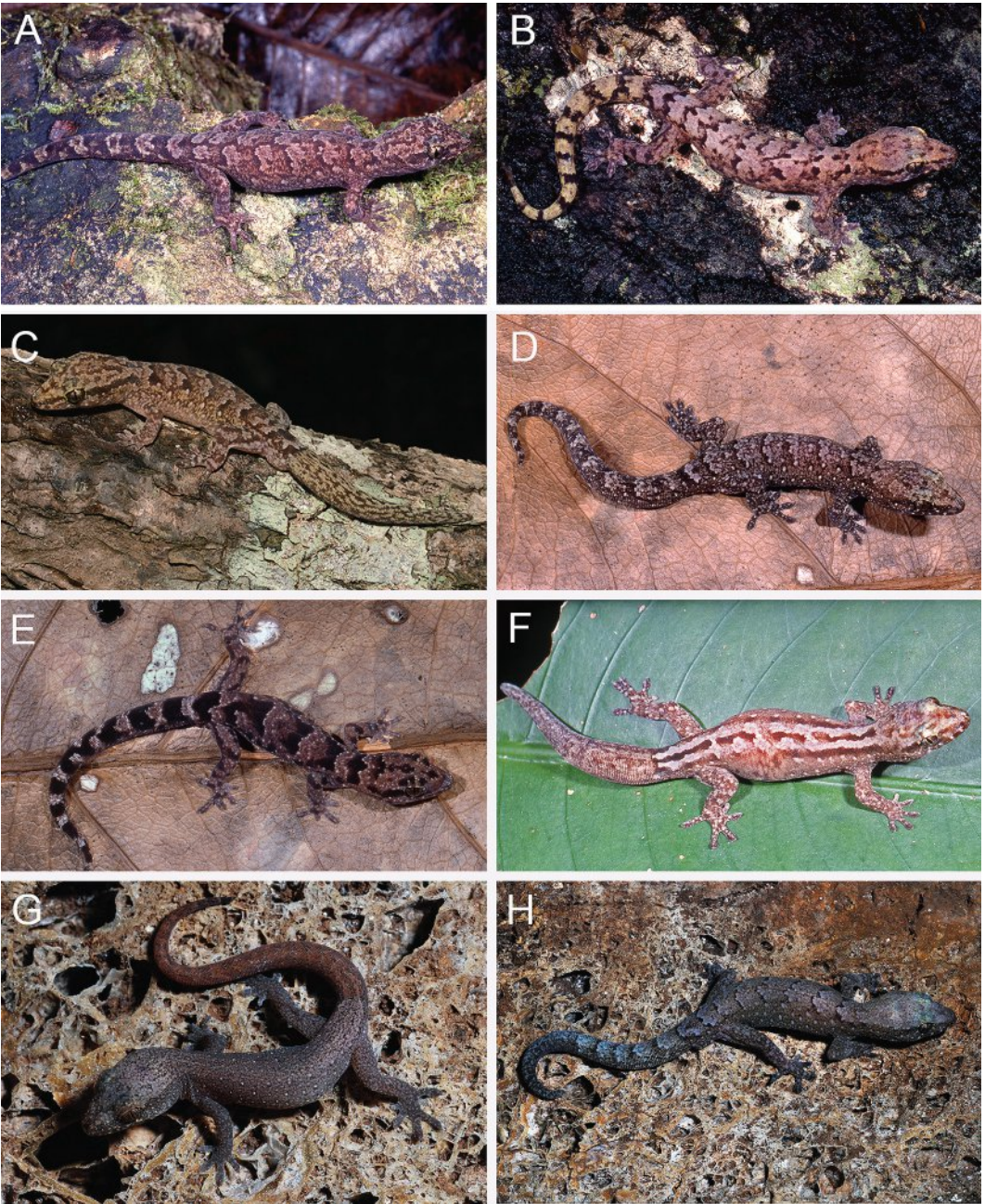


FIGURE 29. Life photographs of representatives of the *Bavaya geitaina* Clade. A–B) *B. geitaina*, Mt. Koghis. C) *B. geitaina*, Mt. Vulcain. D) *B. geitaina* (AMS R.165820), Mt. Ouin. E) *B. geitaina* (AMS R.166085), Forêt Nord. F) *B. geitaina* (CAS 265931), Pic Ningua. G–H) *B. geitaina*, juveniles, Pic Ningua. Fig. C by S. Astrongatt, all others by R.A. Sadlier.



166°28'08.6"E; CAS 202840, Mt. Ouin (near base of old mine track switchback, ca. 900 m), 22°00'19.26"S, 166°25'45.9"E; CAS 265911, 265912\*, 265916–21\*, 265922, Mt. Ouin (saddle between Mt. Ouin and Mt. Dzumac) 22°01'25"S, 166°28'12"E; CAS 265913\*, 265996\*, 265914, 265915\*, Mt. Ouin (saddle between Mt. Ouin and Mt. Dzumac) 22°01'41"S, 166°28'19"E; CAS 265923–24\*, 265925, 265926\*, 265927, Mt. Ouin (saddle between Mt. Ouin and Mt. Dzumac), 22°01'25"S, 166°28'18"E; CAS 265928–29\*, 265930, Mt. Dzumac, 22°01'56"S, 166°28'21"E; AMS R.150737–39, R.150740\*, Mt. Dzumac, 22°02'S, 166°27'E; AMS R.150752–56, R.150760, Mt. Koghis 22°10'43"S, 166°30'20"E; AMS R.151336, Mt. Ouin (saddle between Mt. Ouin and Mt. Dzumac), 22°01'54"S, 166°28'02"E; AMS R.165782–90, Mt. Dzumac, intersection of Piste de Dzumac and Ouinne River road, 22°01'57"S, 166°27'59"E; AMS R.165820, Mt. Ouin, 22°01'33"S, 166°28'32"E; AMS R.147946\*, Parc Provincial de la Rivière Bleue, 4.7 km E Pont Germain, 22°06'S, 166°41'E; AMS R.147959\*, Parc Provincial de la Rivière Bleue, vic. Pont Germain (1 km along road either side) 22°06'S, 166°41'E; CAS 265951\*, Montagne des Sources (site C), 22°09'29.9"S, 166°35'30.4"E; AMS R.161917–19\*, Bois du Sud, 22°10'22"S, 166°45'53"E; CAS 205848, 205849\*, 214447\*, 214448\*, Mt. Koghis (~500 m asl), 22°10'40"S, 166°30'23"E; AMB 5439, AMS R.125881, R.125883, R.125885, R.135100, R.144313\*, R.144315\*, Mt. Koghis, 22°10'S, 166°30'E; AMS R.146528\*, R.147844, R.150755–56\*, Mt. Koghis, 22°10'43"S, 166°30'20"E; CAS 202736\*, Mt. Koghis; AMS R.167440\*, R.167442\*, AMS R.167459\*, Forêt Cachée, Creek Pernod, Plaine des Lacs, 22°11'50"S, 166°47'13"E; CAS 157715\*, Goro, 8 km N Gite Wadiana, 22°13'29.35"S, 166°59'50.42"E; AMS R.164373, Forêt Nord (Relais), 22°19'51"S, 166°55'18"E; AMS R.150009\*, R.150010\*, R.150011–12\*, R.150014–16\*, R.150017–18, Plaine des Lacs, Kwa Néie, 22°18'55"S, 166°54'47"E; AMS R.166084–85, Forêt Nord, 22°18'55"S, 166°54'47"E; AMS R.166088, R.166165–66, Forêt Nord, 22°19'22"S, 166°54'52'47"E; AMS R.166138, Forêt Nord, 22°19'14"S, 166°55'03"E.

**Diagnosis:** A very large, gracile member of the *Bavayia sauvagii* Group (maximum SVL to 72 mm, although usually <65 mm SVL), with tail length to approximately 110% SVL. First supra-labial typically in narrow contact with nostril; internasal scales somewhat reduced. First infralabials in contact behind the median postmental or not. Digital pads moderately expanded distally, with 9–14 relatively slender broad lamellae beneath digit IV of hindfoot, distal lamellae paired. Claw of digit I offset, positioned between a larger medial and a smaller lateral apical scensor. Precloacal pores in males in a single row of 18–24, continuous or interrupted by 1–3 poreless scales. Midbody scale rows 114–144. Tail weakly segmented (verticillate), caudal scale rows forming whorls, each whorl ~9 dorsal scale rows and ~7 ventral scale rows long. Highly contrasting mid to dark brown and cream with a pattern of 5–8 (usually 6), often highly asymmetrical cross bands between limb insertions (pattern generally more weakly developed in specimens from Pic Ningua). A dark canthal stripe extending almost to the ear. Parietal region often with a dark "X" or "H" shaped marking. Flanks typically mottled and spotted. Venter in life creamy white with a brownish suffusion of varying intensity.

**Distribution:** Endemic to the southern mainland portions of the Province Sud from Pic Ningua south through the southern ultramafic ranges to Goro and the southern Plaine des Lacs and to Mt. Koghis near Nouméa (Fig. 30). Mostly known from middle elevations but reaches at least 950 m (Wright et al. 2000).

**Natural History:** *Bavayia geitaina* has primarily been found in closed-forest habitat with a rocky forest floor substrate, from near sea level at Goro to over 900 m at Pic Ningua and Mt. Ouin (Figs. 8A, E, 31A–D). It shelters beneath rocks where they overly other rock, and at night is found on trunks, branches, and twigs of moderate to small diameter trees. On Mt. Koghis it has been observed to forage at night at heights of about 3–5 meters in the trees. Its diet is broadly insectiv-

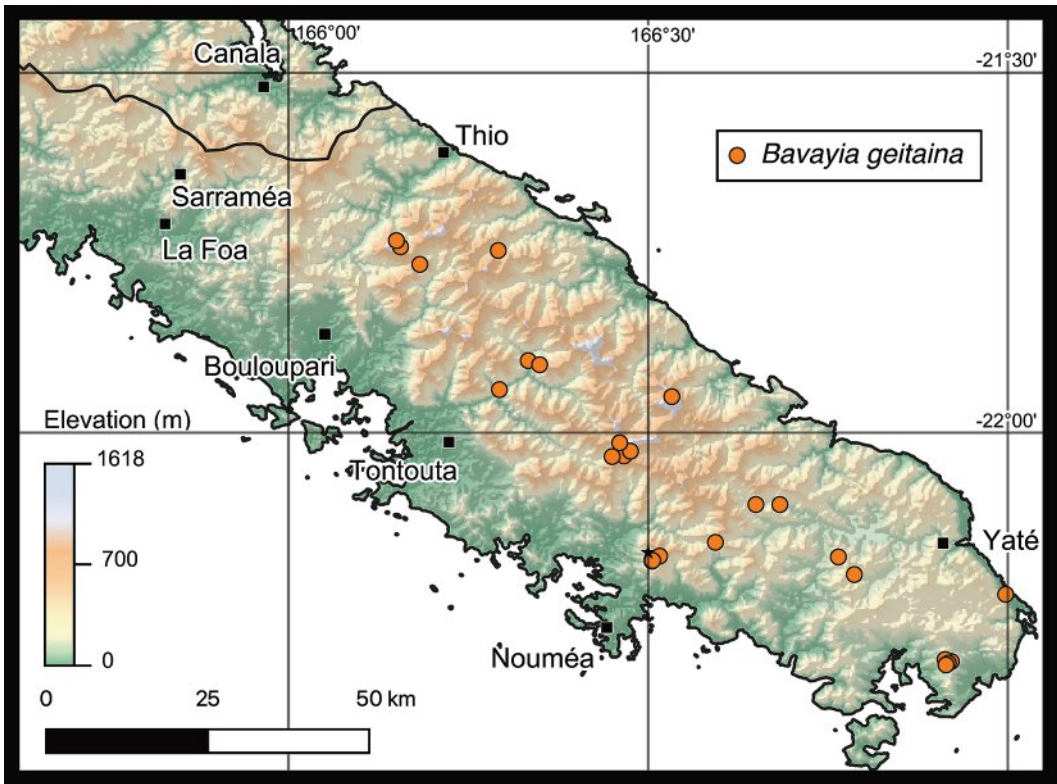


FIGURE 30. Map showing the distribution of *Bavayia geitaina*. Star indicates type locality. Cartography by J. DeBoer.

orous, including spiders, crickets, and mosquitoes (Wright et al. 2000). Clutch size is fixed at two and gravid females containing oviductal eggs have been taken in February, May, August, September and November. Like many of its congeners, this species frequently hosts trombiculid mites.

**Conservation Status:** *Bavayia geitaina* meets the criteria to be categorized as Near Threatened on the IUCN Red List (Sadlier et al. 2021d). It has a broad distribution in southern Grande Terre occurring up to 950 m in elevation, with an estimated extent of occurrence of 806 km<sup>2</sup> and area of occupancy of 36 km<sup>2</sup>. However, genetic studies indicate it occurs as four distinct genetic sublineages across its range. It is considered to have suffered a reduction in population size and extent as a result of past loss and degradation of closed-forest habitat from wildfires. There is an ongoing high level of threat from the loss or degradation of forest edge habitat by wildfires in adjacent maquis shrubland (Ibanez et al. 2019), and the species is also considered to be at threat from habitat degradation by introduced deer which threaten forest habitat quality (altering the abundance and structure of understory shrubs used for foraging) (de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-Wichatitsky 2006), and from the introduced Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from ground sheltering sites and arboreal foraging sites, and to affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001). However, the primary threat to *B. geitaina* is from further loss and degradation habitat as a result of the rapidly expanding nickel mining industry in the Grand Sud and Tontouta Valley, and in the region of Pic Ningua and Mont Çidoa (Pascal et al. 2008), and from wildfires across its range.

**Remarks:** Basic osteological information based on x-rays was provided in the species description (Wright et al. 2000).



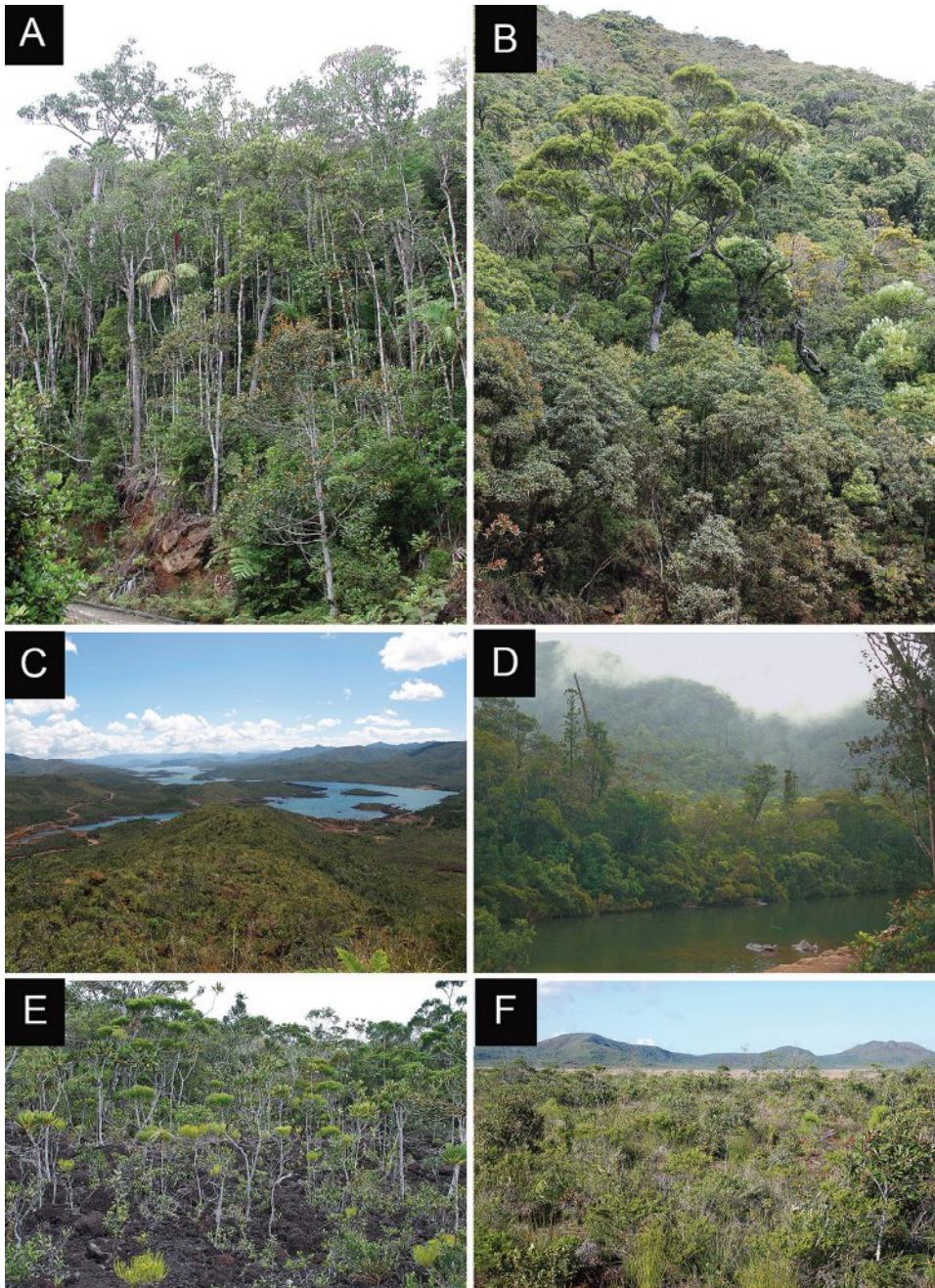


FIGURE 31. *Bavayia* habitats. A) Mid-elevation humid forest at Forêt Nord, Province Sud, habitat of *Bavayia robusta* and *B. geitaina*; B) High elevation humid forest at Pic Ningua, Province Sud, habitat of *Bavayia geitaina*; C) Panoramic view of the Plaine des Lacs, Province Sud. The region is occupied chiefly by *Bavayia septuiclavis* and *B. geitaina*, although *B. goroensis*, *B. robusta*, *B. campestris* sp. nov. and *B. kunyie* sp. nov. occur peripherally; D) Riverine forest at Rivière Bleue, Province Sud, habitat of *Bavayia septuiclavis*, *B. geitaina*, and *B. robusta*; E) *Gymnostoma* dominated maquis on the Plaine des Lacs, Province Sud, habitat of *Bavayia septuiclavis*; F) Maquis ligno-herbacé on the Plaine des Lacs, Province Sud, habitat of *Bavayia septuiclavis*. Photos A–B,E–F by R.A. Sadlier, photos C–D by A.M. Bauer.

*Bavayia ornata* Group

Members of this species group are distinguished from those of the *B. cyclura* Group by their generally smaller size (maximum of 69 mm SVL vs. maximum of 91 mm SVL), less robust, usually more gracile bodies, longer tails ( $>110\%$  SVL vs.  $<110\%$  SVL); narrower digits; a single row of precloacal pores in males (vs. usually 2–4 rows), and whitish to brownish (vs. yellow) ventral coloration. In comparison to members of the *B. sauvagii* Group they are distinguished by their more slender bodies and typically spotted limbs (*B. ornata* Clade) or by their patternless or longitudinally striped dorsum and low number of precloacal pores (8–14 vs. 15–30, rarely as few as 12 in *B. menazi*) (*B. septuiclavis* Clade).

*Bavayia ornata* Clade

**Content:** *Bavayia ornata* Roux, 1913; *B. tchingou* sp. nov.

**Definition:** The *Bavayia ornata* Clade differs from its sister taxon, the monotypic *B. septuiclavis* Clade by its placement of the claw of digit I of manus and pes lateral to a single medial apical scansor (vs. in a cleft between a large medial portion and much smaller lateral portion in a divided apical scansor), its larger number of precloacal pores in males (16–26 vs. 8–14), and by its dorsal color pattern characterized by pale blotches separated by darker transverse bars (vs. striped or almost patternless) and the presence of prominent white spots on the limbs (absent in *B. septuiclavis*).

*Bavayia ornata* Roux, 1913

Figures 32, 33A.

1913 *Bavayia sauvagii ornata* Roux, Nova Caledonia, Zool. 1(2):92; pl. 4, fig. 3.

**Lectotype:** NMBA 7025, “Nouvelle-Calédonie [Province Nord]: Forêt du Mont Panié, altit. 500 m”, coll. F. Sarasin and J. Roux, 26 June 1911. Lectotype designated by Kramer (1979:159) who gave the locality as “Wald des Mont Panié, 500 m Neu-Kaledonien.”

**Paralectotypes:** NMBA 7023–24, 7026–28, same data as lectotype.

**Referred Material:** (all localities in Province Nord) AMS R.77843–46, R.77870–74, R.77888, R.77892–93, R.78352, R.144231–32, R.144233\*, R.144234, R.149306\*, R.149336–37, R.149340, R.149369–71, UMMZ 219093–96, Mt. Panié, 20°33'27"S, 164°47'03"E; QM J55107, Mt. Panié, 20°33'S, 164°45'E.

**Diagnosis:** *Bavayia ornata* is a large (to 69 mm SVL), gracile species of *Bavayia* with a long, slender tail (TailL  $\sim 110\%$  SVL) and a long snout. Digital pads moderately expanded distally and with 11–13 lamellae under digit IV of the hindfoot, only distal 2–4 divided and bearing setae. Claw



FIGURE 32. *Bavayia ornata* Roux, 1913. Illustration of male from plate 4 of Roux (1913).





FIGURE 33. Life photographs of representatives of *Bavayia ornata* and *B. septuiclavis* Clades. A) *B. ornata*, Mt. Panié; B) *B. tchingou* sp. nov. (CAS 265732), Massif du Tchingou; C) *B. septuiclavis*, Goro Plateau; D) *B. septuiclavis* (AMS R.171443), Pourina River; E) *B. septuiclavis*, Rivière Bleu; F) *B. septuiclavis* (AMS R.166160), Forêt Nord. Fig. B by A.H. Whitaker.

of first digit offset, positioned on the lateral edge of an undivided medial apical scansor. Precloacal pores in males in a single row of 21–26. Dark brown with a pattern of 4–6 dark scalloped transverse markings across the dorsum between the limb insertions. Neck usually with a broad, pale nape patch, fragmented or entire, not connected to other pale markings posteriorly. Surfaces of flanks with large, brown-rimmed white ocelli, hindlimbs mostly unicolored heavily marked with white spots. Tail bearing a series of pale, symmetrical or asymmetrical dorsal blotches. Venter whitish with a brown suffusion.

*Bavayia ornata* may be distinguished from its sister taxon, *B. tchingou* sp. nov. by its larger size (maximum SVL 69 vs. 53.2 mm SVL), lower number of lamellae beneath digit IV of pes (11–13 vs. 12–16), larger number of precloacal pores (21–26 vs. ~16), less heavily spotted head and neck and blotched (vs. tiger-banded tail pattern).

**Distribution:** Endemic to Mt. Panié, Province Nord, where it occurs chiefly at 300–500 m elevation (Fig. 34). Despite extensive searches this species has only been found in a small area along the track to the summit on the eastern flank of the massif.

**Natural History:** *Bavayia ornata* has been recorded from closed forest at mid elevation (Fig. 24C), where it shelters beneath rocks and dead fallen trees or debris by day. Nothing is known of



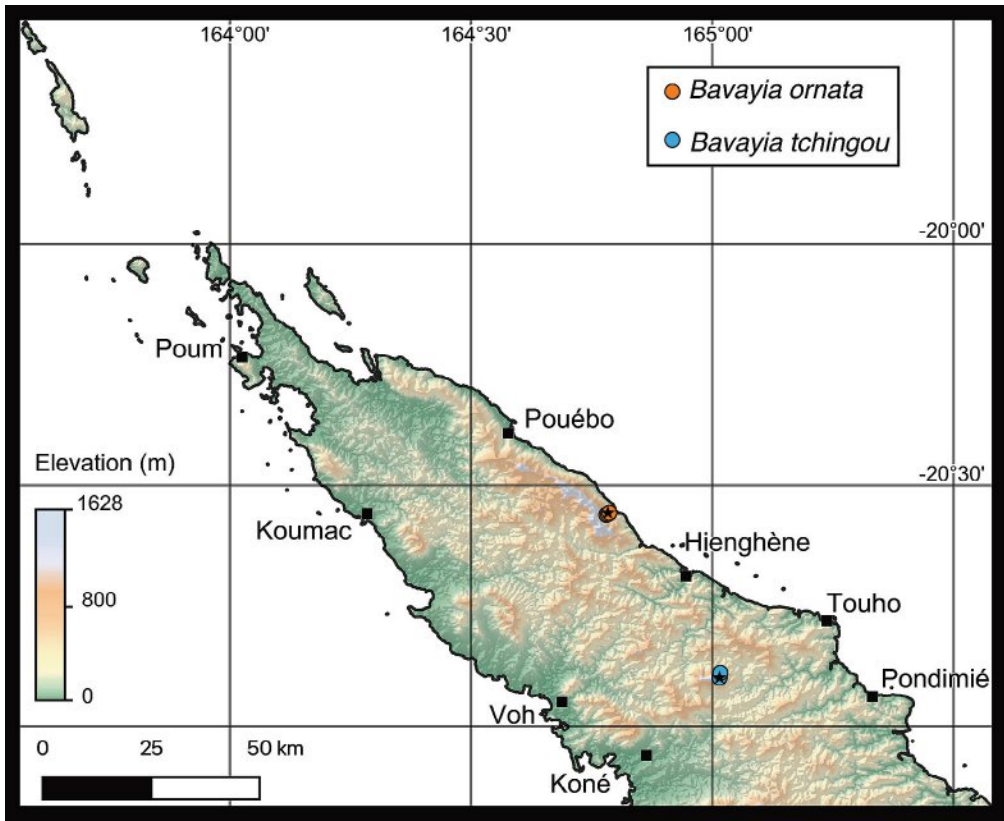


FIGURE 34. Map showing the distribution of members of the *Bavayia ornata* Clade. *Bavayia ornata* (orange), *B. tchingou* (blue). Stars indicate type localities. Cartography by J. DeBoer.

the diet of this species, although it is almost certainly a generalist arthropod feeder, like all other congeners. Clutch size is two.

**Conservation Status:** *Bavayia ornata* meets the criteria (B1ab(iii, v) + 2ab(iii, v)) to be categorized as Critically Endangered on the IUCN Red List (Sadlier et al. 2021e). It has an extremely restricted distribution being known only from a single area on the east side of Mt. Panié at 400–500 m elevation. The population is considered to be decreasing and the extent of occurrence and area of occupancy has been estimated to be 8 km<sup>2</sup>. Despite extensive survey work at other sites on the massif it still remains known only from a small area of < 2km<sup>2</sup>. Its distribution at the known site is likely to be determined by variables associated with habitat structure, such as the presence of ground daytime sheltering sites, and moisture levels. It is considered to be at a high level of threat from the introduced Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from ground sheltering sites and arboreal foraging sites, and to affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001), from introduced pigs which threaten forest habitat quality damaging ground daytime sheltering sites, and from predation by rodents (Whitaker 1978) and to a lesser degree cats (Palmas et al. 2017). Introduced deer also impact on the abundance and structure of understory shrubs used for foraging (de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-Wichatitsky 2006) and there is the potential for loss or degradation of forest edge habitat from wildfires in adjacent savannah woodland (Ibanez et al. 2019).

***Bavayia tchingou* sp. nov.**

Figures 33B, 35.

**Holotype:** MNHN-RA-2022.0054\* (ex. CAS 265731, ex. AMS 167270), Massif du Tchingou, Province Nord, New Caledonia, 20°53'56.8"S, 165°00'53.9"E (900 m elevation), coll. A.H. Whitaker and V.A. Whitaker, 28 June 2006.

**Paratypes:** (all localities in Province Nord) AMS R.167289, CAS 265734\* (ex. AMS R.167290), Massif du Tchingou, 20°53'21.2"S, 165°00'59.88"E (900 m elevation), coll. A.H. Whitaker and V.A. Whitaker, 1 July 2006; AMS R.167269, R.167271, R.167273, CAS 265732 (ex. AMS R.167272), Massif du Tchingou, 20°53'56.8"S, 165°00'53.9"E (900 m elevation), coll. A.H. Whitaker and V.A. Whitaker, 28 June 2006; AMS R.167288, CAS 265733 (ex. AMS R.167287), same locality and collectors as previous, 1 July 2006.

**Referred Material:** (all localities in Province Nord) AMS R.167268, Massif du Tchingou, 20°53'56.8"S, 165°00'53.9"E (900 m elevation); AMS R.167291, Massif du Tchingou 20°53'21.2"S, 165°00'59.88"E (900 m elevation).

**Diagnosis:** *Bavayia tchingou* sp. nov. is a small (to 53.2 mm SVL), slender, gracile species of the *Bavayia ornata* Clade with a long, slender tail (TailL to at least 117% SVL). Digits are elongate and subdigital pads are moderately expanded distally, with 12–16 lamellae under digit IV of the hindfoot, only the penultimate 2–4 lamellae divided. Claw of digit I of manus and pes offset, positioned on the lateral edge of an undivided medial apical scensor. Precloacal pores in males in small, difficult to discern, in a single row of ~16; females without precloacal pores or dimples. Medium to dark brown with a pattern of 5 dark scalloped transverse markings across the dorsum between the limb insertions. Neck without V-shaped marking and bearing numerous whitish spots. Surfaces of flanks with large, brown-rimmed white ocelli, hindlimbs mottled and heavily marked with white spots. Venter whitish with a brown suffusion.

*Bavayia tchingou* sp. nov. may be distinguished from its sister taxon, *B. ornata* by its smaller size (maximum SVL 53.2 vs. 69 mm SVL), longer tail, larger eyes, higher number of lamellae beneath digit IV of pes (12–16 vs. 11–13), lower number of precloacal pores (~16 vs. 21–26), more heavily spotted head and neck and tiger-banded (vs. blotched) tail pattern.

**Description:** Based on holotype — MNHN-RA-2022.0054 (ex. CAS 265731, ex. AMS 167270), adult male. Snout-vent length (SVL) 51.2 mm; trunk relatively long, extremely gracile, depressed. Head oblong, large (HeadL 28% SVL), narrow (HeadW 63% HeadL), not depressed (HeadD 36% HeadL), distinct from neck; interorbital/frontal region with midline depression, canthus well developed; snout long (EyeSn 43% HeadL), less than twice eye diameter (OrbD 24% HeadL). Granular scales on anterior snout approximately two to three times diameter of those on occipital region. Pupil vertically oriented with crenelated margins; several superciliary scales in posterodorsal quadrant of orbit conical, moderately elongate, pointed. Ear opening approximately 1.5 times higher than wide, canted posterodorsally to anteroventrally; eye to ear distance equal to diameter of eye (EyeEar 100% OrbD). Rostral rectangular, much broader than high, no median dorsal crease, contacted posteriorly by a series of seven small, roughly circular internasal and two much enlarged supranasals, contacted posteroventrally by first supralabial. Nostrils oval and anterolaterally oriented, surrounded by two nasals, one supranasal, and the rostral; in broad contact with first supralabial. Mental subtriangular, slightly deeper than wide; a single enlarged, median, hexagonal postmental in broad contact with mental, separating first infralabials from one another; first infralabials each in contact posteriorly with median postmental and one smaller lateral postmental chin shields. First four to five rows of chin shields larger than remaining throat scales. 10 L, 9 R enlarged supralabial scales, of which the 8<sup>th</sup> through 12<sup>th</sup> and 7<sup>th</sup> through 9<sup>th</sup>, respectively

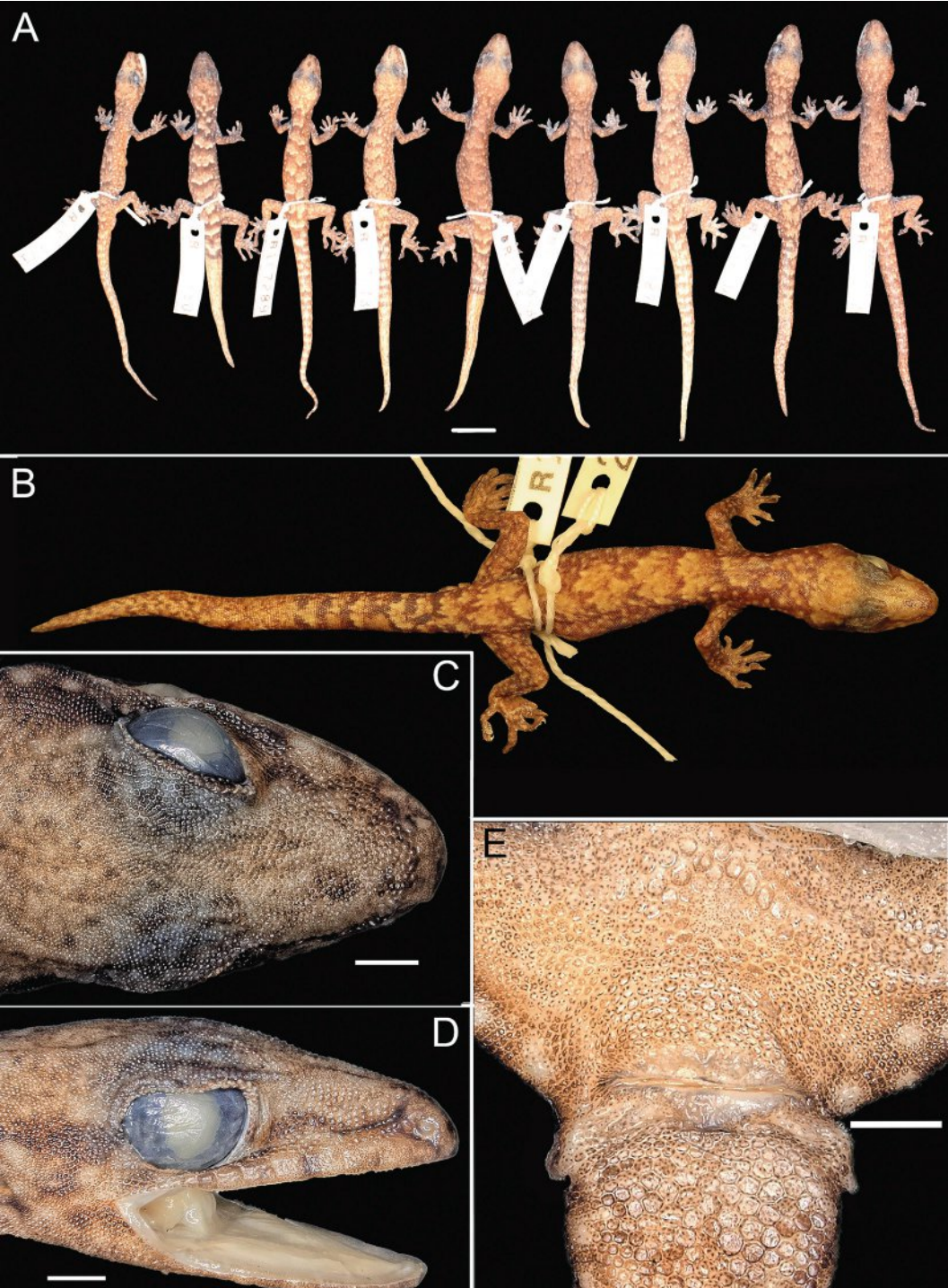


FIGURE 35. *Bavayia tchingou* sp. nov. A) Paratype series. B–E) Holotype MNHN-RA-2022.0054 (ex. AMS R.149392): B) whole body dorsal view; C) dorsal view of head; D) right lateral view of head; E) ventral view of right pes. Scale bars: A–B = 10 mm, C–E = 2 mm.



are beneath the eye on the right side; 9 L, 10 R infralabial scales; 46 interorbital scale rows between superciliaries at midpoint of orbit, 16 interorbitals between the orbital margins of the frontal bone.

Dorsal scales small, homogeneous, very slightly conical, granular; ventral scales slightly larger than dorsals, juxtaposed anteriorly becoming subimbricate and somewhat enlarged posteriorly on the body. Posterior abdominal scales rounded, mid-abdominal scales elongate, diamond-shaped. Approximately 146 scale rows around midbody. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Scales in precloacal row enlarged, but precloacal pores small and difficult to discern, in a single continuous row of 16. Forearm and crus moderately long (13% and 15% of SVL, respectively), axillary pockets shallow. Digits long and moderately narrow, all bearing claws, those on digit I of both manus and pes reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital lamellae typically paired, except variably single or fragmented at the base of digits. Distalmost lamella of digits II–V, manus and pes, undivided. Claw of digit I positioned lateral to a single apical scensor. Lamellar counts from right side of holotype 6-9-11-11-9 manus and 6-9-11-13-10 pes.

TailL 50.0 mm (distal 31.4 mm regenerated), approximately 98% of snout-vent length, tapered, stout, rounded in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, square (basal original portion of tail) to rectangular, arranged in regular rows. Surface of tail weakly segmented, caudal scale rows forming whorls, each whorl ~7 dorsal scale rows and 6 ventral scale rows long; midventral caudal scales not enlarged. Scales on pygal portion of tail much smaller ( $\frac{1}{2}$  to  $\frac{1}{3}$ ) than postpygal scales. Cloacal spurs consisting of 2–3 large, compressed, flattened, conical, posterodorsally directed scales, just posterolateral of the cloaca.

**Color in preservative:** Dorsum and flanks a medium to chocolate brown with beige to light brown dorsal blotches and cream to white spots. Five wavy brown transverse markings between the limb insertions, each preceded by a line of small white spots and then by a beige dorsal blotch with irregular margins. Between the beige markings and the dark transverse bar there is a short transitional zone in which the density of brown pigment increases moving anteriorly. The flanks bear two longitudinal rows of whitish spots, the more dorsal continuing above the limb insertions onto the neck and the tail, the more ventral restricted to the space between the limb insertions; white spots extend dorsally from the flanks and continue into the anterior margins of the dark dorsal bars and also lie within portions of the dark bars themselves. Anterior to the dark bar at the forelimb insertion, a series of pale blotches is partially fragmented and surrounded by a reticulating medium brown pattern, small bright white spots border the reticulated pattern laterally and overlies portions of both the pale spots and the dark network. The dorsum of the head is mostly patternless and pale grayish brown (snout) to beige (crown), with small, mostly faint medium brown markings, including several on the snout and a thin antorbital arc. A medium brown streak runs from the snout, through and beneath the orbit and on to the lower temporal region, whence it is contiguous with the ground color of the flanks. The labial scales are mostly light brown with some more heavily pigmented portions of certain scales. The limbs are mottled and bear a medium brown reticulation with cream to beige pale markings; darker brown patches at the anterior aspect of each limb insertion and on the distal forearms. Pygal portion of tail with an irregular blotch similar in color to those on the trunk, bounded posteriorly by a chocolate brown irregular band that straddles the tail constriction. Posteriorly five whitish to cream markings with chocolate brown interspaces on the original part of the post-pygal tail, yielding a tiger barring pattern. The regenerated portion of the tail similar in color to original; darker markings not contiguous and forming a rough “checkerboard” pattern. Body venter light brown with darker pigmentation under the limbs,

around the cloaca, on the throat and chin. Subcaudal surfaces light to medium brown with scattered beige to cream markings.

**Color in life:** (based on paratype CAS 265732, ex. AMS R.167272, Fig. 33B) Ground color chocolate brown with extensive small whitish to buff spotting across most of the dorsum, flanks, limbs and head. Pale dorsal blotches buff to pale yellowish or straw. Snout medium brown, contiguous with canthal streak, which fades posteriorly but continues behind the eye as a lower temporal streak that passes into the upper flanks. A dark, median, rostral streak extends posteriorly almost to the level of the anterior orbital rim; other thin, dark markings over the orbits and in the upper temporal region. Dorsal half of orbital rim yellow and occipital and posterior parietal regions with yellowish spots and markings. Iris silvery. Tail with series of approximately 28 thin, pale bands, buff on pygal portion of tail and whitish on post-pygal tail, alternating with darker banks of mottled brown and straw.

**Variation:** Mensural features of paratypes are presented in Table 12. Paratypes with 1–3 inter-nasals contacting the rostral. First infralabials separated behind the mental in all paratypes by an enlarged median postmental chin shield. Collectively the first infralabials border 3 enlarged chin shields (rarely two). Male paratypes with a single row of ~16 small, very difficult to discern precloacal pores, pore row scales not enlarged as in holotype; no pores or dimpled scales in females. Longest original tail 117% SVL (AMS R.167289). Color pattern relatively conservative and with all the same elements but from weakly differentiated (e.g., AMS R.167272) to bold (AMS R.167290). Always five dark bars between limb insertions, white spotting of flanks and dorsum always prominent, sometimes forming nearly complete transverse bands anterior to the dark dorsal bars. Patterning on neck variable, but always with distinct white or cream spotting. Dorsum of head pale with scattered brown markings; a longitudinal streak sometimes present at mid-snout. Tiger-barring of tail always evident on original portions of tails, with up to 20 alternating sets of cream to beige and medium brown rings. Regenerated tails with either dark irregular dashes or more elongate lines.

TABLE 12. Mensural data from the type series of *Bavayia tchingou* sp. nov.; \*tail regenerated.

	Holotype	Paratypes							
	MNHN-RA 2022.0054	AMS R.167271	CAS 265734	AMS R.167288	AMS R.167273	AMS R.167289	CAS 265732	CAS 265733	AMS R.167269
Sex	M	M	F	F	F	M	F	F	M
SVL	51.2	45.3	45.8	53.2	46.1	44.4	52.3	50.6	47.9
ForeaL	6.5	5.7	6.0	6.8	6.1	5.4	6.8	5.4	5.2
CrusL	7.9	6.2	6.6	7.2	6.8	6.2	8.1	6.4	6.6
TailL	50.1*	51.6	37.2*	48.6*	47.8*	52.1	57.7	58.4*	52.4*
HeadL	14.3	12.2	12.0	14.7	12.6	11.8	13.2	11.8	12.1
HeadW	9.0	7.5	7.6	9.0	7.8	7.9	8.2	7.9	7.5
HeadH	5.1	4.1	4.3	5.1	4.7	4.3	4.0	3.7	3.6
OrbD	3.5	3.3	3.3	3.6	3.3	3.4	2.5	2.6	2.4
EyeEar	3.5	2.9	3.2	3.3	3.3	3.2	2.7	2.7	2.4
SnEye	6.2	5.4	5.6	6.5	5.6	5.1	5.4	4.9	5.5
NarEye	4.9	4.0	4.0	4.5	4.5	4.0	4.0	3.4	3.1
InterOrb	5.5	4.6	4.6	5.8	5.6	5.0	4.6	4.5	4.2
EarL	1.8	1.5	1.5	1.8	1.8	1.6	1.4	1.2	1.1

**Etymology:** The specific epithet is the name of the type locality and only known place of occurrence of the new species and is a noun in apposition.

**Distribution:** Limited to the Massif du Tchingou in the Chaîne Centrale of the central Province Nord (Fig. 34).

**Natural History:** *Bavayia tchingou* sp. nov. has been recorded from high elevation (~900 m) *Nothofagus* forest and maquis (Whitaker and Whitaker 2007). It was reported as common in the

montane forest and was recorded active at night despite low temperatures on the foliage of trees and shrubs, and on the rock-faces of road cuttings.

**Conservation Status:** *Bavayia tchingou* sp. nov. meets the criteria (D2) to be categorized as Vulnerable on the IUCN Red List. It has an extremely restricted distribution being known from Mt. Tchingou in the northern ranges. It is recorded from *Nothofagus* forest and maquis at around 900 m in elevation, with an estimated extent of occurrence of ~12 km<sup>2</sup> above this elevation. Its distribution at the known sites is likely to be determined by variables associated with habitat structure, such as the presence of ground daytime sheltering sites, and moisture levels. There is a potential threat to the species from loss or degradation of both forest edge and adjacent maquis habitat near the summit from wildfires (Ibanez et al. 2019), leading to a reduction in the area of occupancy and quality of habitat. Introduced deer and pigs also pose a threat to the quality of habitat, particularly by damaging ground daytime sheltering sites (de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-Wichatitsky 2006). Much of the Massif du Tchingou lies with ultramafic surface zoned for mining but is not currently actively mined.

**Remarks:** Life photographs were provided by Whitaker and Whitaker (2007), as *Bavayia ornata*.

### *Bavayia septuiclavis* Clade

**Content:** *Bavayia septuiclavis* Sadlier, 1988.

**Definition:** The monotypic *Bavayia septuiclavis* Clade is distinguished from the members of the *B. ornata* Clade by its placement of the claw of digit I of manus and pes in a cleft between a large medial portion and much smaller lateral portion in a divided apical scansor (vs. lateral to a single medial apical scansor), by its lower number of precloacal pores (8–14 vs. 16–26), and by its striped to almost patternless dorsum (vs. pattern of pale dorsal blotches separated by dark, transverse bars) and the absence of prominent white spots on the limbs.

### *Bavayia septuiclavis* Sadlier, 1988

Figures 33C–F.

2000 *Bavayia septuiclavis*, Sadlier, Rec. Austral. Mus. 40:367, figs. 3, 4.

**Holotype:** AMS R.78139, “4 km along Mount Gouemba road from turnoff on Yate-Goro road (300–350 m), [Province Sud] 22°09'S, 166°54'E, New Caledonia,” coll. R.A. Sadlier and P.R. Rankin, 27 December 1978.

**Paratypes:** (all localities in Province Sud) AMS R.78140–41, same data as holotype; AMS R.90193, same locality and collectors as holotype, coll. 26 December 1978; AMS R.125291–93, Rivière Bleu Forest Reserve, ca. 22°06'S, 166°40'E, coll. S. Tillier, August 1987; QM J44034, J44985 [sic, QM J43985], Rivière Bleu Forest Reserve, ca. 22°06'S, 166°40'E, coll. 25 May 1984; AMS R.78339, Mount Koghis, 22°10'S, 166°32'E, coll. R.A. Sadlier and P.R. Rankin, 2 January 1979; AMS R.125888, Mount Koghis, 22°10'S, 166°32'E [sic, 22°10'43"S, 166°30'20"E], coll. H.G. Cogger and R.A. Sadlier, 23 August 1987; AMS R.78234–36, 2 km north-east of Pic du Pin, Plaine des Lacs, 22°15'S, 166°50'E, coll. R.A. Sadlier and P.R. Rankin, 28 December 1978; MNHN 1985–120, 1985–121, Vallée de la Coulée, 22°11'S, 166°36'E.

**Referred Material:** (all localities in Province Sud) AMS R.171408\*, Ni River Valley, 21°53'1.066"S, 166°32'14.455"E; AMS R.172565–68\*, Mine Galliéni, Mt. Vulcain, Tontouta Valley, 21°54'20.363"S, 166°20'57.063"E; CAS 265995\*, saddle between Mt. Ouin and Mt. Dzumac, 22°01'41"S, 166°28'19"E; AMS R.171440–43\*, Pourina River Valley, 22°01'51.132"S 166°43'33.514"E; FMNH 62804–05, Col de la Pirogue, 22°05'08"S, 166°19'12"E; CAS 205473,



Parc Provincial de la Rivière Bleue, vue Panoramique, vic. Pont Germain, 22°05'44"S, 166°40'07"E; CAS 205439–56, 205478–81, Parc Provincial de la Rivière Bleue, Pont Germain (vicinity), 22°06'S, 166°38'E; AMS R.135661, Parc Provincial de la Rivière Bleue, Kaori Géant (vicinity), 22°06'S, 166°40'E; AMS R.147947\*, Parc Provincial de la Rivière Bleue, 4.7 km E Pont Germain, 22°06'S, 166°41'E; AMS R.147956–57\*, R.147958, R.147972–73\*, UMMZ 219025, Parc Provincial de la Rivière Bleue, Pont Germain (vicinity 1 km along road either side), 22°06'S, 166°39'E; CAS 202838, Parc Provincial de la Rivière Bleue, ca. 0.5 km S Pont Germain (200 m), 22°06'S, 166°38'E; AMS R.152609–23, R.152636–37, Parc Provincial de la Rivière Bleue, Pont Germain (vicinity), 22°06'02"S, 166°39'30"E; AMS R.147955\*, Parc Provincial de la Rivière Bleue, Rivière Blanche, Houp Géant, 22°09'03"S, 166°41'12"E; AMS R.174595–96\*, R.174623–25, Montagne des Sources, watershed of Rivière du Casse Cou on Route de Corniche, 22°09'9.036"S, 166°35'37.392"E; CAS 265881, Montagne des Sources, Site C, 22°09'29.9"S, 166°35'30.4"E; CAS 265882–884, Montagne des Sources, Site B, 22°07'51.2"S, 166°36'17.4"E; AMS R.144324–25\*, R.144354–55\*, R.146279–80\*, R.146281, R.147779\*, R.150761–63, UMMZ 217124, Mt. Koghis, 22°10'43"S, 166°30'20"E; CAS 198642–43, 198644\*, 198645, 202724–25, 202744–46, 205410–11, 214449, 214450\*, Mt. Koghis (~500 m asl), 22°10'40"S, 166°30'23"E; AMS R.167436–38\*, R.176439, Forêt Cachée, Creek Pernod, Plaine des Lacs, 22°11'50"S, 166°47'13"E, AMS R.167468, Creek Pernod, Plaine des Lacs, 22°11'40"S, 166°47'31"E; AMS R.177079–80, Rivière des Lacs, near la Madelaine, 22°11'20.519"S, 166°51'15.291"E; AMS R.161911–12\*, R.161913, Monts Kwa Né Mwa, 7 km W crossing of Rivière des Pirogues (R.P.3), 22°12'22"S, 166°40'43"E; AMS R.179079–80\*, Goro Plateau, Plaine des Lacs (FER.E2), 22°12'50"S, 166°56'50"E; AMS R.167400, R.167401–403\*, R.167428, Ka Yé Wagwé (vic.), 2.7 km SE Ka Yé Wagwé, Plaine des Lacs, 22°13'17"S, 166°54'25"E; AMS R.167428\*, 3.0 km SSE Ka Yé Wagwé, Plaine des Lacs, 22°13'58"S, 166°53'45"E; AMS R.172656, R.172657–58\*, Chutes de la Madelaine, 22°13'50.16"S, 166°51'36"E; AMS R.164247–49\*, R.167250–54, R.164264, R.164280–84, Pic du Pin, 22°14'53"S, 166°49'45"E; AMS R.168121, Rivière des Pirogues, Rivière Ya, 22°14'41.347"S, 166°42'14.445"E; AMS R.168097, Rivière des Pirogues, 22°15'47.753"S, 166°41'45.071"E; AMS R.168106, Rivière des Pirogues, 22°16'16.265"S, 166°42'10.041"E; AMS R.168107, Rivière des Pirogues, 22°15'27.112"S, 166°42'34.209"E; AMS R.177428–29, Plaine des Lacs, near Lac en Huit, 22°15'47.863"S, 166°51'40.675"E; AMS R.179124\*, Goro Plateau, Plaine des Lacs (FER.02), 22°15'35.433"S, 166°56'52.21"E; AMS R.179129\*, Goro Plateau, Plaine des Lacs (FER.02), 22°15'49.444"S, 166°57'32.74"E; AMS R.166004–05\*, R.166006–07, Plaine des Lacs, route de la Wajana, 22°16'09"S, 166°57'35"E; AMS R.166023–24, Plaine des Lacs, route de la Wajana, 22°16'09"S, 166°58'57"E; AMS R.166000–02, R.166118–21, Plaine des Lacs, route de la Wajana, 22°16'26"S, 166°57'43"E; AMS R.166140, R.166152–53, Plaine des Lacs, route de la Wajana, 22°16'35"S, 166°58'38"E; AMS R.166116–17, Plaine des Lacs, route de la Wajana, 22°17'04"S, 166°58'57"E; AMS R.174769–70\*, R.174773\*, R.174783–86\*, Goro Plateau, Wadjana River drainage (upper reaches), 22°16'25.178"S, 166°59'21.76"E; AMS R.179265\*, Goro Plateau, Kwé Nord (20-30 YMP), 22°16'23.5"S, 166°58'04.6"E; AMS R.179196–97\*, Goro Plateau, Kwé Nord (20-30 YMP), 22°16'30"S, 166°58'06"E; AMS R.179190–92\*, Goro Plateau, Kwé Nord (20-30 YMP), 22°16'34.5"S, 166°58'06"E; AMS R.179269–71\*, Goro Plateau, Kwé Nord (20-30 YMP), 22°17'01"S, 166°57'58.9"E; AMS R.180295–97\* Goro Plateau, Kwé Nord, 22°16'38"S, 166°56'37"E; AMS R.166182–83, Plaine des Lacs, route de la mine, 22°16'35"S, 166°58'02"E; AMS R.166171, Plaine des Lacs, route de la mine, 22°16'52"S, 166°57'13"E; AMS R.166022, Plaine des Lacs, route de la Goro/route de la mine intersection, 22°17'04"S, 166°57'39"E; AMS R.161926, Plaine de Lacs, near Grand Lac, 22°16'37"S, 166°47'07"E; AMS R.164319, R.164335–

38, R.164339–41\*, R.164346–49, Pic du Grand Kaori, 22°16'56"S, 166°53'28"E; AMS R.166052–53, R.166055\*, R.166159–60, R.164298, Pic du Grand Kaori, 22°17'05"S, 166°53'42"E; QM J86837–38, Pic du Grand Kaori, 22°17'01"S, 166°54'00"E; AMS R.172099–104, Goro Plateau, Kwé Nord, 22°16'46.92"S, 166°56'46.212"E; AMS R.172093–94\*, Goro Plateau, Kwé Nord, 22°16'49.8"S, 166°57'12.204"E; AMS R.179211, Goro Plateau, Kwé Nord, 22°17'05.458"S, 166°58'52.465"E; AMS R.171337–38, Goro Plateau, Kwé Nord, 22°17'30.12"S, 166°58'52.392"E; AMS R.171342–43, R.171386, R.171368, Goro Plateau, Kwé Nord, 22°17'35.16"S, 166°58'40.512"E; AMS R.171349–50, Goro Plateau, Kwé Nord, 22°17'45.96"S, 166°58'59.304"E; AMS R.171369–70, Goro Plateau, Kwé Nord, 22°17'48.84"E; AMS R.179096–102\*, Goro Plateau, Baie de Prony (AS3, 4 & 5), 22°16'50.408"S, 166°51'49.7"E; AMS R.179116–118\*, Goro Plateau, Baie de Prony (AS3, 4 & 5), 22°16'53.213"S, 166°52'42.41"E; AMS R.164357\*, R.164358, Forêt Nord, 22°19'28"S, 166°54'51"E; AMS R.166086, Forêt Nord, 22°19'22"S, 166°54'52"E; AMS R.166167–68, Forêt Nord, 22°19'22"S, 166°54'52"E; ZFMK 45032–34, 49288, Nouméa [in error]; ZFMK 51823, 20 km N Nouméa; Yaté, 55044–45. **Observational record** (S. Astrongatt): Ouinne River, 22°00'41.03"S, 166°36'25.17"E.

**Diagnosis:** A small species of *Bavayia* (maximum SVL 52.6 mm for a captive female, MTKD D 39061) with a moderately robust body, relatively long limbs and a long tail (to 110% SVL). The claw of digit I of manus and pes lies in a cleft within the apical scansor, which is divided into a larger medial portion and a smaller lateral portion; digital pads weakly expanded distally, lamellae beneath digit IV of pes 10–14. Precloacal pores in males in a single row, continuous or interrupted, of 8–14; enlarged cloacal spur scales usually 2–3 per side. Color pattern medium to light brown, buff, pinkish brown or yellowish with faint to bold longitudinal markings. Mid-dorsal and paravertebral region, from tail base to nape, lighter than dorsolateral areas and flanks, continuous with similarly colored area on dorsum of head. A darker vertebral stripe, usually continuous, dividing the pale dorsum of the trunk into two parallel pale stripes in some individuals, lateral margins of pale dorsal area usually bounded by a thin, dark line. Some individuals are almost patternless and, in some, the light dorsum is only weakly differentiated from the darker dorsolateral coloration and the dark vertebral stripe as well as dark lateral borders of the pale dorsal region may be represented by longitudinal series of tiny dark dots or dashes. Snout dark, continuous with broad canthal stripe passing through the lower  $\frac{2}{3}$  of eye and continuing above ear and forelimb insertions and on to the flanks and lateral surfaces of the original tail. Orbital rim outlined, partly or fully, in buff, whitish or yellowish. Iris silvery to coppery. Flanks bearing one or two longitudinal rows of tiny whitish spots. Limbs mottled and/or speckled but lacking prominent white spots. Original tail bearing a series of pale chevrons, sometimes forming a herringbone pattern. Venter pale, whitish, buff or beige, with chin, throat and edges of body suffused with color similar to, though usually paler than the lateral surfaces of the adjacent body regions.

For comparisons with *B. ornata* Clade members see Definition of *B. septuiclavis* Clade. Based on color pattern alone, *B. septuiclavis* superficially resembles species of *Dierogekko*, from which they are distinguished by having only a single row of precloacal pores (vs. two rows [in some *Dierogekko* only, see Bauer et al. 2006]), by their larger size (to 50 mm SVL vs. usually < 45 mm SVL), and by a less clearly delineated dorsal stripe pattern (vs. pale middorsal usually strongly set off from adjacent parts of body and often undivided into multiple stripes). It is also similar to *B. menazi* in the *B. exsuccida* Clade, from which it differs in its wider head and difference in claw configuration. Striped individuals also occur in several other species of *Bavayia* but differ in characters noted in the Group and Clade Definition sections.

**Distribution:** Widely distributed on ultramafic surfaces in the southern mainland portion of the Province Sud, from the Ni Valley in the northeast and Mt. Vulcain and the Tontouta Valley in

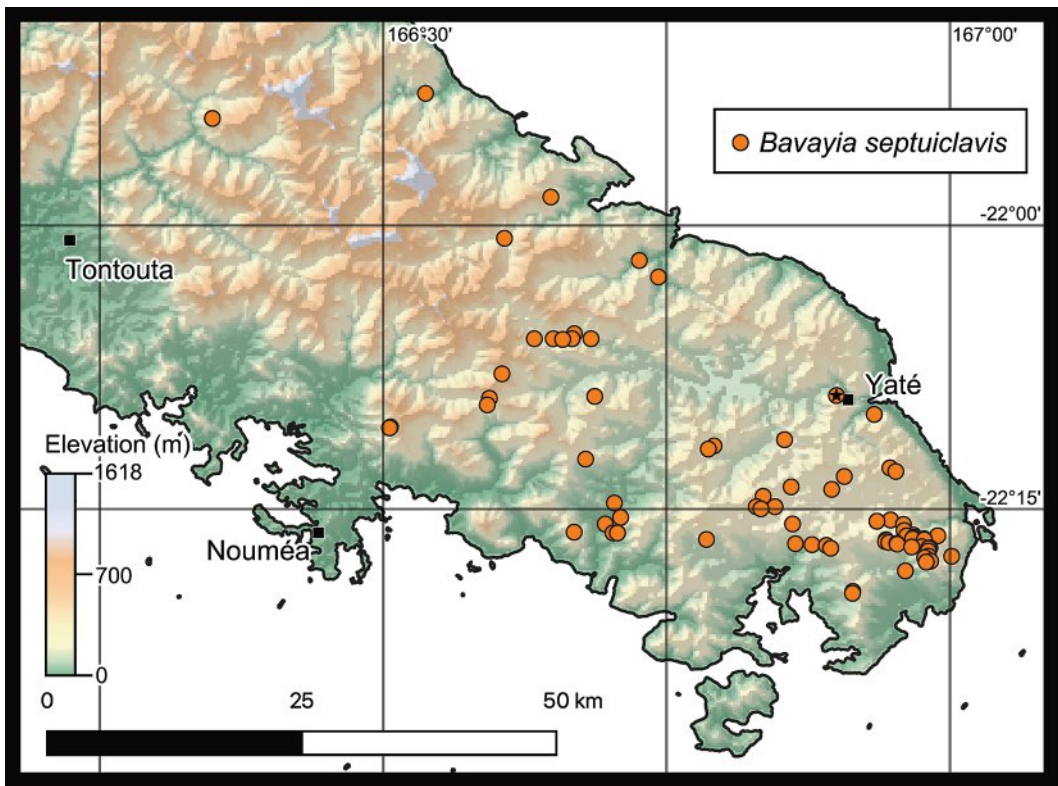


FIGURE 36. Map showing the distribution of *Bavayia septuiclavis*. Stars indicate type localities. Cartography by J. DeBoer.

the northwest, south across the Plaine des Lacs to the Goro Plateau. Present at Mt. Koghis, but absent from greater Nouméa and the coastal southwest of the Grande Terre and from all offshore islands (Fig. 36). Rösler (1998) reported on specimens from Mt. Dore, an otherwise unrecorded locality, but precise locality data are lacking.

**Natural History:** *Bavayia septuiclavis* is primarily terrestrial, occupying daytime retreats under logs and rocks and emerging to forage after dark, both on the ground and on vegetation, usually under 1 m in height. It occurs in maquis formations and in closed forest (Figs. 8A–E, 31C–F). A *Bavayia*, likely this species, was recovered from the stomach of a *Rhacodactylus auriculatus* at Rivière Bleu, where both species are common in maquis (Snyder et al. 2010). Gérard et al. (2014) demonstrated the ability of *B. septuiclavis* to avoid odors associated with the introduced Pacific rat (*Rattus exulans*), although it did not respond to odors from ship rats, feral cats or invasive ants, nor to novel potential predators and competitors (Gérard et al. 2016). It is insectivorous and lays eggs in two-egg clutches. Captive data are provided by Rösler (1998) and Frank (2018).

**Conservation Status:** *Bavayia septuiclavis* meets the criteria to be categorized as Near Threatened on the IUCN Red List (Sadlier et al. 2021f). It has a broad distribution within the Massif du Sud and is known from a number of sites across a broad range of habitats and elevation. The extent of occurrence is broadly estimated at 1542 km<sup>2</sup>, and the area of occupancy at 156 km<sup>2</sup>. It is presumed to have suffered some reduction in extent as a result of extensive loss of humid forest and modification to maquis habitats from a wide range of causes, peripheral populations are likely to be fragmented and localized. In the southern part of its range it is subject to loss of habi-



tat from the rapidly expanding nickel mining industry in the Grand Sud and in the Tontouta Valley (Pascal et al. 2008), and loss or degradation of habitat from wildfires (Ibanez et al. 2019). In forest habitat it is likely to be threatened by the introduced Fire Ant *Wasmania auropunctata* which has the potential to displace geckos from ground sheltering sites and arboreal foraging sites and affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001), from the impact of introduced pigs which threaten forest habitat quality by damaging ground daytime sheltering sites, and from predation by rodents and cats (Whitaker 1978; Palmas et al. 2017).

### *Bavayia cyclura* Group

Members of the *B. cyclura* Group are distinguished from other *Bavayia* group taxa by their typically robust, often large bodies (>50 mm maximum SVL, except in *B. goroensis*, and >60 mm maximum SVL in the majority of species), the placement of the claw of digit I of the manus and pes in a notch between a larger medial and smaller lateral lobe of the apical scansor. Usually two or more rows of precloacal pores in males with a maximum of 46 pores. Dorsal pattern typically with alternating dark transverse bars and pale blotches, and a yellow venter in life.

### *Bavayia cyclura* Clade

**Content:** *Bavayia cyclura* (Günther, 1872); *B. robusta* Wright, Bauer and Sadlier, 2000.

**Definition:** Members of the *B. cyclura* Clade are distinguished from other *B. cyclura* Group taxa by their large to very large body size (maximum 73.0 mm SVL in *B. cyclura*, 91.0 mm SVL in *B. robusta*), which exceeds all members of the *B. goroensis* and *B. borealis* clades; snout relatively short (40% of HeadL or less vs. 40% or more in the *B. montana* Clade) males with 2–3 rows of precloacal pores (maximum 36 pores in total); and the dorsum typically bearing a pattern of four dark, transverse markings between the limb insertions, each preceded by a pale blotch or chevron (but lacking the extensive, contrasting whitish to yellowish speckling of the *B. montana* Clade); white spotting in or adjacent to dark transverse bands generally conspicuous (vs. absent or inconspicuous in the *B. crassicolis* Clade); venter yellow.

### *Bavayia cyclura* (Günther, 1872)

Figures 37, 38A.

1869 *Platydictylus pacificus* Bavay, Mém. Soc. Linn. Normandie 15:8 (nec *P. pacificus* Gray = *Dactylocnemis pacificus*).

1872 *Peripia cyclura* Günther, Ann. Mag. Nat. Hist. ser. 4, 10:422; fig. p. 422. See comments under Lectotype.

1873 *Lepidodactylus neocaledonicus* Bocage, Jor. Sci. Mat. Phys. Nat. Lisboa 4:206.

1879 *Hemidactylus (Peripia) Bavayi* [part] Sauvage, Bull. Soc. Philomath. Paris, sér. 7, 3:71.

1883 *Lepidodactylus cyclurus* Boulenger, Proc. Zool. Soc. London 1883:121, pl. XXII, fig. 4.

1913 *Bavayia cyclura* Roux, Nova Caledonia, Zool. 1(2):87.

**Lectotype:** BMNH 71.4.16.30B, designated by Wright et al. (2000). *Peripia cyclura* was initially described by Günther (1872) on the basis of a series of five specimens collected by Julius L. Brenchley (1816–1873) on the cruise of the *Curaçoa* in 1865 but was incorrectly reported by Günther to have originated in “Feejee” (subsequently corrected by Günther [1873] to “New Caledonia”). However, the series is composite; BMNH 71.4.16.30 (A–B) are referable to a *Bavayia cyclura* Clade species and BMNH 71.4.16.31 (A–C) to a *B. sauvagii* Clade species (Bauer 1990a; Bauer and Henle 1994). The specimen illustrated by Boulenger (1885:pl. XIII, fig. 6) is clearly *B. cyclura* as currently recognized. Wright et al. (2000) designated the lectotype, thereby fixing the

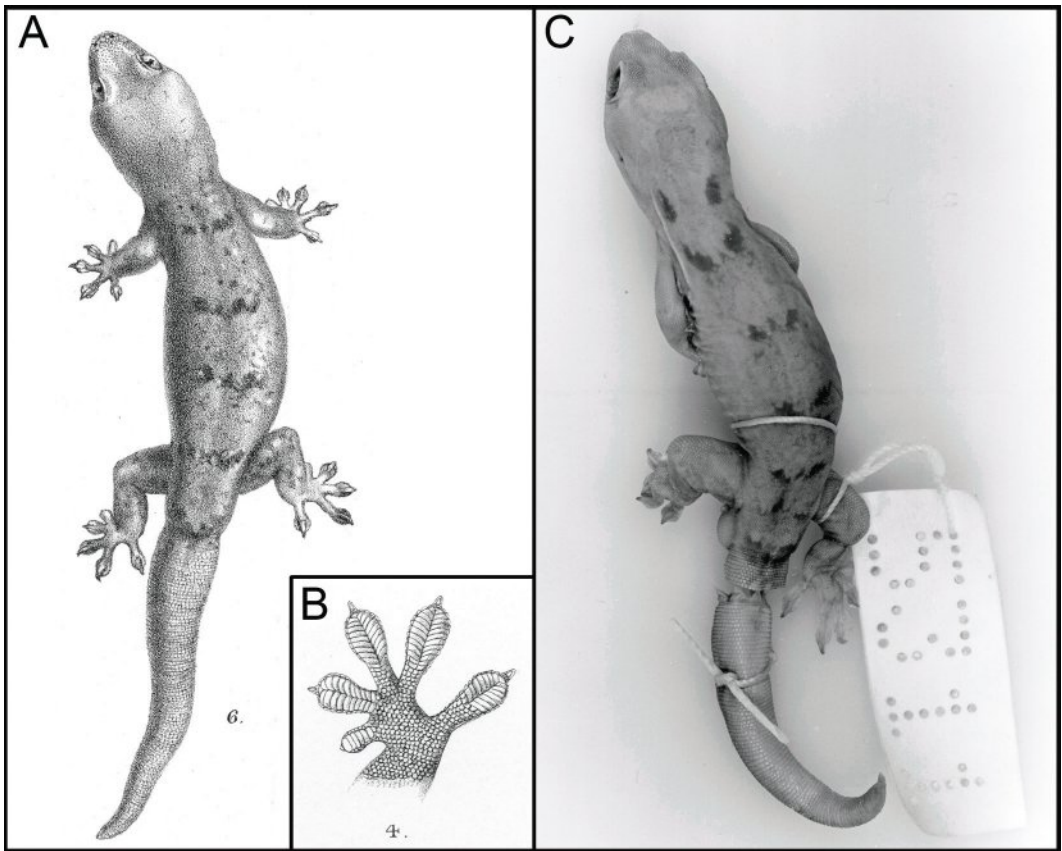


FIGURE 37. *Bavayia cyclura* (Günther, 1872). A) Image from Boulenger (1885: pl. XIII); B) Ventral view of right pes from Boulenger (1883: pl. XXII); C) Syntype of *Hemidactylus (Peripia) bavayi* (MNHN 5311) syn. *Bavayia cyclura*.

name to a specimen consistent with the then current use of the name *B. cyclura*. However, because of their concept of *B. cyclura* (See Comments below) there exists the possibility that the lectotype might be conspecific with the species now recognized as *B. robusta*, which, if shown to be the case, would render *robusta* a junior synonym of *cyclura* and would require a new name for the species treated in this account. Roux (1913) placed two other names in the synonymy of *B. cyclura* and this has been accepted by subsequent authors (e.g., Wright et al. 2000; Bauer and Sadlier 2000). The first of these, *Lepidodactylus neocaledonicus* Bocage (1873), was described on the basis of an unknown number of specimens in the Lisbon Museum, since destroyed by fire (Almaça and Neves 1987), and three specimens in Berlin, of which ZMB 7784A was designated as lectotype by Bauer and Günther (1991). The second was *Hemidactylus (Peripia) Bavayi* proposed by Sauvage (1879) based on two syntypes, MNHN-RA-5311 and 5312, of which only the former is referable to a *B. cyclura*-like gecko. None of these types are associated with specific localities and the collectors of the types of *H. (P.) bavayi*, Jean Armand Isidore Pancher (1814–1877) and Édouard Auguste Marie (1835–1888) both likely collected within the distributions of both *B. cyclura* Clade species (Bouchet et al. 2006; Morat 2010).

**Paralectotypes:** BMNH 71.4.16.30A, BMNH 71.4.16.31A–C (the latter three paralectotypes are referable to *B. sauvagii*; Bauer 1990a; Bauer and Henle 1994; Wright et al. 2000).

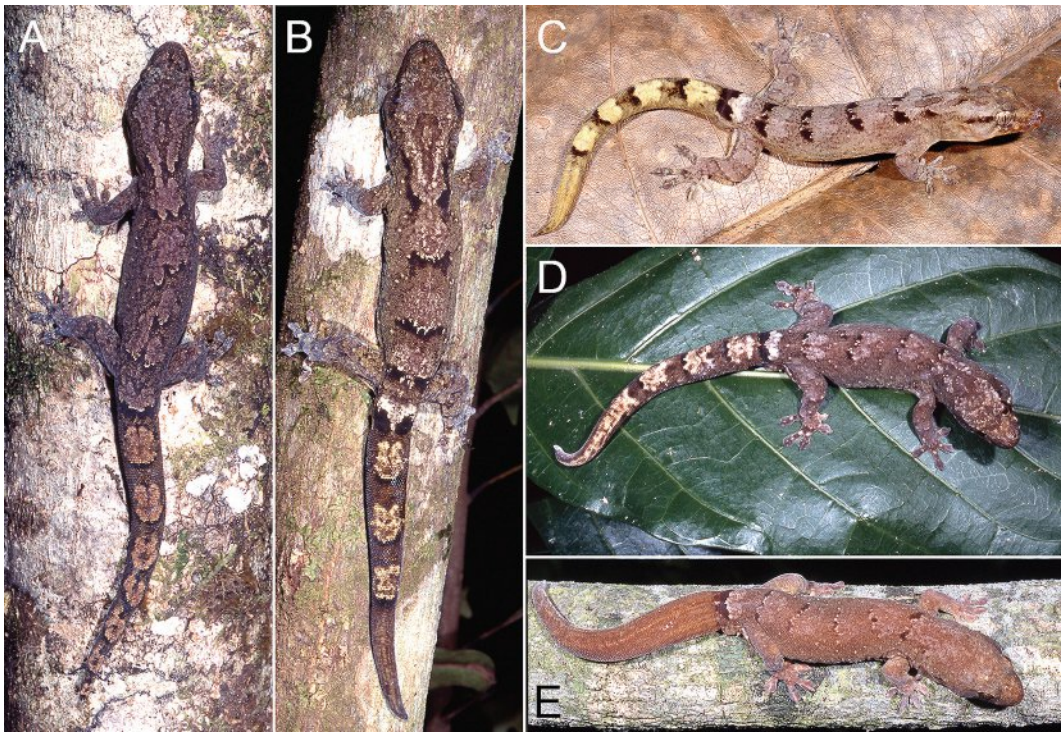


FIGURE 38. Life photographs of representatives of the *Bavayia cyclura* Clade. A) *B. cyclura*, Plage de Ouano; B) *B. robusta*, Mt. Koghis; C) *B. robusta* (AMS R.164243), Forêt Nord; D) *B. robusta* (CAS 265836), Île Môrô; E) *B. robusta*, Île Môrô. All photos by R.A. Sadlier.

**Referred Material:** (all localities in Province Sud) MNHN-RA-1980.977, Montagnes Blanches (200 m), 21°31'30"S, 165°17'11"E; AMS R.166347–48, R.166358, R.166361, Forêt Plate, 7 km NW Gouaro, Bourail, 21°33'32.4"S, 165°23'17.6"E; AMS R.166359, Mouéara, Gouaro-Déva, Bourail 21°35'00.2"S, 165°20'10.0"E; CAS 157697\*, 157698–704, 16 km NW Plage de Poé, 21°34'S, 165°24'E; CAS 165861–62, 165865–66, 165868–73, 1658841, 165886, 16 km NW Plage de Poé, 21°34'S, 165°24'E; CAS 266178, Plage de Poé, 21°37'10.66"S, 165°23'21.38"E; AMS R.166220–24, Mouéara, Gouaro-Déva, 5 km NW Plage de Poé, 21°34'53.78"S, 165°19'45.52"E; MNHN-RA-1980.978, 1985.122, Col des Arabes, 21°37'23"S, 165°32'28"E; MNHN-RA-1980.1065, Oua-Tom, 21°47'35.41"S, 165°54'15.60"E; AMS R.146399, R.146400–01\*, R.146402–08, CAS 266176, 198755, 198759–60, Plage de Ouano, 21°50'43"S, 165°48'33"E; AMS R.166354–57, R.166360\*, R.166362–63, Île Isie, 3 km S Presqu'île de Ouano, 21°53'38.4"S, 165°50'42"E; AMS R.166244–46, R.166246\*, Île Leprédour, Baie de St. Vincent, 14 km SW Bouloupari, 21°58'39"S, 166°00'33"E; CAS 265901\*, 265902–10, Presqu'île des Montagnes 22°02'08"S, 166°07'26"E; AMS R.166263–64\*, R.166271–72, R.166273–75\*, R.166276, Presqu'île des Montagnes, 22°02'03"S, 166°07'04"E.

**Diagnosis:** A large (maximum SVL to 73 mm, AMS R.166359), robust species of the *Bavayia cyclura* Clade. Claw of digit I positioned in a groove within the apical lamella, which is divided into a larger medial and a smaller lateral portion; two or three rows of precloacal pores in males, anterior row with 10–17 pores, posterior complete row with 4–12, third row, rarely present (1–2 pores), 15–32 pores in total; first pair of infralabials typically entirely separated by mental; mid-body scale rows 105–120; 12–16 lamellae under digit IV of pes, distal (adhesive) lamellae cleft or



paired. Color pattern variable, usually light to mid brown with a pattern of 4 pale dorsal blotches bordered posteriorly by dark bars in the region between the fore- and hindlimbs. Pale blotches from beige to purplish brown to almost salmon in color. Neck usually with a pale dorsolateral stripe on either side, converging towards the dorsal midline at the level of the forelimbs where they may fuse with the first pale blotch over the shoulder region. Individuals with longitudinal stripes occur in very low frequency (Bauer and Vindum 1990). Light markings on tail dorsum typically lighter than trunk blotches, pale reddish-brown to light brown. In life, the ventral surface typically has a pale to bright yellow flush.

From its sister taxon *B. robusta*, *B. cyclura* is distinguished by its smaller size (maximum SVL 73.0 vs. 91.0 mm), lower number of midbody scales (105–120 vs. 129–147), and minor differences in coloration pattern, including more drab pale tail blotches and often a more strongly patterned trunk.

**Distribution:** Mid-west coast of the Province Sud between the region of Gouaro, near Bourail, south to Presque'île des Montaignes on the Baie de St. Vincent (Fig. 39).

**Natural History:** Recorded from a variety of habitats including: beachfront scrub with scattered trees and the edge of coastal and near coastal closed forest; near-coastal sclerophyll forest on the west coast (Bauer and Vindum 1990), and mangrove habitat.

*Bavayia cyclura* is an arboreal species that shelters beneath the bark of dead fallen and stand-

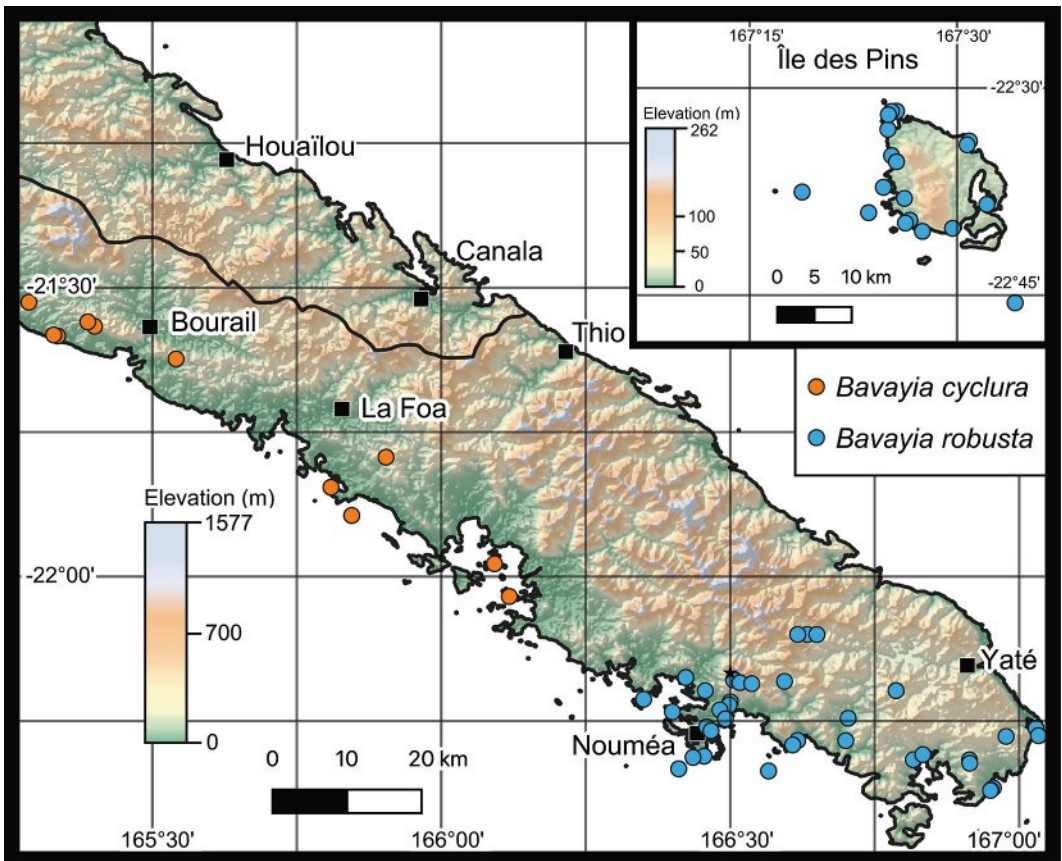


FIGURE 39. Map showing the distribution of members of the *Bavayia cyclura* Clade. *Bavayia cyclura* (orange), *B. robusta* (blue). Stars indicate type localities. Cartography by J. DeBoer.

ing trees or in tree holes by day and forages in the branches of trees and shrubs at night (Bavay 1869; Bauer 1990a). In near-coastal sclerophyll forest, Bauer and Vindum (1990) recorded a large number of individuals sheltering in a single standing, rotten tree trunk. Like all members of the genus, females lay two leathery-shelled eggs per clutch. Gravid females have been found in October. Rösler (1987) reported that captive *B. cyclura* can live at least eight years, and that in captivity eggs weighing 1.00–1.25 g can be laid every 30 days, hatching after an incubation period of 56–70 days (Rösler 1989). However, it is uncertain to which currently recognized species these data apply.

**Conservation Status:** *Bavayia cyclura* as currently construed meets the criteria (B1ab(ii, iii) + 2ab(ii, iii)) to be categorized as Endangered on the IUCN Red List (Sadlier et al. 2021g). The species is limited to coastal habitats on the west coast of the Grande Terre from Presqu'île Montagnès to Poé and on the satellite islands in the area. It is known from five localities, with an estimated extent of occurrence of 331 km<sup>2</sup> and area of occupancy of 16 km<sup>2</sup>. The species habitat is considered to have been substantially lost and degraded through clearance for agriculture and from wildfires (Ibanez et al. 2019). These threats are ongoing, and compounded by further degradation of habitat by introduced deer which alter the abundance and structure of understory shrubs used for foraging (de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-Wichatitsky 2006), and from the introduced Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from ground sheltering sites and arboreal foraging sites, and to affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001).

**Remarks:** Wright et al. (2000) recognized that *B. cyclura*, as then construed, was likely a complex. They distinguished *B. cyclura* from *B. robusta*, however, their concept of the former was still composite, including non-*montana* clade members of the *B. cyclura* group, as well as some populations subsequently recognized as referable to *B. robusta*. Discrepancies between data reported here and in earlier publications (e.g., Roux 1913; Sadlier 1988; Bauer 1990a; Bauer and Vindum 1990; Wright et al. 2000) stem from the earlier broad application of the name *cyclura* to geckos from across New Caledonia. MCZ A27309, a cleared and stained specimen of *B. robusta*, was incorrectly cited as *B. cyclura* in Daza et al. (2015).

### ***Bavayia robusta* Wright, Bauer and Sadlier, 2000**

Figures 38B–E, 40.

2000 *Bavayia robusta* Wright, Bauer, and Sadlier, Pacific Sci. 54:50; figs. 4, 5B.

**Holotype:** MNHN-RA-1998.0604 (ex. AMS R.150750), “Mt. Koghis forest (500 m elevation), Province Sud, New Caledonia, 22°10'S, 166°30'E,” coll. R.A. Sadlier, A.M. Bauer, and S. Smith, 14 February 1997.

**Paratypes:** AMS R 150751, CAS 202741–43, same data as holotype; AMS R 152659–60, CAS 205423, same locality as holotype, coll. R.A. Sadlier, A.M. Bauer and J.L. Wright, 23 May 1998.

**Referred Material:** (all localities in Province Sud) **“Mainland” Clade:** MNHN-RA-1980.979, Montagne des Sources, versant oest (875 m), ~22°06'S, 166°37'E; AMS R.146597\*, R.147847, Parc Provincial de la Rivière Bleue, Pont Germain (vicinity), 22°06'S, 166°38'E; AMS R.147960\*, Parc Provincial de la Rivière Bleue, Pont Germain (vicinity), 22°06'S, 166°39'E; YPM HERR.022279–81, Ongoué, coast W of Païta, 22°09'10.18"S, 166°14'53.82"E; CAS 265839\*, 265840–41, 265842–50, Dumbéa River, north bank at main road crossing Péage road, 22°10'28"S, 166°25'23"E; UMMZ 93831, 93833, Dumbéa [no precise locality]; AMS R.78340–41, R.90191–92, R.148019\*, 150750–51\*, R.152659, R.152660\*, CAS 202741–43\*, FMNH 170762, Mt.

Koghis, 22°10'43"S, 166°30'20"E; MNHN-RA- 1985.120, Vallée de la Coulée, 22°10'52"S, 166°35'38"E; AMS R.147846–47\*, R.147847, Forêt Thy, 22°11'S, 166°31'E; AMNH 81768, Forêt de Thy–Hanna (800 m), 22°11'06"S, 166°32'14"E; MNHN-RA-1985.117–119, Colline au SW de Tonghoué, 22°11'50"S, 166°27'24"E; AMS R.166287–89, Koumourou, Ducos, Nouméa, 22°11'50"S, 166°47'13"E; AMS R.168119, R.168120\*, QM J43972, Rivière des Pirogues, Rivière Ya, 22°12'43.5"S, 166°21'00.3"E; AMS R.135091\*, CAS 80842, 80849, Yahoué Valley (vic. Nouméa), 22°13'S, 166°30'E; CAS 162237–39, Forêt de Yahoué (11 km N Nouméa), 22°13'19.39"S, 166°29'52.4"E; AMS R.166311–12, R.166334–35, Nouméa, 7ème Km, Baie Tina, 22°13'50"S, 166°28'55.5"E; AMS R.166277, R.166283–85\*, R.166286, R.166310, R.166313–14, Nouméa, Baie Tina, Piste Cyclable de Tina, 22°14'45.3"S, 166°29'30"E; AMS R.174578–82, MCZ A-27346–48, Nouméa, Parc Forestier (B), 22°15'34.92"S, 166°27'33.84"E; CAS 265858–59, Portes de Fer, Parc Forestier, 22°15'35.0"S, 166°27'34.0"E; CAS 80866–67, 80870–71, MCZ R6209, R162911, NMBA 2904, NMW 14754, Nouméa (vicinity), 22°16'S, 166°28'E; MCZ Field A27309 (cleared-and-stained specimen), Nouméa, Anse Vata, IRD Campus, 22°18'03"S, 166°26'37"E; CAS 265851, 265852, 265853–57\*, YPM HERR.022257–59, Nouméa, Anse Vata, IRD Campus, 22°18'07.85"S, 166°26'39.17"E; AMS R.174588–92, Nouméa, Ouen Toro, 22°18'37.67"S, 166°27'17.43"E; MCZA 27356\*, A27357, Nouméa, Ouen Toro, 22°18'35.25"S, 166°27'16.2"E; YPM HERR.022265, HERR.022266\*, HERR.022267–69, HERR.022270–71, Île Uéré, Nouméa, 22°18'51"S, 166°28'46"E; AMS R.166327–33, Monts Kouiambo, Pointe Maa, 22°13'50"S, 166°28'55.5"E; AMS R.167443, Forêt Cachée, Creek Pernod, Plaine des Lacs, 22°14'12"S, 166°23'59.7"E; AMS R.78283–85, Mt. Dore (eastern base), 2 km west of Plum turnoff on Mt. Dore road, 22°17'S, 166°37'E; AMS R.146495\*, Mt. Dore, 22°17'28"S, 166°36'29"E; AMS R.144357\*, R.144358–59\*, Mt. Dore, 2.9 km S of turnoff to Plum along road around Mt. Dore, 22°17'28"S, 166°36'29"E; CAS 198660\*, Mt. Dore, east side – coastal park at mangrove border, 22°17'28"S, 166°36'29"E; MNHN -RA-2002.0763, Îlot Porc-Epic, 22°19'S, 166°34'E; YPM HERR.022262–64, Îlot Kouameak, Baie de Goro, Province Sud, 22°15'44"S, 167°01'45"E; YPM HERR.022260–61, Îlot Nêâê, Baie de Goro, Province Sud, 22°16'30"S, 167°02'00"E; AMS R.172599\*, Ko Mwa Nûri, Port Boisé, 22°22'07.88"S, 166°57'03.53"E; CAS 203036–38, 203039–41\*, 203042, Île aux Canards, 22°18'45.39"S, 166°26'08.24"E; CAS 203023, 203024\*, 203025, 203026\*, 203027, 203028\*, Îlot Maître, 22°19'57"S, 166°24'39.10"E; MNHN-RA-1985.114, Carénage, Baie de Prony, 22°18'28"S, 166°50'00"E; CAS 80863, Prony Bay, 22°19'S, 166°49'E; YPM HERR.022272–78, Île Ste. Marie, E of Nouméa, 22°29'S, 166°48'E; USNM 146331–32, Atire Island, 22°31'14.6 S, 166°33'23.77"E; CAS 203018\*, 203020\*, 265962–64\*, Isle of Pines, Île Du Ana, 22°37'32.6"S, 167°18'46.10"E; AMS R.163258\*, R.163260\*, Isle of Pines, Île Kûumo, 22°37'11.5"S, 167°24'40.36"E.

**"Insular" Clade:** AMS R.163243\*, Forêt Nord, 22°19'01"S, 166°54'50"E; AMS R.166087\*, Forêt Nord, 22°19'22"S, 166°54'52"E; AMS R.172596\*, R.172598\*, Ko Mwa Nûri, Port Boisé, 22°22'10.76"S, 166°57'01.23"E; AMS R.172597\*, R.172600\*, Ko Mwa Nûri, Port Boisé, 22°22'07.88"S, 166°57'03.53"E; CAS 203029, 203030–35\*, 265967–68\*, Isle of Pines, Île Caanawa, 22°31'40.8"S, 167°25'37.2"E; CAS 265969\*, 265970, 265971–72\*, Isle of Pines, Île Nâ Nâ, 22°31'42"S, 167°25'15"E; CAS 265973–77\*, Isle of Pines, Île Kwa Wiyèrè, 22°31'56"S, 167°25'02"E; CAS 265978–82\*, Isle of Pines, Île Kônobutr, 22°33'51"S, 167°30'54"E; CAS 265983–86\*, Isle of Pines, Île Mwârèya, 22°34'07"S, 167°30'44"E; AMS R.138590–92\*, R.138593, CAS 182158–64, Isle of Pines, 3 km N of Kuto on main lowland ring–road, 22°38'00"S, 167°26'12"E; AMS R.138597, R.138626, Isle of Pines, Gite Kodjeue on Waa Mé Bay, 22°35'19"S, 167°25'39"E; AMS R.138633–34, Isle of Pines, ca. 1 km N Gite Kodjeue on Waa Mé Bay, 22°34'54"S, 167°25'16"E; CAS 182180, 182202–03, Isle of Pines, ca. 1 km N Gite Kodjeue on



Waa Mé Bay, 22°34'54"S, 167°25'16"E; CAS 203016–17\*, 203019\*, 203021–22\*, 265965\*, Isle of Pines, Île Du Ana, 22°37'32.6"S, 167°18'46.10"E; AMS R.163256–57\*, R.163259\*, R.163267\*, Isle of Pines, Île Kûûmo, 22°37'11.5"S, 167°24'40.36"E; CAS 265956–60\*, Taré, Bay of Upi, South East Île des Pins, 22°38'26"S, 167°32'10"E; AMS R.163230\*, R.163238\*, CAS 202999, 203000–07\*, 265836\*, Isle of Pines, Île Môrô, 22°39'02"S, 167°23'36"E; CAS 265825–28\*, 265829–34\*, 265835\*, Isle of Pines, Kuto Peninsula, ca. 100 m south of Hotel Kou-Bugny, 22°39'35"S, 167°26'35"E; CAS 265837–38\*, Isle of Pines, Kuto Peninsula, near Gendarmerie, 22°39'47"S, 167°26'16"E; AMNH 81772, Isle of Pines, Vao, 22°40'10"S, 167°29'41"E; AMS R.163239\*, R.163247, R.163248\*, R.163249, R.163250\*, R.163253, Isle of Pines, Île Aventure, 22°40'23"S, 167°27'30"E; AMB-AJG 8089, CAS 265952–54\*, Isle of Pines, Île Nuû Ami, 22°45'19"S, 167°34'10"E; CAS 203008–11\*, 203012, 203013–15\*, Isle of Pines, Île Nuû Ami, 22°45'34"S, 167°34'13"E.

**Clade Uncertain:** CAS 265966, Isle of Pines, Île Du Ana, 22°37'11.5"S, 167°24'40.36"E; AMS R.163256, R.163259, R.163268, Isle of Pines, Île Kûûmo, 22°37'32.6"S, 167°18'46.10"E. CAS 266179, Isle of Pines or satellite islands.

**Diagnosis:** A very large species of the *Bavayia cyclura* group (maximum SVL 86.6 mm, AMS R.78340, although reaching 91 mm under captive conditions [ZFMK 62623, see Remarks], usually <80 mm SVL), body robust, jaw adductor musculature pronounced. Claw of digit I positioned in a groove within the apical lamella, which is divided into a larger medial and smaller lateral portion; two or more rows of precloacal pores in males, anterior row with 10–30 pores, posterior row with 5–14 pores, third row (when present) 1–6 pores, 17–36 pores in total; first pair of infralabials typically entirely separated by mental; first supralabial in broad contact with the nostril; a single internasal scale; midbody scale rows 129–147; 10–15 paired lamellae under digit IV of pes. Color pattern variable, usually light-mid brown with a pattern of 3–4 dark transverse bars between the fore and hindlimb insertions and an additional bar or chevron on the sacral region or pygal portion of tail, each bordered anteriorly by a thin whitish line or transverse series of small spots. Areas between dark bars may be somewhat lighter than the flanks or may be uniform. A dark dorsolateral bar usually extends forward from the first transverse bar through the eye to the nostril, sometimes with a break on the neck. This bar is often obscure on the snout. Light markings on tail dorsum cream to bright white, much bolder than pattern on trunk. In life, the ventral surface typically has a pale to bright yellow flush.

From its sister taxon *B. cyclura*, *B. robusta* is distinguished by its larger size (maximum SVL 91.0 mm vs. 73.0 mm), higher number of midbody

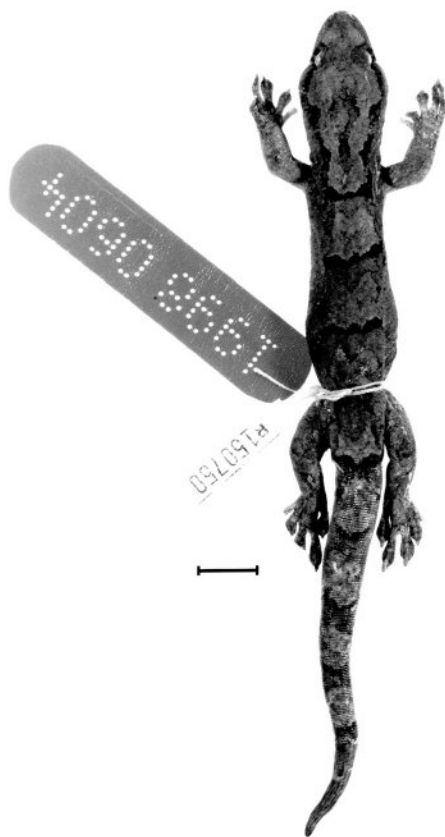


FIGURE 40. Holotype of *Bavayia robusta* (MNHN 1998.0604) from Mt. Koghis, Province sud, New Caledonia. Photo by Dong Lin (California Academy of Sciences).

scales (129–147 vs. 105–120), and minor differences in coloration pattern, including brighter, more-contrasting pale tail blotches and often a less discretely demarcated dorsal trunk pattern.

**Distribution:** Widespread in the southern Grande Terre from the latitude of Païta and Parc Provincial de la Rivière Bleue to the southern extent of the island. Also present on Île Ouen, the Île des Pins and on most, if not all, of the satellite islands of the latter that support trees (Fig. 39). ZFMK 62623, is ostensibly from Mt. Mou, a locality from which *B. robusta* has not otherwise been collected, but without a more specific locality we have chosen not to plot this record. The presence of more precise records from near Païta, however, suggests that this species could be present in the Mt. Mou area.

**Natural History:** An arboreal species occurring from sea level to mid-elevation (500 m). It is found in humid forest formations (Figs. 8A, 31A,D), strand vegetation, ornamental trees and shrubs (Fig. 49A), mangroves and even in edificarian habitats. It usually occupies arboreal retreats under bark or in treeholes, or crevices in artificial structures and may forage at heights of 5–8 m above the ground or higher. It is a nocturnal species that is a generalist arthropod feeder. Like all of its congeners it lays two leathery-shelled eggs. Gravid females have been found in February, May and September and hatchlings measuring  $\leq 24$  mm SVL have been found in April and May. Ineich and Bonnet (2005) reported predation by *Epibator nigrofasciolatus* on this species (as *B. cyclura*).

**Conservation Status:** *Bavayia robusta* meets the criteria to be categorized as Near Threatened on the IUCN Red List (Sadlier et al. 2021h). It has a broad distribution in southern Grande Terre at elevations of up to 500 m, and occurs on adjacent islets. The mainland population has an estimated extent of occurrence of 2,497 km<sup>2</sup> and area of occupancy of 92 km<sup>2</sup>. The species extends south to the Île des Pins region and this population shows some level of genetic differentiation. On Grande Terre it is presumed to have suffered a substantial reduction in population size and extent from past habitat loss and degradation, primarily through clearance for occupation and agriculture but also including wildfires (Ibanez et al. 2019). The main threats to the species are the loss and degradation of habitat, particularly mangroves and other coastal habitats which are under threat from urbanization, and isolated closed forest remnants in the Grand Sud that are at risk due to the rapidly expanding nickel mining industry (Pascal et al. 2008).

**Remarks:** ZFMK 62623 from Mt. Mou (see Distribution above) is the largest individual of *Bavayia* of which we are aware (91 mm SVL), although this individual was kept for some time in captivity and may have reached this size only due to the favorable captive conditions. Basic osteological data from x-rays were presented in the type description (Wright et al. 2000). Selected skull elements were also figured by Daza et al. (2015). Wright et al. (2000) originally based their concept of *B. robusta* on large individuals (all over 70 mm SVL) from Mt. Koghis, unaware that smaller “*B. cyclura*” specimens from the same locality were conspecific and that their new species was widespread in the south of the Grande Terre as well as on the Île des Pins and virtually all of its satellite islands as well as the islands surrounding Nouméa. The karyology of this species (as *B. crassicollis*) was discussed and mitotic chromosomes figured by King (1987) and King and Mengden (1990). MCZ A27309, a cleared and stained specimen, was incorrectly cited as *B. cyclura* in Daza et al. (2015). *Bavayia* “*cyclura*” discussed and imaged by de Vosjoli (1995) and Watkins-Colwell (2003) are referable to *B. robusta*.

Genetic data (Geneva 2007; Chavis 2016) demonstrate that there is a shallow but consistent differentiation of *B. robusta* from the southern Grande Terre and from the Île des Pins and surrounding islands (treated as *B. cf. crassicollis* by Geneva 2007 and *B. cf. robusta* by Chavis 2016). The two populations are, however, conspecific as they have not undergone complete lineage sorting (Chavis 2016) nor does barcoding support their distinction (Bernstein et al. 2021). However, the two lineages are nearly geographically complementary in distribution, but the “insular clade”

also occurs on the Grande Terre near Forêt Nord and Port Boisé and both clades are present on at least some of the small islands around the Île des Pins (Île Du Ana, Île Kûmo). The presence of “mainland clade” animals on these small islands is likely due to accidental translocation of these geckos in wood or other supplies carried by private pleasure craft that regularly visit these uninhabited islands.

### *Bavayia goroensis* Clade

**Content:** *Bavayia goroensis*, Bauer, Jackman, Sadlier, Shea and Whitaker, 2008; *B. nubila* Bauer, Sadlier, Jackman and Shea, 2012.

**Definition:** Members of the *B. goroensis* Clade are distinguished from other *B. cyclura* Group taxa by their small to moderate body size (maximum SVL 48.6, *B. goroensis*; 67.3 mm SVL, *B. nubila*) with a low number of precloacal pores (two rows of precloacal pores with a maximum of 18 pores in total vs.  $\geq 20$  in all other *B. cyclura* Group members except some members of the *B. borealis* Clade). The dorsum typically bears a pattern of 5 or 6 dark, transverse bars between the limb insertions, pattern sometimes highly asymmetrical and irregular (vs. typically 4 such markings in other clades, most often more-or-less symmetrical); the venter is pale yellow.

### *Bavayia goroensis* Bauer, Jackman, Sadlier, Shea and Whitaker, 2008

Figures 41A–B.

2008 *Bavayia goroensis* Bauer, Jackman, Sadlier, Shea and Whitaker, Pacific Science 62:248, figs. 1–4.

**Holotype:** MNHN-RA-2004.0027\* (ex. AMS R.166017), “Plaine des Lacs, route de la Wajana, [Province Sud, New Caledonia] 22°16'26"S, 166°57'43"E, coll. R.A. Sadlier and G. Shea, 11 December 2003.

**Paratypes:** (all localities in Province Sud) AMS R.166030\* Plaine des Lacs, route de la Wajana, Province Sud, New Caledonia, 22°16'35"S, 166°58'38"E, coll. R.A. Sadlier and G. Shea, 10 December 2003; AMS R.167433\*, 1.8 km southeast of Ka Yé Wagwé, Plaine des Lacs, Province Sud, New Caledonia, 22°13'04.59"S, 166°54'01.49"E, coll. R.A. Sadlier and A.H. Whitaker, 11 February 2007; CAS 235383\*, 3.0 km southeast of Ka Yé Wagwé, Plaine des Lacs, Province Sud, New Caledonia, 22°13'22.03"S, 166°54'33.04"E, coll. R.A. Sadlier and A.H. Whitaker, 7 February 2007.

**Referred Material:** (all localities in Province Sud) AMS R.167443\*, Forêt Cachée, Creek Pernod, Plaine des Lacs, 22°11'50"S, 166°57'13"E; AMS R.172907–08\*, Goro Plateau, Kwé Nord, 22°17'39.12"S, 166°59'04.92"E; AMS R.172095\*, Goro Plateau, Kwé Nord, 22°16'49.8"S, 166°57'12.2"E; AMS R.175549\*, Goro Plateau, Plaine des Lacs (FER.E2), 22°13'46.30"S, 166°56'54.86"E.

**Diagnosis:** A very small, relatively slender member of the *Bavayia cyclura* group (maximum SVL 48.6 mm, AMS R.167443) with tail length at least 113% SVL. It may be distinguished from its congeners by the following combination of characteristics: claw of digit I positioned in a groove within the apical lamella, which is divided into a larger medial and smaller lateral portion; two rows of precloacal pores in males, anterior row 12 pores, posterior row 4–5, 16–17 pores in total; first pair of infralabials in contact behind the mental; first supralabial in broad contact with the nostril; a single internasal scale; midbody scale rows approximately 122; 12 paired lamellae under digit IV of pes. Background color a mottled chocolate to purplish brown forming a reticulation with fine pale lavender to yellowish speckles. Dorsum bearing 6–7 symmetrical or asymmetrical, pale lavender blotches between the shoulder and sacrum and another, somewhat irregular on nape. Limbs mottled dark to purplish brown with pale lavender markings and extensive light speckling. Orig-



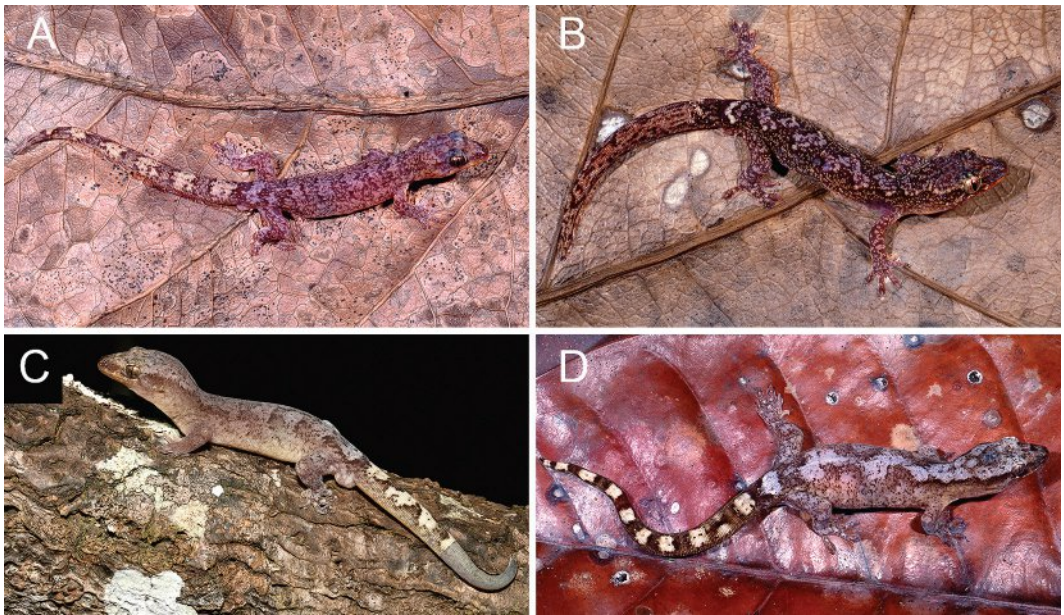


FIGURE 41. Life photographs of representatives of the *Bavayia goroensis* clade. A) *B. goroensis* (holotype MNHN-RA-2004.0027), Plaine des Lacs; B) *B. goroensis* (paratype AMS R.166030), Plaine des Lacs; C) *B. nubila*, Mt. Vulcain; D) *B. nubila* (paratype AMS R.165780), Mt. Ouin. Fig. C by S. Astrongatt, all others by R.A. Sadlier.

nal tail with six or more cream to off-white markings alternating with mottled ground color. Larger spots and dashes of whitish to pale yellow in paravertebral position, bracketing the pale dorsal blotches and continuing onto the dorsolateral aspect of the head to the midpoint of the eye in some individuals. In life, the ventral surface pale yellow.

From its sister taxon *B. nubila*, *B. goroensis* is distinguished by its much smaller size (maximum SVL 48.6 vs. 67.3 mm), lower number of mean midbody scales (122 vs. 138), and the contact of the first infralabials behind the mental (vs. separation by a hexagonal postmental) and differences in coloration pattern, including brighter, more-contrasting pale tail blotches and often a less discretely demarcated dorsal trunk pattern. It may be distinguished from all other members of the *B. cyclura* Group by its small size and by its dorsal pattern of 6 or 7 pale dorsal markings (vs. 5 or fewer in all other clades). The yellow speckling prominent in some individuals is reminiscent of *B. montana* clade taxa, but the body size and habitus are quite different.

**Comments:** Basic osteological information based on x-rays was provided in the species description (Bauer et al. 2008).

**Distribution:** *Bavayia goroensis* has a restricted distribution on the Plaine des Lacs in the far southeast of the Grande Terre (Fig. 42).

**Natural History:** *Bavayia goroensis* has been recorded from a range of maquis habitats from shrubland to preforest maquis, and from closed-forest habitat (Figs. 8C–E). It has been found sheltering under the exfoliating bark of a small tree by day and observed active at night on shrubs and trees. Trombiculid mites present on tail and in axillary pocket of some individuals. Nothing is known of its ecology, but presumably it is insectivorous and produces clutches of two eggs.

**Conservation Status:** *Bavayia goroensis* meets the criteria (B1ab(i, ii, iii, iv, v) + 2ab(i, ii, iii, iv, v)) to be categorized as Endangered on the IUCN Red List (Sadlier et al. 2021i). It has a restricted distribution being known from a small area of the Plaine des Lacs and the Goro Plateau region of far southern Grande Terre between 200 and 300 m elevation, with an estimated extent of

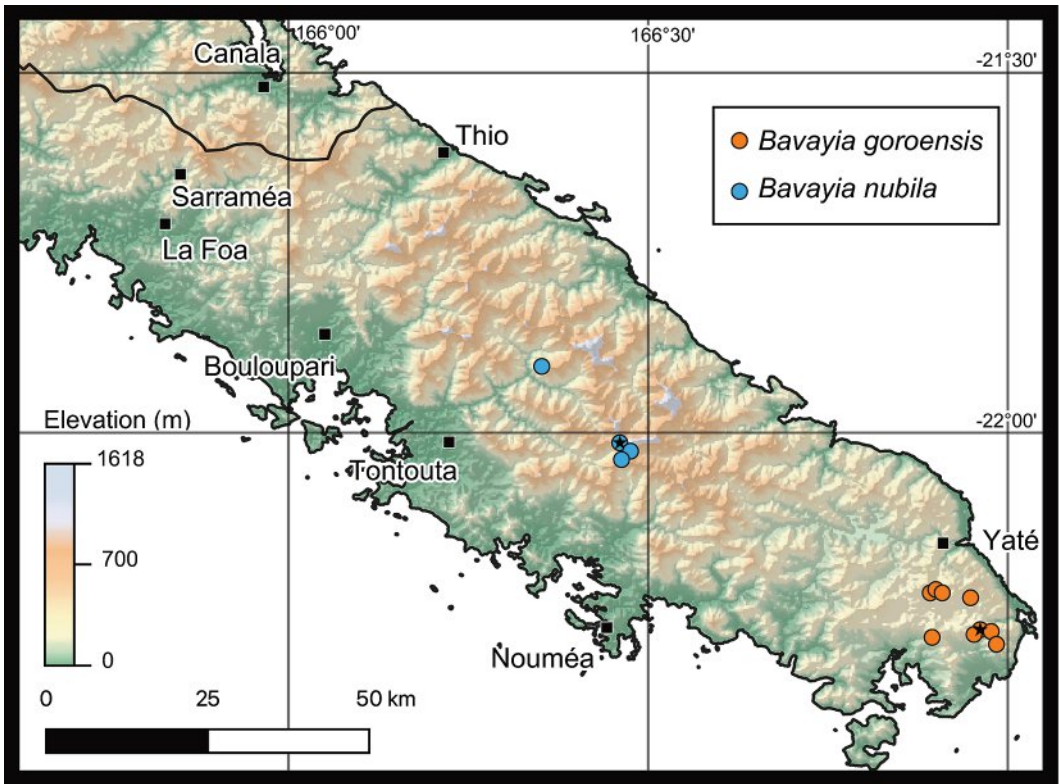


FIGURE 42. Map showing the distribution of members of the *Bavayia goroensis* Clade. *Bavayia goroensis* (orange), *B. nubila* (blue). Stars indicate type localities. Cartography by J. DeBoer.

occurrence and area of occupancy of 28 km<sup>2</sup>. Past wildfires in the Plaine des Lacs region have likely reduced the extent and quality of habitat for the species and possibly fragmented the population. The most serious threat to *B. goroensis* is from loss of suitable habitat from clearing resulting from the rapidly expanding nickel industry in the south. Wildfires are also considered a major threat to maquis habitats and impact on the margins of adjacent forest habitats (Ibanez et al. 2019). Predation by feral cats also presents a threat (Palmas et al. 2017) as does the introduced Fire Ant *Wasmannia auropunctata* which is now present in most forests in the area (Jourdan et al. 2000, 2001). A further growing problem around Plaine des Lacs is the loss of habitat through conversion of maquis shrubland to forestry plantations.

### *Bavayia nubila* Bauer, Sadlier, Jackman and Shea, 2012

Figures 41C–D.

2012 *Bavayia nubila* Bauer, Sadlier, Jackman and Shea, Pacific Science 66:240, figs. 1–4.

**Holotype:** MNHN-RA-2004.0028 (ex. AMS R.148020\*) “Mt. Ouin, south face, [Province Sud, New Caledonia] 22°00′51″S, 166°27′39″E, 856 m elevation,” coll. R.A. Sadlier and G.M. Shea, 26 September 1995.

**Paratypes:** AMS R.165780\*, Mt. Ouin, Province Sud, New Caledonia, 22°01′33″S, 166°28′32″E, 889 m elevation, by coll. R.A. Sadlier and G.M. Shea, 26 December 2003; AMS R.165816\*, Mt. Dzumac, 1 km south of Ouinne River Track, Province Sud, New Caledonia, 22°02′15″S, 166°27′47″E, 943 m elevation, coll. R.A. Sadlier and G.M. Shea, 26 December 2003.

**Referred Material:** AMS R.172571\*, Mine Galliéni, Mt. Vulcain, Tontouta Valley, Province Sud, New Caledonia, 22°54'28"S, 166°21'07"E, 566 m elevation, coll. A.H. Whitaker and M. Letink, 12 September 2009.

**Diagnosis:** A moderate-sized, relatively slender member of the *Bavayia cyclura* group (maximum SVL 67.3 mm, MNHN-RA-2004.0028) with tail length equal to SVL. It may be distinguished from its congeners by the following combination of characteristics: claw of digit I positioned in a groove within the apical lamella, which is divided into a larger medial and smaller lateral portion; two rows of precloacal pores in males, anterior row 14 pores, posterior row 4, 18 pores in total; first pair of infralabials separated behind the mental by hexagonal postmental; first supralabial in broad contact with the nostril; a single internasal scale; midbody scale rows approximately 138; 13–14 paired lamellae under digit IV of pes. Background color a dull light to medium brown with dark brown flecks or blotches forming irregular longitudinal and/or transverse markings. Dorsum bearing 6–7 symmetrical or asymmetrical, grayish-brown to pale lavender blotches between the shoulder and sacrum. Pale markings on shoulder partly confluent with similar marking on nape and continuous onto dorsum of head (except mid-crown) as far anterior as anterior margin of orbits. Flanks beige to pinkish-gray; limbs mottled, with pale blotches on hindlimbs only. Original tail with up to ten cream, rectangular or irregularly shaped blotches six or more cream to off-white markings bounded by dark brown bands. Pale markings on post-pygial portion of tail markedly brighter and more contrasting than those on head, trunk and tail base. In life, the venter is pale yellow.

From its sister taxon *B. goroensis*, *B. nubila* is distinguished by its much larger size (maximum SVL 67.3 vs. 48.6 mm), higher number of midbody scales (138 vs. 122), and the separation of the first infralabials behind the mental by a postmental scale (vs. in contact). It may be distinguished from all other members of the *B. cyclura* group by its dorsal pattern of 6 or 7 pale dorsal markings (vs. 5 or fewer in all other clades).

**Distribution:** *Bavayia nubila* is restricted to a small area in the adjacent Monts Vulcain, Ouin and Dzumac lying between the Tontouta and Dumbéa Rivers (Fig. 42).

**Natural History:** *Bavayia nubila* has been recorded from mid to high elevation closed-forest habitat (540–950 m). It has been found by day sheltering under the exfoliating bark of a small standing tree, under the bark of a fallen tree, and under a small rock on the ground. The two female paratypes, collected in December, were gravid and contained two eggs (Bauer et al. 2012a).

**Conservation Status:** *Bavayia nubila* meets the criteria (B1ab(ii, iii, v) + 2ab(ii, iii, v)) to be categorized as Endangered on the IUCN Red List (Sadlier et al. 2021j). It is known only from two regionally proximate populations, Monts Dzumac and Mont Vulcain between 500–1000 m in elevation, with an estimated area of occupancy of 12 km<sup>2</sup>. It is expected to have undergone a reduction in population size and extent of occurrence as a result of past loss and degradation of habitat through wildfires. It is considered to be at a high level of threat by loss and degradation of humid forest habitat from wildfires (Ibanez et al. 2019) and from the expansion of the nickel mining industry (Pascal et al. 2008), and a moderate level of threat from predation pressure by rodents and cats (Whitaker 1978; Palmas et al. 2017).

### *Bavayia montana* Clade

**Content:** *Bavayia montana* Roux, 1913; *B. kanaky* sp. nov.; *B. mandjeliensis* sp. nov., *B. kopeto* sp. nov.; *B. koniambo* sp. nov.; *B. jourdani* sp. nov.; *B. renevierorum* sp. nov.

**Definition:** Members of the *B. montana* Clade are distinguished from other *B. cyclura* Group taxa by their moderate to large body size (maximum 59.0–76.0 mm SVL). Snout long (40% of



HeadL or more vs. 40% or less in the *B. cyclura* Clade); adductor musculature not generally hypertrophied (vs. usually so in adults of most *B. robusta* and *B. crassicollis* Clade taxa); first infralabials usually in contact behind the mental or barely separated from one another by contact between mental and median postmental. Distal portions of digits II–V typically very strongly dilated. Males with 2–4 (usually 3) rows of precloacal pores (vs. usually 1–2 in the *B. borealis* Clade); maximum 44 pores in total. The dorsum typically bears four alternating dark, transverse bands or chevrons and pale blotches between the limb insertions (vs. 5–6 in the *B. goroensis* Clade and some other species) and usually with extensive mosaic of whitish, yellowish or light brown contrasting with a darker brown ground color (vs. typically absent in other clades); venter pale to bright yellow.

### ***Bavayia montana* Roux, 1913**

Figures 43A–B.

1913 *Bavayia cyclura montana* Roux, Nova Caledonia, Zool. 1(2):88.

**Lectotype:** NMBA 6946 (based on indication in the NMBA register), “Mont Ignambi, altit. 700–800 m,” Province Nord, New Caledonia, 20°28'S, 164°36'E, coll. F. Sarasin and J. Roux, 29 April 1911. Lectotype designated by Kramer (1979:159), who gave the restricted type locality as “Mount Ignambi, 700–800 m, Neu-Kaledonien” and listed NMBA 6954 (a specimen from Ni, here referred to *B. jourdani* sp. nov.) as the lectotype, presumably a typographical error in light of the register data.

**Paralectotypes:** MCZ R19634, NMBA 6942–45, 6948–50, Mt. Ignambi (700–800 m) Province Nord, New Caledonia, 20°28'S, 164°36'E, by F. Sarasin & J. Roux 29 April 1911; Kramer (1979) listed only NMBA 6942–6945 and 6948–50 as paralectotypes in his published type catalogue. MCZ R19634 (formerly NMBA 6947) had been exchanged in 1924 and was also part of the original syntype series. Roux's (1913) published description could be construed to have included the specimens from all of the localities he cited (Mont Ignambi, près Tao, Mont Canala, Coindé, Ni; Mt. Panié was not mentioned as a locality in the description), but we here follow the information provided in the Basel collection register.

**Referred Material:** (all localities in Province Nord) AMS R.77841–42, R.77877, Mt. Panié, 20°33'35"S, 164°47'03"E; AMS R.144235\*, R.144236, Mt. Panié, 20°33'32"S, 164°46'50"E; AMS R.149303, Mt. Panié, 20°33'40"S, 164°47'08"E (300–400 m); NMBA 6951–53, Mt. Panié (ca. 400 m), Province Nord, New Caledonia, 20°28'S, 164°36'E, coll. F. Sarasin and J. Roux, 25 April 1911; AMS R.49335, Mt. Panié, 20°33'58"S, 164°46'38"E (alt. 750 m); AMS R.149341\*, Mt. Panié, 20°33'35"S, 164°47'03"E (alt. 400 m); AMS R.149376–77\*, Mt. Panié, 20°33'35"S, 164°47'03"E (400 m); AMS R.149978\*, Mt. Panié, 20°33'37"S, 164°46'56"E (400–500 m); CAS 266175\*, Panié Range, Wewec (camp) 20°35'54.492"S, 164°43'50.7"E (359 m); CAS 266232\*, Panié Range, Wewec (transect 3), 20°35'42.504"S, 164°43'44.112"E (401 m); AMS R.174678\*, Panié Range, Wewec (transect 4), 20°35'45.708"S, 164°44'11.796"E (364 m); CAS 266233\*, AMS R.174697, Panié Range, Dawenia (transect 5), 20°32'15.396"S, 164°40'54.192"E (661 m); CAS 266234\*, Panié Range, La Guen (camp), 20°37'30.504"S, 164°46'55.992"E (570 m); AMS R.174733\*, MCZ 266454, La Guen (transect 4), 20°37'25.608"S, 164°46'53.508"E (594 m); AMS R.174741\*, Panié Range, La Guen (transect 1), 20°37'29.208"S, 164°46'34.716"E (747 m); CAS 265900\*, La Guen (transect 3), 20°37'15.1"S, 164°46'48.8"E (747 m); AMS R.161173\*, Massif d'Ouazangou-Taom, Mt. Taom, between Gomen Mine and summit, 20°46'53"S, 164°34'12"E (900 m); AMS R.164178\*, Massif d'Ouazangou-Taom, Mt. Taom, summit, 20°46'50"S, 164°35'00"E (900 m).

**Diagnosis:** A large species of the *Bavayia montana* Clade (maximum SVL 76 mm, NMBA 6942), body robust, tail ~ equal to SVL. It can be distinguished from its congeners by the follow-

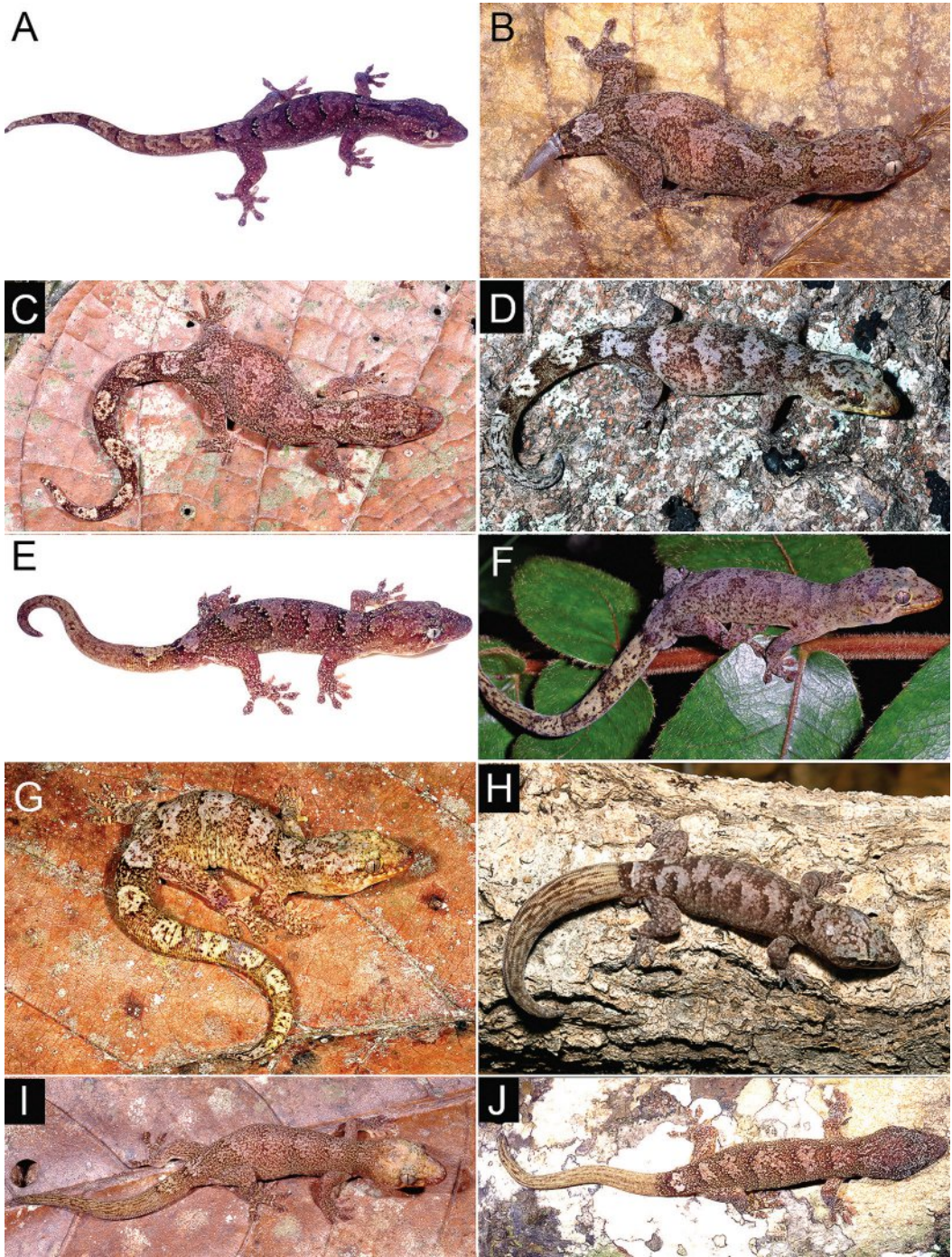


FIGURE 43. Life photographs of representatives of the *Bavayia montana* clade. A) *B. montana*, Mt. Panié; B) *B. montana*, Mt. Taom; C) *B. kanaky* (AMS R.167145), Mt. Ménazi; D) *B. kanaky* (paratype CAS 265738), Mt. Do; E) *B. mandjeliensis* (MNHB-RA-2022.0061, holotype), Mt. Mandjelia; F) *B. koniambo*, summit Mt. Koniombo; G) *B. jourdani*, Mé Maoya, 400 m; H) *B. kopeto*, Kopéto Massif; I) *B. renevierorum*, Pic d'Amoa; J) *B. renevierorum*, Mt. Aoupinié. All photos by R.A. Sadlier.



ing combination of characteristics: adductor musculature not hypertrophied; snout elongate ( $\geq 40\%$  HeadL); claw of digit I positioned in a groove within the apical lamella, which is divided into a larger medial and smaller lateral portion; three or four rows of precloacal pores in males, 23–28 pores in total; first pair of infralabials usually separated by mental; midbody scale rows  $\sim 132$ ; 12–16 mostly paired lamellae under digit IV of pes. Color pattern variable, usually mid- to dark brown with a pattern of 4 dark transverse bars between the fore and hindlimb insertions and an additional bar or chevron on the sacral region or pygal portion of tail, each bordered anteriorly by a thin whitish line or transverse series of small spots, which in turn border a pale, symmetrical or asymmetrical blotch or saddle. Dark areas of background coloration on dorsum (anterior to pale blotches) bearing a contrasting mosaic of whitish, yellowish or light brown scales. Dark dorsolateral bar usually extends forward from nape or shoulder through the eye to the nostril (canthal streak) but is often obscure on the snout; a pair of pale upper temporal streaks extending to the level of the shoulder often present. Light markings on tail dorsum cream to bright white, much bolder than pattern on trunk. In life, the ventral surface typically has a pale to bright yellow flush.

Among other members of the *B. montana* Clade, *B. montana* is distinguished from *B. mandjeliensis* sp. nov. and *B. renevierorum* sp. nov. by its typically lower number of precloacal pores (23–28 vs. 26–37 and 27–44, respectively), and from *B. kopeto* sp. nov. by its much larger size (76.0 mm vs. 59.0 mm maximum SVL), narrower head, and more pronounced neck. Its pale upper temporal streaks and dark canthal stripe are more well developed than in other clade members.

**Distribution:** Closed forest habitat of the northern Grande Terre, chiefly the Panié Massif and adjacent Mt. Ignambi in the far northeast of the Province Nord and the ultramafic Massif d'Ouazangou-Taom on the west coast, approximately 25 km to the southwest (Fig. 44). Typically found at middle to higher elevations (from 400 m to at least 900 m).

**Natural History:** *Bavayia montana* is arboreal, occurring in closed forest formations (Fig. 24C) and shelters by day under the bark of trees. Dietary records are unknown, but the species is presumed to have a generalized arthropod diet like its congeners. Some specimens harbor trombiculid mites on the tail, in the axillae, around the eyes or between the digits. Roux (1913) found them sheltering in tree ferns or *Pandanus*.

**Conservation Status:** A revised *Bavayia montana* meets the criteria (B1ab(ii, iii, v) + 2ab(ii, iii, v)) to be categorized as Endangered on the IUCN Red List (Sadlier et al. 2021k). It has a very small distribution and comprises two disjunct populations, one on the Panié Massif on the northeast coast, the other on the Ouazangou-Taom Massif on the northwest coast. The extent of occurrence has been estimated at 440 km<sup>2</sup>, and the area of occupancy as 36 km<sup>2</sup>. It is expected to have undergone a reduction in population size and extent of occurrence as a result of past loss and degradation of humid forest habitat from wildfires across its range. Both populations are under threat from the potential for loss or degradation of forest edge habitat from wildfires in adjacent savannah woodland (Panié) or maquis shrubland (Ouazangou-Taom) (Ibanez et al. 2019). On the Panié Massif it is considered to be threatened by habitat degradation by introduced deer which impact on the abundance and structure of understory shrubs used for foraging (de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-Wichatitsky 2006), from the introduced Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from arboreal sheltering and foraging sites, and to affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001), and from predation pressure from rodents (Whitaker 1978). The population on Ouazangou-Taom is also under a high level of threat as a result of loss and degradation of habitat due to the expansion of the nickel mining industry (Pascal et al. 2008).

**Remarks:** Roux's (1913) concept of *B. cyclura montana* included several of the species recognized here. Only his material from Mt. Ignambi and "près Tao" are currently assignable to



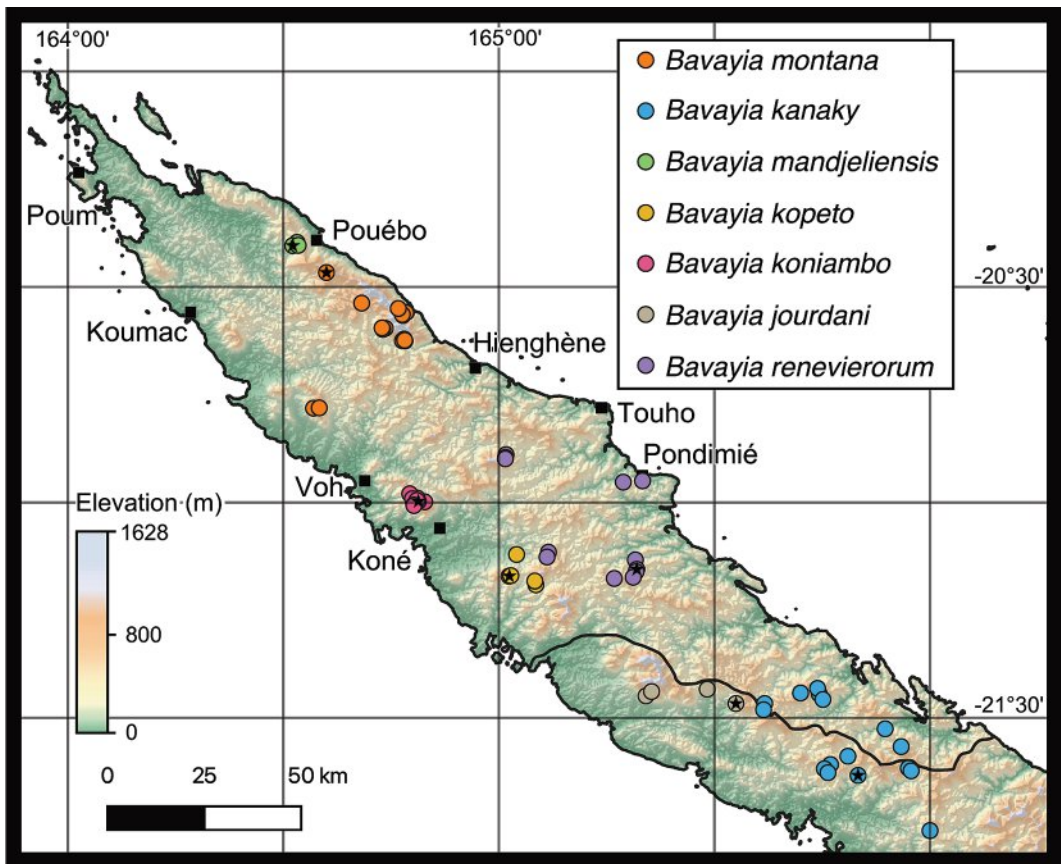


FIGURE 44. Map showing the distribution of members of the *Bavayia montana* Clade. *Bavayia montana* (orange), *B. kanaky* (blue), *B. mandjeliensis* (green), *B. koniambo* (pink), *B. kopeto* (mustard), *B. jourdani* (gray), *B. renevierorum* (purple). Stars indicate type localities. Cartography by J. DeBoer.

*B. montana* sensu stricto. Roux (1913) indicated that the largest female of *B. montana* he measured had a SVL of 79 mm but no specimen number was provided and assignment to species recognized herein unknown. However, our data based on museum material, chiefly from our own collections, support that this size is likely reached only by *B. montana* (but see *B. renevierorum* account).

***Bavayia kanaky* sp. nov.**

Figures 43C–D, 45.

**Holotype:** MNHN-RA-2022.0039\* (ex. AMS R.144110), Sarraméa, vic. Guesthouse (Evasion 130) at Sarraméa, Province Sud, New Caledonia, 21°38'S, 165°50'E, coll. R.A. Sadlier, August 1994.

**Paratypes:** AMS R.144111\*, data as for holotype; AMS R.149870–72\*, CAS 265735–36 (ex. AMS R.149867–68), 265737\* (ex. AMS R.149869), Mé Adéo, Néoua area, Province Sud, New Caledonia, 21°28'52"S, 165°36'51"E, coll. R.A. Sadlier and A.H. Whitaker, 24 October 1996; CAS 265738 (ex. AMS R.171215), Mt. Do, Province Sud, New Caledonia, 21°45'41"S, 166°00'01"E, coll. R.A. Sadlier and G. Shea, 30 September 2008.

**Referred Material:** AMS R.167145\*, Ménazi Massif, Mt. Ménazi, Province Nord, 21°26'32"S, 165°42'03"E; AMS R.167966–67\*, Mé Mwa, 0.6 km SW Mé Mwa, Province Nord,

21°26'40.881"S, 165°44'36.37"E; AMS R.174932, Ménazi Massif, Vitörhué, 0.5 km NW Mé Mwa, Province Nord, 21°25'53.688"S, 165°44'21.852"E; AMS R.174936, Ménazi Massif, Fa Nêjö, 2 km S Mé Mwa, Province Nord, 21°27'26.281"S, 165°45'6.3035"E; NMW 19672:1–2, lower Negropo River, 4 km from the bridge near Canala, Province Nord, approx. 21°31'31.29"S, 165°53'46.4"E; NMBA 6959, FMNH 25921, RMNH 6788, Mt. Canala (700 m), Province Nord, approx. 21°34'S, 165°56'E; UMMZ 177976–77, Mt. Rembai, near Col d'Amieu, Province Sud, 21°35'20.06"S, 165°48'35.38"E; AMS R.174632, Parc des Grandes Fougères, Aire du Houp, Province Sud, 21°36'29.88"S, 165°46'09.41"E; AMS R.174641–43, Parc des Grandes Fougères, Aire des Araucarias, Province Sud, 21°37'5.30" S 165°45'18.61"E; AMS R.174654–55, CAS 259999\*, Parc des Grandes Fougères, Parc entrance, Province Sud, 21°37'37.38"S, 165°45'48.99"E; CAS 264280, Parc des Grandes Fougères, Parc entrance, Province Sud, 21°37'39.1"S, 165°45'46.3"E; NMBA 6955–56, Coindé, 21°37'22.17"S, 165°57'23.34"E.

**Diagnosis:** A mid-sized species of the *Bavayia montana* Clade (maximum SVL 67.2 mm, MNHN-RA-2022.0039), body robust, original tail 109% SVL. It can be distinguished from its congeners by the following combination of characteristics: claw of digit I positioned in a groove within the apical lamella, which is divided into a larger medial and smaller lateral portion; two or three rows of precloacal pores in males, 22–29 pores in total; first pair of infralabials usually in contact behind the mental; midbody scale rows ~139; 11–15 mostly paired lamellae under digit IV of pes. Dorsum and flanks medium brown with a pattern of four dark brown narrow transverse bands between the limb insertions, with additional bands on the nape and tail base; each band preceded by a predominately pale blotch. Nape and shoulder bands thicker, darker, and more regular than more posterior bands. Dark areas of background coloration on dorsum (anterior to pale blotches) bearing a contrasting mosaic of whitish, yellowish, or light brown scales. Parietal region with an ill-defined brown triangle. Pale blotches on tail usually well-demarcated, with brown borders.

Among other members of the *B. montana* Clade, *B. kanaky* is distinguished from *B. mandjeliensis* sp. nov. and *B. renevierorum* sp. nov. by its typically lower number of precloacal pores (22–29 vs. 26–37 and 27–44, respectively), and from *B. kopeto* sp. nov. by its considerably larger size (67.2 mm vs. 59.0 mm maximum SVL) and narrower head. In contrast to *B. montana*, it usually has a poorly developed canthal streak and paired upper temporal streaks, if present, do not extend to the shoulder. Its strongly contrasting light and dark dorsal markings distinguish it from, *B. koniambo* sp. nov., in which the contrast is more subdued. Its somewhat smaller and more rugose snout scales differentiate it from *B. jourdani* sp. nov.

**Description:** Based on holotype — MNHN-RA-2022.0039 (ex. AMS R.144110), an adult male. Snout-vent length (SVL) 67.2 mm; trunk relatively long, depressed. Head oblong, short (HeadL 23% SVL), relatively wide (HeadW 72% HL), not depressed (HeadD 42% HL), grading smoothly into neck; no pronounced interorbital depression, canthus weakly developed; snout long (EyeSn 43% HL), less than twice eye diameter (OrbD 25% HeadL). Granular scales on snout approximately twice to three times diameter of those on occipital region. Pupil vertically oriented with crenelated margins; posteriormost superciliary scale slender, elongate, pointed. Ear opening approximately 1.5 times high as wide, canted posterodorsally to anteroventrally; eye to ear distance much greater than the diameter of eye (EyeEar 151% OrbD). Rostral rectangular, much broader than high, divided by a partial groove running downward for a distance of < 20% of the rostral height, contacted posteriorly by five small internasals and two slightly enlarged supranasals, contacted posteroventrally by first supralabial. Nostrils oval and anterolaterally oriented, surrounded by three postnasals, one supranasal, and the rostral, in broad contact with first supralabial. Five similarly sized, rounded internasal scales between supranasals. Mental triangular, somewhat wider than deep; first infralabials in extensive contact behind the mental, each in contact

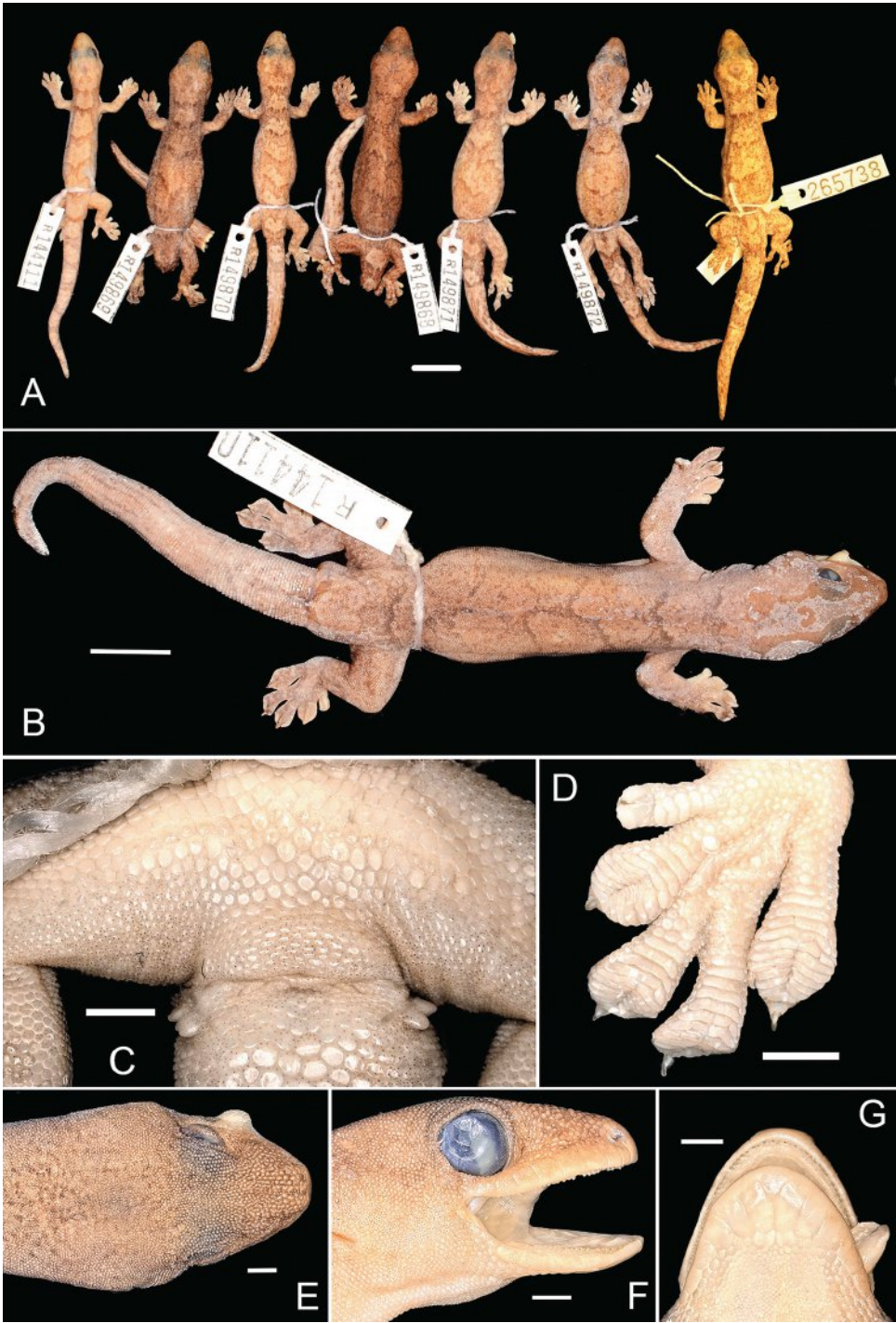


FIGURE 45. *Bavayia kanaky* sp. nov. A) Paratype series (CAS 265735 not figured). B–F) Holotype MNHN-RA-2022.0039 (ex. AMS R.144110): B) whole body dorsal view; C) cloacal region; D) ventral view of right pes; E) dorsal view of head; F) right lateral view of head; G) ventral view of head. Scale bars: A–B = 10 mm, C–E = 2 mm.



posteriorly with two enlarged postmental chin shields. First three to six rows of chin shields larger than remaining throat scales. Nine enlarged supralabial scales, of which the 7<sup>th</sup> through 9<sup>th</sup> are beneath the eye; 8 L, 9 R infralabial scales; 33 interorbital scale rows between superciliaries at midpoint of orbit, 11 interorbitals between the orbital margins of the frontal bone.

Dorsal scales small, homogeneous, very slightly conical, granular; ventral scales slightly larger than dorsals, subimbricate, enlarged posteriorly on the body. Posterior abdominal scales rounded, mid-abdominal scales elongate, diamond-shaped. Approximately 139 scale rows around midbody. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Precloacal pores small but easily distinguishable, 29 in three rows; anterior continuous row of 20 pores, second row of 8 pores, with rightmost pored scale offset from remaining continuous row by a single poreless scale, third row a single midline pored scale. Forearm and crus short (12% and 14% of SVL, respectively), axillary pockets shallow. Digits short and very wide distally, all bearing claws, those on digit I of both manus and pes greatly reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital lamellae paired distally, undivided basally. Distalmost lamella of digits II–V, manus and pes, undivided. Apical plates of digit I of manus and pes asymmetrical, with claw positioned in a notch between a larger medial and smaller lateral scansor. Lamellar counts from right side of holotype 5-10-10-10-8 manus and 5-10-11-11-12 pes.

TailL 56.0 mm (chiefly regenerated), approximately 83% of snout-vent length, tapered, stout, roughly oval in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, rectangular, arranged in regular rows. Surface of tail weakly segmented, caudal scale rows forming whorls, each whorl ~7 dorsal scale rows and 6 ventral scale rows long; midventral caudal scales not enlarged. Scales on pygal portion of tail much smaller ( $\frac{1}{2}$  to  $\frac{1}{3}$ ) than post pygal scales. Cloacal spurs consisting of a pair of smooth, conical, blunt-tipped, slightly compressed, posterodorsally-directed, raised scales just posterior to each side of the cloaca.

**Color in preservative:** Dorsum and flanks light to medium brown with a pattern of darker brown narrow transverse bands, the more posterior ones connected mid-dorsally to one another. Five bands from shoulder to sacrum (four between limb insertions), with an additional band on the nape. Nape and shoulder bands thicker, darker and more regular than more posterior bands. Three bands on trunk behind shoulders, each approximately two to three granules wide, highly asymmetrical and linked by an irregular, partly broken, middorsal marking of similar color and width. The posterior abdominal band indistinct, but middorsal marking prominent at its intersection with the band. Sacral band darker, more discrete and symmetrical, similar to shoulder band. Region between bands with speckles and small irregular markings matching the transverse bands in color. A prominent dark marking at the constriction of the tail base. An ill-defined brown triangle on the parietal region. Remainder of head and limbs mostly unpatterned except for scattered small speckles or irregular markings. Flanks paler than dorsum with diffuse mottling or speckling, dorsal pattern does not extend to ventrolateral margin. Original portion of tail with weakly demarcated pale cream blotches; regenerated portion with three thin, dark longitudinal lines. Body venter cream to beige, with no speckling or dark pigmentation, although the mottled pattern of the flanks extends onto the lateral margins of the ventral surface; hemipenial bulge whitish. Tail venter light brown with mottling of the dorsal surfaces visible along the lateral margins.

**Color in life:** (based on life photos of non-type AMS R.167145 and paratype CAS 265738, Figs. 43C–D). Ground color grayish- to purplish brown overlain by sparse to dense whitish to yellowish speckles. The areas immediately anterior to dark brown transverse bands occupied by pale mottled blotches or irregular crossbands of dull gray to pinkish-brown color. Posterior to the

dark bands the mottled or speckled ground color is visible until the anterior margin of the following pale blotch or band is reached. A thick dark brown line extends posteriorly from the eye and may or may not be confluent with the nape band (this marking has almost vanished in the preserved holotype). Center of parietal table with a diffuse dark marking and irregular markings on the snout. Limbs mottled and speckled as is trunk. A series of up to eight pale markings on the tail dorsum, from bright white to pale straw in color; irregular in shape but roughly oval, with a thin dark brown border, especially prominent anteriorly, and separated by areas of dark grayish brown to chocolate brown that are shorter than the pale markings. Ventral coloration pale to bright yellow.

**Variation:** Mensural features of paratypes are presented in Table 13. The paratypes have from one to five internasals. In some specimens the first infralabials are bordered posteriorly by a total of only three enlarged chin shields. Male paratype AMS R.144111 with 22 precloacal pores in two rows; no pores or dimples in females. Longest original tail 109% SVL (AMS R.144111). Color pattern highly variable, but always with a series of 4–5 regular to irregular, thin medium to dark brown transverse markings preceded by a wider pale band or area of ground color. The degree of asymmetry of the dark transverse bands and the prominence of dark longitudinal markings in the holotype are exceptional.

TABLE 13. Mensural data from the type series of *Bavayia kanaky* sp. nov.; \*tail regenerated, \*\* broken.

	Holotype	Paratypes							
	MNHN-RA 2022.0039	CAS 265735	AMS R.149871	AMS R.144111	CAS 265736	AMS R.149870	CAS 265737	AMS R.149872	CAS 265738
Sex	M	F	F	M	F	F	F	F	F
SVL	67.2	56.0	62.2	46.8	67.9	55.6	61.8	59.5	54.6
ForeaL	8.1	6.42	7.3	4.0	7.3	6.6	7.0	6.8	6.4
CrusL	9.2	7.7	8.6	4.6	8.9	7.5	8.5	8.1	7.4
TailL	56.0*	49.7	46.6*	50.8	55.8**	45.2*	46.0**	22.1**	46.3*
HeadL	15.5	13.6	15.2	9.6	16.2	13.8	15.7	14.7	16.3
HeadW	11.2	9.9	11.1	6.49	12.3	9.7	10.7	11.0	10.9
HeadH	6.5	5.7	6.1	2.5	6.4	5.1	6.3	5.5	6.0
OrbD	3.9	3.7	3.6	2.9	3.9	3.3	3.5	3.3	3.3
EyeEar	5.6	4.8	5.6	4.4	5.5	4.8	5.6	4.8	4.5
SnEye	6.6	5.8	6.2	3.2	7.0	5.8	6.5	6.3	5.3
NarEye	5.1	4.5	4.5	2.3	4.8	4.0	4.7	4.4	3.9
InterOrb	5.0	4.5	5.1	4.2	5.4	5.7	5.4	4.8	5.8
EarL	2.0	2.0	1.9	1.5	2.2	2.1	1.8	1.8	1.3
InterNar	2.0	1.3	1.7	1.4	2.0	1.7	1.9	2.2	2.3

**Etymology:** The epithet *kanaky* is a proper noun in apposition. Kanaky is an alternative name for New Caledonia, derived from the indigenous Kanak people.

**Distribution:** This species is distributed in the Chaîne Centrale in the central region of the Grande Terre between Sarraméa and Mt. Ménazi and Canala (Fig. 44).

**Natural History:** *Bavayia kanaky* sp. nov. has been recorded primarily from closed forest habitat at high (~ 900 m on Mt. Do and Mt. Ménazi), mid (Parc des Grandes Fougères 400-800 m, Mt. Ménazi 520 m) and low (Sarraméa 150 m) elevation closed-forest habitat, the interface of mid elevation closed-forest and maquis (Mé Adéo) and has also been recorded from mid-high elevation (Mt. Ménazi 740 m) maquis on cuirasse (Figs. 11B–C, 24E). It is presumably insectivorous and produces two-egg clutches.

**Conservation Status:** *Bavayia kanaky* sp. nov. meets the criteria (B1ab(ii, iii, v) + 2ab(ii, iii, v)) to be categorized as Vulnerable on the IUCN Red List. It has a small distribution, being known only from six locations in the central and central-east ranges, with an estimated extent of occurrence of ~240 km<sup>2</sup>. It is presumed to have suffered a reduction in population size and extent as a result of past loss and degradation of humid forest habitat from wildfires, and clearing for mining activities, forestry and agriculture. It is considered to be at a high level of ongoing threat from fire

(Ibanez et al. 2019) and mining activities (Pascal et al. 2008), and from habitat degradation by introduced deer and pigs which threaten forest habitat quality (damaging ground daytime sheltering sites and the abundance and structure of understory shrubs used for foraging) (de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-Wichatitsky 2006), and from the introduced Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from arboreal sheltering and foraging sites, and to affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001).

**Remarks:** Roux's (1913) material of "*B. c. montana*" from Ni, Canala, and Coindé (as well as some exchanged material, e.g. RMNH 6788) are referable to *B. kanaky*. It is possible that Roux's (1913) *B. cyclura* from Mia, near Canala may also be this same species. No non-*montana* clade *B. cyclura* group species are known from this region. While the possibility exists that this material represents yet another species of *Bavayia*, variation in size or color pattern may have led Roux to consider there to be two large-bodied congeners in these areas. *Bavayia cyclura* from Mé Adéo referred to by Bauer et al. (1998) are assignable to *B. kanaky*.

***Bavayia mandjeliensis* sp. nov.**

Figures 43E, 46.

**Holotype:** MNHN-RA-2022.0061 (ex. CAS 198707), Mt. Mandjelia (clearing in forest at 540 m), Province Nord, New Caledonia, 20°24'15"S, 164°31'18"E, coll. R.A. Sadlier and A.M. Bauer, 4 January 1995.

**Paratypes:** AMS R.188672, R.188673, R.188674, data as for holotype; CAS 198702, Mt. Mandjelia (ca. 15 m below summit – 737 m), Province Nord, New Caledonia, 20°23'48"S, 164°31'54"E, coll. R.A. Sadlier and A.M. Bauer, 4 January 1995.

**Referred Material:** UMMZ 174097, Mt. Mandjelia (700 m), Province Nord, 20°24'12.88"S, 164°32'03.96"E; AMS R.146353–54, R.146355\*, R.146356–58, R.146359\*, R.146360, CAS 198709, Mt. Mandjelia (clearing in forest 540 m), Province Nord, 20°24'15"S, 164°31'18"E.

**Diagnosis:** A mid-sized species of the *Bavayia montana* Clade (maximum SVL 66.8 mm, MNHN-RA-2022.0061), body robust, longest regenerated tail 96% SVL. It can be distinguished from its congeners by the following combination of characteristics: claw of digit I positioned in a groove within the apical lamella, which is divided into a larger medial and smaller lateral portion; three rows of precloacal pores in males, 26–37 pores in total; first pair of infralabials usually in contact behind the mental; midbody scale rows ~146; 12–15 mostly paired lamellae under digit IV of pes. Dorsum and flanks medium brown with a pattern of four dark brown, narrow, transverse bands between the limb insertions, with additional bands on the nape and tail base; each band associated with a transverse row of white flecks and preceded by a predominately pale blotch. Dark areas of background coloration on dorsum (anterior to pale blotches) bearing a contrasting mosaic of whitish, yellowish, or light brown scales. Patterning on head not strongly contrasting; pale markings on upper temporal region, if present, not extending uninterruptedly to shoulder. Pale blotches on tail usually well-demarcated, with brown borders.

Among other members of the *B. montana* Clade, *B. mandjeliensis* is distinguished from most species (except *B. renevierorum* sp. nov.) by its larger number of precloacal pores (26–37 vs. a maximum of 29). It further differs from *B. kopeto* sp. nov. by its considerably larger size (66.8 mm vs. 59.0 mm maximum SVL), narrower head, and more pronounced neck. In contrast to *B. montana*, it usually has a poorly developed canthal streak and paired upper temporal streaks, if present, do not extend uninterrupted to the shoulder. Its strongly contrasting light and dark dorsal markings distinguish it from, *B. koniambo* sp. nov., in which the contrast is more subdued. *Bavayia mand-*



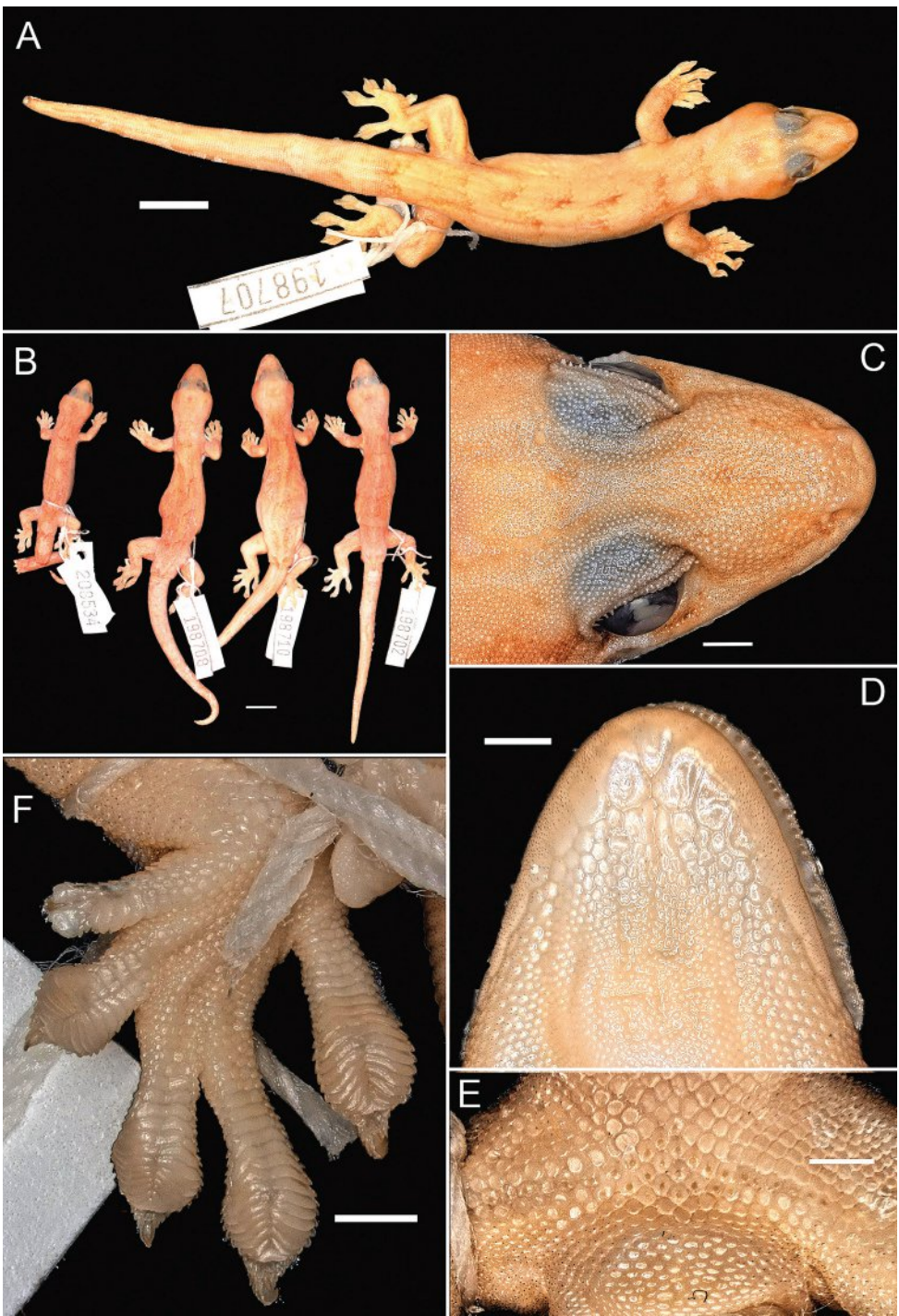


FIGURE 46. *Bavayia mandjeliensis* sp. nov. A) Holotype MNHN-RA-2022.0061 (ex. AMS R.198707), whole body dorsal view; B) Paratype series; C–F) Holotype MNHN-RA-2022.0061 (ex. AMS R.198707): C) dorsal view of head; D) ventral view of head; E) cloacal region; F) ventral view of right pes. Scale bars: A–B = 10 mm, C–F = 2 mm.

*jeliensis* sp. nov. is most similar to *B. renevierorum* sp. nov., which has an even larger number of precloacal pores (27–44 vs. 26–37) and lacks a pronounced frontonasal depression.

**Description:** Based on holotype — MNHN-RA-2022.0061 (ex. CAS 198707), an adult male. Snout-vent length (SVL) 66.8 mm; trunk relatively long, gracile, depressed. Head oblong, moderately long (HeadL 27% SVL), relatively wide (HeadW 71% HeadL), somewhat depressed (HeadD 35% HeadL), grading smoothly into neck from widest point at adductor muscles; frontonasal depression present, canthus moderately well developed; snout relatively long (EyeSn 40% HeadL), almost double eye diameter (OrbD 21% HeadL). Granular scales on snout approximately twice to three times diameter of those on occipital region. Pupil vertically oriented with crenelated margins; five posteriormost superciliary scales slender, elongate, pointed. Ear opening approximately 1.5 times high as wide, canted posterodorsally to anteroventrally; eye to ear distance much greater than the diameter of eye (EyeEar 156% OrbD). Rostral rectangular, much broader than high, without median rostral crease, contacted posteriorly by five small internasals and two enlarged supranasals, contacted posteroventrally by first supralabial. Nostrils oval and anterolaterally oriented, surrounded by three postnasals, one supranasal, and the rostral, in broad contact with first supralabial. Five similarly sized, rounded internasal scales between supranasals. Mental triangular, somewhat deeper than wide; first infralabials in extensive contact behind the mental, each in contact posteriorly with two enlarged postmental chin shields. First three to five rows of chin shields larger than remaining throat scales. Nine enlarged supralabial scales, of which the seventh through ninth are beneath the eye; 9 L, 9 R infralabial scales; 46 interorbital scale rows between superciliaries at midpoint of orbit, 15 interorbitals between the orbital margins of the frontal bone.

Dorsal scales tiny, homogeneous, very slightly conical, granular; ventral scales slightly larger than dorsals, subimbricate, enlarged posteriorly on the body. Posterior abdominal scales rounded, mid-abdominal scales elongate, diamond-shaped. Approximately 146 scale rows around midbody. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Precloacal pores small but easily distinguishable, 32 in three rows; anterior continuous row of 21 pores, second continuous row of 8 pores, third continuous row of 3 pores. Forearm and crus short (12% and 14% of SVL, respectively), axillary pockets shallow. Digits short and wide distally, all bearing claws, those on digit I of both manus and pes greatly reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital lamellae paired distally, undivided basally. Distalmost lamella of digits II–V, manus and pes, undivided. Apical plates of digit I of manus and pes asymmetrical, with claw positioned in a notch between a larger medial and smaller lateral scansor. Lamellar counts from right side of holotype 8-12-12-14-12 manus and 7-13-13-15-13 pes.

Tail 59.0 mm (distal 40.9 mm regenerated), approximately 88% of snout-vent length, tapered, stout, roughly oval in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, rectangular, arranged in regular rows. Surface of tail weakly segmented, caudal scale rows forming whorls, each whorl ~7 dorsal scale rows and 6 ventral scale rows long; midventral caudal scales not enlarged. Scales on pygal portion of tail much smaller ( $\frac{1}{2}$  to  $\frac{1}{3}$ ) than post pygal scales. Cloacal spurs consisting of a pair of smooth, conical, blunt-tipped, slightly compressed, posterodorsally directed, raised scales just posterior to each side of the cloaca.

**Color in preservative:** Specimen highly faded, dorsum and flanks beige to light brown, with a pattern of irregular darker brown narrow transverse bands, five bands from shoulder to sacrum, with an additional band on the nape. Nape and shoulder bands thicker and more symmetrical than more posterior bands. Three bands between limb insertions highly asymmetrical and darkest in paravertebral position. Nape and sacral bands diffuse and more-or-less uniform in pigmentation

intensity. Area in front of each band paler than background color and forming a vaguely defined transverse blotch. Region posterior to dark bands with small, diffuse scattered dark speckles. Parietal region with an ill-defined pale brown blotch on the parietal region and a wide dark brown line extending back from the midpoint of the eye towards the nape. Remainder of head and limbs mostly unpatterned except for scattered small speckles or irregular markings, particularly of the snout and feet. Flanks paler than dorsum with diffuse mottling or speckling, dorsal pattern does not extend to ventrolateral margin. Original portion of tail with weakly demarcated pale cream blotches with diffuse mid-brown anterior and posterior borders; regenerated portion with scattered broken mid-brown longitudinal lines. Body venter cream to beige, with no speckling or dark pigmentation, although the mottled pattern of the flanks extends onto the lateral margins of the ventral surface. Tail venter light brown with mottling of the dorsal surfaces visible along the lateral margins.

**Color in life:** (based on photo of holotype, Fig. 43E). Ground color purplish brown overlain by dense whitish to yellowish speckles across all areas of ground color. Dark transverse bars bold and contrasting, each with a series of small, irregular whitish spots or marks running in or just anterior to the bars themselves. The areas immediately anterior to dark brown transverse bands occupied by pale purplish blotches or irregular crossbands, each with scattered lighter and darker internal markings. Posterior to the dark bands the mottled or speckled ground color is visible until the anterior margin of the following pale blotch or band is reached. A thick dark brown line extends posteriorly from the eye and is confluent with the speckled ground color behind the nape band; it is roughly bordered, above and below, by white speckles. Another broken line of white speckles passes diagonally backward from ventral midpoint of the eye through the corner of the mouth. Anterior to the dark nape band a series of three pale purplish blotches, each roughly bordered by whitish speckles, extends forward on each side of the head to reach the upper margin of the eyes. The areas between the pale blotches and on the parietal table are colored as is the trunk. The snout and interorbital areas are a darker purplish brown. Limbs mottled and speckled as is trunk. series Two irregular pale markings with dark brown borders on the dorsum of the original tail, the anterior wider than long and similar to the pale body bands of the trunk, the more posterior longer than wide and cream-colored, not extending onto the ventral half of the tail. Ventral coloration pale to bright yellow.

**Variation:** Mensural features of paratypes are presented in Table 14. The paratypes have from two to four larger internasals. In paratype CAS 198708 the first infralabials are separated anteriorly by the mental and posteriorly by one of four enlarged chin shields and in paratype CAS 208534 there are collectively only three enlarged chin shields contacting the first infralabials posteriorly. Male paratypes have three rows of precloacal pores with 26–37 pores per specimen. Longest partly regenerated tail 96% SVL (CAS 198708). Color pattern variable, but always with a series of 4–5 regular to irregular, thin, medium to dark brown transverse markings preceded by a wider pale band or area of ground color.

**Etymology:** Named for Mt. Mandjelia, the northern extension of the Panié-Ignambi Massif in the northeastern Province Nord, the only known region of occurrence for this species.

**Distribution:** Restricted to elevations above 500 m on the forested slopes of Mt. Mandjelia (Fig. 44).

**Natural History:** Recorded active at night on trunks and branches of smaller trees in closed-forest habitat and at the edge of forest clearings.

**Conservation Status:** *Bavayia mandjeliensis* sp. nov. meets the criteria (D2) to be categorized as Vulnerable on the IUCN Red List. It has a very small distribution, being known only from Mt. Mandjelia in the far northeast ranges of Grande Terre. It has been recorded from above 500 m in



TABLE 14. Mensural data from the type series of *Bavayia mandjeliensis* sp. nov.; \*tail regenerated, \*\* broken.

	Holotype	Paratypes			
	MNHN-RA 2022.0061	CAS 198708	CAS 198702	CAS 208534	CAS 198710
Sex	M	F	M	M	F
SVL	66.8	66.1	63.0	49.6	64.5
ForeaL	8.3	8.4	7.7	5.8	8.0
CrusL	9.5	9.7	8.8	6.5	9.8
TailL	59.0*	63.2	64.2*	48.5**	46.1*
HeadL	18.6	17.3	17.3	12.8	17.3
HeadW	13.2	11.7	11.9	9.1	12.8
HeadH	6.6	6.8	6.6	5.3	7.4
OrbD	3.9	3.3	3.7	3.4	3.8
EyeEar	6.1	5.6	6.1	4.7	5.6
SnEye	7.5	7.5	7.2	6.1	6.9
NarEye	5.6	5.6	5.4	5.7	5.2
InterOrb	5.2	4.8	5.0	4.0	4.5
EarL	2.4	1.8	2.3	1.5	1.5
InterNar	2.2	2.2	2.1	1.6	2.2

elevation and has an estimated extent of occurrence of <10 km<sup>2</sup> at this elevation and above. It is presumed to have suffered a reduction in population size and extent as a result of past loss and degradation of humid forest habitat from wildfires and clearing for forestry activities and agriculture. It is considered to be at a moderate level of ongoing threat from fire (Ibanez et al. 2019), and from predation by cats (Palmas et al. 2017), from habitat degradation by introduced deer and pigs which threaten forest habitat quality (damaging ground daytime sheltering sites and the abundance and structure of understory shrubs used for foraging) (de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-Wichatitsky 2006), and from the introduced Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from arboreal sheltering and foraging sites, and to affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001).

***Bavayia kopeto* sp. nov.**

Figures 43H, 47.

**Holotype:** MNHN-RA-2022.0057 (ex. AMB 7738), Massif de Kopéto, spillway access road, 21°10'15"S, 165°01'28"E, coll. A.M. Bauer and R.A. Sadlier, 21 January 2003.

**Paratypes:** AMS R.188654 (ex. AMB 7759), AMS R.188655 (ex. AMB 7768), R.188656 (ex. AMB 7770), CAS 265791–92 (ex. AMB 7761–62), 265791–92 (ex. AMB 7761–62), 265793 (ex. AMB 7772), data as for holotype; CAS 265789\* (ex. AMB 7737), Massif de Kopéto, spillway access road 21°10'15"S, 165°01'28"E, coll. A.M. Bauer and R.A. Sadlier, 23 January 2003; AMS R.188658\* (ex. AMB 7749), CAS 265790 (ex. AMB 7751) Massif de Kopéto, spillway access road, 21°10'12"S, 165°01'39"E, coll. A.M. Bauer and R.A. Sadlier, 21 January 2003. AMS R.167200–201, Massif de Kopéto, Papainda, Province Nord, New Caledonia, 21°10'35.2"S, 165°01'04"E, coll. A.H. Whitaker and V.H. Whitaker, 26 February 2006.

**Referred Material:** (all localities in Province Nord) CAS 265794–95 (ex. AMB 7735–36), 265796–99 (ex. AMB 7739–42), 265801 (ex. AMB 7760), 265802–03 (ex. AMB 7763–64), 265804 (ex. AMB 7767), 265805 (ex. AMB 7769), Massif de Kopéto, spillway access road, 21°10'15"S, 165°01'28"E; CAS 265800 (ex. AMB 7750), 265810 (ex. AMB 7771), 265806–08 (ex. AMB 7773–75), 265809 (ex. AMB 7802), Massif de Kopéto, spillway access road, 21°10'12"S, 165°01'39"E; AMS R.163118, Papainda, Massif de Kopéto, 14 km SE Pouembout (870 m), 21°10'38.5"S, 165°01'15.4"E.

**Diagnosis:** A small species of the *Bavayia montana* Clade (maximum SVL 59.0 mm, CAS

265789), body robust, original tail 111% SVL. It can be distinguished from its congeners by the following combination of characteristics: head very broad with poorly distinguished neck, claw of digit I positioned in a groove within the apical lamella, which is divided into a larger medial and smaller lateral portion; two to three rows of precloacal pores in males, 17–29 pores in total; first pair of infralabials in contact behind the mental or separated; midbody scale rows ~126; 10–14 mostly paired lamellae under digit IV of pes. Dorsum and flanks light to medium brown with a pattern of 4–5 dark brown, narrow, transverse bands between the limb insertions, with additional bands on the nape and tail base, each preceded by a predominately pale blotch (bilaterally symmetrical or with left and right sides shifted out of phase); white flecks associated with dark bands absent or inconspicuous. Contrasting mosaic of whitish, yellowish, or light brown scales prominent or not. Patterning on head variable, pale markings on upper temporal region, if present, not extending uninterrupted to shoulder. Pale blotches on tail in a series of 8 on original tails.

Among other members of the *B. montana* Clade, *B. kopeto* is distinguished from all other species by its smaller size (59.0 vs. 62.9 or larger maximum SVL) and by its distinctive wide head with hypertrophied adductor muscles.

**Description:** Based on holotype — MNHN-RA-2022.0057 (ex. AMB 7738), an adult male. Snout-vent length (SVL) 58.6 mm; trunk relatively long, gracile, depressed. Head oblong, moderately long (HeadL 25% SVL), wide (HeadW 80% HeadL) with prominent adductor musculature, not depressed (HeadD 40% HeadL), neck poorly delineated; slight interorbital depression present, canthus moderately developed; snout relatively long (EyeSn 43% HeadL), much greater than eye diameter (OrbD 24% HeadL). Granular scales on snout approximately twice diameter of those on occipital region. Pupil vertically oriented with crenelated margins; posteriormost third of superciliary scales conical, elongate, pointed. Ear opening approximately 1.5 times high as wide, slightly canted posterodorsally to anteroventrally; eye to ear distance much greater than the diameter of eye (EyeEar 161% OrbD). Rostral rectangular, much broader than high, with short median rostral crease, contacted posteriorly by five small internasals and two enlarged supranasals, contacted posteroventrally by first supralabial. Nostrils oval and anterolaterally oriented, surrounded by three postnasals (the dorsalmost much larger than the others), one supranasal, and the rostral, in moderate contact with first supralabial. Five similarly sized, oblong internasal scales between supranasals. Mental triangular, deeper than wide; first infralabials in relatively narrow contact behind the mental, each in contact posteriorly with three enlarged anterior postmental chin shields (five total). First three to five rows of chin shields larger than remaining throat scales. Nine enlarged supralabial scales, of which the 6<sup>th</sup> through 9<sup>th</sup> are beneath the eye; 10 L, 10 R infralabial scales; 38 interorbital scale rows between superciliaries at midpoint of orbit, 14 interorbitals between the orbital margins of the frontal bone.

Dorsal scales tiny, homogeneous, very slightly conical, granular; ventral scales slightly larger than dorsals, subimbricate, enlarged posteriorly on the body. Posterior abdominal scales rounded, mid-abdominal scales elongate, diamond-shaped. Approximately 126 scale rows around midbody. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Precloacal pores large and easily distinguishable, 26 in three rows; anterior continuous row of 16 pores, second continuous row of 9 pores with a gap of one poreless scale separating the rightmost two pored scales from the remainder, third row of a single median pore. Forearm and crus short (11% and 13% of SVL, respectively), axillary pockets shallow. Digits short and wide distally, all bearing claws, those on digit I of both manus and pes greatly reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital lamellae paired distally, undivided basally. Distalmost lamella of digits II–V, manus and pes, undi-

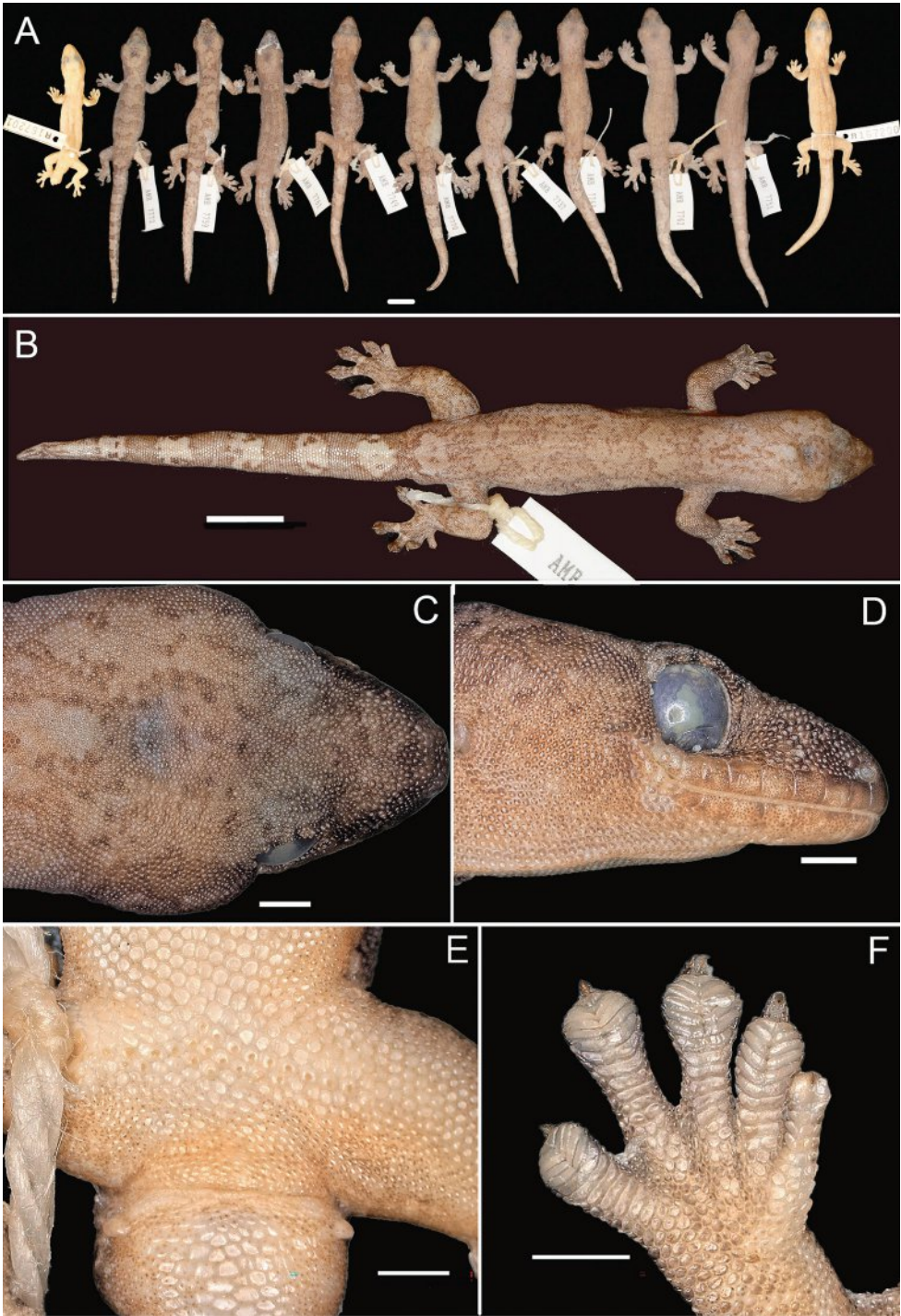


FIGURE 47. *Bavayia kopeto* sp. nov. A) Paratype series. B–E) Holotype MNHN-RA-2022.0057 (ex. AMB 7738): B) whole body dorsal view; C) dorsal view of head; D) right lateral view of head; E) cloacal region; F) ventral view of right manus. Scale bars: A–B = 10 mm, C–F = 2 mm.



vided. Apical plates of digit I of manus and pes asymmetrical, with claw positioned in a notch between a larger medial and smaller lateral scansor. Lamellar counts from right side of holotype 6 (all exceptionally narrow)-10-12-11-12 manus and 5-11-12-13-12 pes.

TailL 56.0 mm (distal 7.0 mm regenerated), approximately 96% of snout-vent length, tapered, stout, roughly oval in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, rectangular, arranged in regular rows. Surface of tail weakly segmented, caudal scale rows forming whorls, each whorl ~7 dorsal scale rows and 6 ventral scale rows long; midventral caudal scales not enlarged. Scales on pygal portion of tail much smaller ( $\frac{1}{2}$  to  $\frac{1}{3}$ ) than post pygal scales. Cloacal spurs consisting of a single smooth, conical, blunt-tipped, slightly compressed, posterodorsally directed, raised scale just posterior to each side of the cloaca.

**Color in preservative:** Dorsum and flanks light brown, with a pattern of irregular darker brown narrow transverse bands, six bands from shoulder to sacrum, with an additional band on the nape. Each band is more-or-less continuous anteriorly but posteriorly the darker brown is mottled and flecked. Anterior to each more-or-less continuous band is a paler, light brown blotch or saddle which itself contains small dark brown flecks and irregular markings. The pale marking at shoulder level is preceded by a broken dark brown "V" anterior to which cream to beige markings form an irregular marking from the nape and occiput, over the temporal regions to the supraorbital position. The snout and crown have more densely aggregated irregular dark markings; these form broken transverse bands in the preorbital position and across the snout just behind the nostrils. There is also a thick brown line from the posterior border of the orbit to above the ear; it has a darker, well-defined dorsal margin but is more irregular and ill-defined ventrally. The labial scales are mostly light brown with darker portions on some individual scales. The limbs and flanks resemble the background pattern of the trunk, with dark speckling and occasional larger irregular markings on a lighter background. Pygal portion of tail with a single light brown oval marking (matching in color those of the trunk) with a well-defined dark brown posterior border and two dark brown central spots in paravertebral position. Post-pygal pale markings cream-colored, roughly oval in shape, limited to the dorsal half of the tail, and separated by light to mid-brown interspaces approximately equal in length to the pale markings themselves; each surrounded by a dark brown border and enclosing a pair of dark brown spots or dashes; five such pale markings on original portion of tail. Regenerated portion of tail mid-brown with irregular darker brown dashes. Venter beige with diffuse darker markings under the chin and throat, under the thighs, anterior and posterior to the cloaca, on the margins of the hemipenial bulge and along the margins of the body.

**Color in life:** (based on photo of living non-type specimen, Fig. 43H). Ground color grayish brown overlain by whitish speckles on dorsum and flanks. Dark transverse bars (largely phase-shifted on either side of the body in the reference specimen) bold and contrasting strongly with the pale, predominantly gray markings, which are mostly demarcated by a border of white dots or speckles along their posterior margins and enclose small, scattered, irregular dark brown markings. Head with highly irregular dark brown line, dashes and blotches on a gray background. Limbs mottled gray and brown with scattered white flecks. Tail in reference specimen fully regenerated, bearing an irregular longitudinal network of dark brown lines on a light brown background. Ventral coloration pale to bright yellow.

**Variation:** Mensural features of paratypes are presented in Table 15. The paratypes have from four to six internasals and between three and five enlarged postmental chin shields border the first infralabials. In paratype AMS R.188655 the first infralabials are separated posteriorly by an enlarged rounded postmental, in paratype AMS R.188656 the elongate apex of the mental separates the first infralabials and in CAS 265790 there is very narrow contact behind the mental; other paratypes share the condition of the holotype. Male paratypes have two or three rows of precloa-

TABLE 15. Mensural data from the type series of *Bavayia kopeto* sp. nov.; \*tail regenerated, \*\* broken.

	Holotype	Paratypes										
	MNHN-RA 2022.0057	CAS 265792	AMS R.188658	AMS R.188656	CAS 265793	CAS 265789	AMS R.188655	CAS 265791	AMS R.188654	CAS 265790	AMS R.167200	AMS R.167201
Sex	M	M	F	M	M	M	M	F	M	M	M	M
SVL	58.6	59.4	52.5	55.8	53	59	53.7	56.3	56.5	57.5	60.2	48.7
ForeaL	6.6	6.7	6.4	6.6	6.0	6.4	6.6	6.5	6.7	6.7	6.3	5.5
CrusL	7.9	8.4	7.6	7.5	7.5	8	7.5	7.8	7.8	8.3	8.2	6.4
TailL	56.0	58.6	51.7*	52.2*	54.6	47.5*	59.6	46.3*	48.7*	59.5	47.6*	8.3**
HeadL	14.4	15.6	14.7	15	14.6	15.7	13.6	13.5	14.7	14.8	15.6	13.0
HeadW	11.5	11.6	9.9	10.6	10.3	11.4	10.2	9.5	10.4	11.8	10.2	9.2
HeadH	5.7	6.1	5.5	5.6	5.7	5.9	5.8	5.4	5.5	6	5.4	4.0
OrbD	3.4	3.2	3.2	3.2	3.1	3.4	3.2	3.1	3.2	3	3.2	2.8
EyeEar	5.5	5.5	5.1	5.2	5.2	5.5	5.3	5.3	5.6	5.5	4.8	4.4
SnEye	6.2	6.5	6.0	6.2	6.0	6.1	6.1	6.1	6.4	6.3	6.5	5.3
NarEye	4.4	4.6	4.5	4.4	4.2	4.5	4.5	4.7	4.7	4.7	5.3	3.8
InterOrb	4.8	4.5	4.1	4.4	4.5	4.8	4.5	4.6	4.5	4.8	4.4	3.9
EarL	1.4	1.5	1.4	1.3	1.3	1.3	1.3	1.3	1.2	1.3	1.9	1.6
InterNar	1.7	2	1.6	1.7	1.8	1.8	1.7	1.9	1.7	1.6	1.7	1.4

cal pores with 17–29 pores per specimen. Longest original tail 111% SVL (AMS R.188655). Color pattern variable, but usually with a series of 4–5 regular to irregular, thin medium to dark brown transverse markings between the limb insertions, each preceded by a wider pale band, saddle or blotch. The contrast between the light and dark markings may be pronounced or weak. The pale markings may be regular and symmetrical, phase-shifted between left and right sides but still regular, or both irregular and asymmetrical. Original tails bear eight post-pygol pale markings.

**Etymology:** The specific epithet is a toponym formed as a proper noun in apposition, signifying the only known area of occurrence of this species.

**Distribution:** All known specimens have been collected on the Massif de Kopéto, one of the northwestern ultramafic massifs in the Province Nord (Fig. 44).

**Natural History:** *Bavayia kopeto* sp. nov. has only been recorded from closed-forest habitat on the summit region of the massif above ~900 m in elevation. Many individuals were recovered from crevices in the dry soil of road cuttings (Fig. 49B), with multiple individuals sometimes occupying a single crevice. Nocturnal, presumably insectivorous; likely produces of clutches of two eggs like all congeners, although gravid females were not found among the specimens collected with the types.

**Conservation Status:** *Bavayia kopeto* sp. nov. meets the criteria (B1ab(ii, iii) + 2ab(ii, iii)) to be categorized as Critically Endangered on the IUCN Red List. It has a very small distribution, being known only from the Kopéto Massif on the central-west ranges above 800 m in elevation, with an estimated extent of occurrence of ~7 km<sup>2</sup> above this elevation, and a considerable proportion of this area already cleared as a result of mining activities. It is presumed to have suffered a significant reduction in population size and extent as a result of past loss and degradation of humid forest habitat from wildfires, and from mining activities. It is considered to be at a high level of threat from fire (Ibanez et al. 2019) and ongoing mining activities (Pascal et al. 2008), and what little habitat remains is degraded by introduced deer and pigs which threaten forest habitat quality (affecting the abundance and structure of understory shrubs used for foraging) (de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-Wichatitsky 2006).

**Remarks:** A “*Bavayia montana*” figured by Watkins-Colwell (2003) is referable to *B. kopeto* sp. nov.

***Bavayia koniambo* sp. nov.**

Figures 43F, 48.

**Holotype:** MNHN-RA-2022.0047\* (ex. AMS R.161124), Massif de Koniambo, 8 km NE Koné, headwaters of Rivière Pandanus, Province Nord, New Caledonia, 20°59'51"S, 164°48'47"E, coll. A.H. Whitaker and V.A. Whitaker, 6 June 2002.

**Paratypes:** AMS R.161126–27, CAS 265739\* (ex. AMS R.161125), locality and collectors as for holotype, 7 June 2002.

**Referred Material:** (all localities in Province Nord) AMS R.168060–61, R.168078, R.168080, Massif de Koniambo, headwaters of Rivière Pandanus, 20°59'50.841"S, 164°48'46.69"E; AMS R.168072, Massif de Koniambo (summit ridge), 20°59'55.127"S, 164°49'40.615"E; AMS R.171447, Massif de Koniambo, east slope summit ridge, 20°59'23.41"S, 164°48'37.72"E; AMS R.171448–49, Massif de Koniambo, headwaters Rivière Pandanus, 20°59'48.514"S, 164°48'29.88"E; AMS R.171459, Massif de Koniambo, headwaters of Creek Coco (South Branch), 20°58'47.88"S, 164°47'35.63"E. AMS R.171462, Massif de Koniambo, headwaters of Rivière Pandanus, 20°59'39.982"S, 164°48'21.73"E;

AMS R.179518–19, Massif de Koniambo, 20°59'55.67"S, 164°48'06.47"E; AMS R.179540–41, Massif de Koniambo (Zone C1), 20°59'42.8"S, 164°48'35"E; AMS R.179542, Massif de Koniambo (Zone C2), 21°00'21.8"S, 164°48'09.41"E; AMS R.179543, Massif de Koniambo (Zone C2), 21°00'26.5"S, 164°48'10.4"E.

**Diagnosis:** A small species of the *Bavayia montana* Clade (maximum SVL 62.9 mm, MNHN-RA-2022.0047), body robust, original tail 100% SVL. It can be distinguished from its congeners by the following combination of characteristics: claw of digit I positioned in a groove within the apical lamella, which is divided into a larger medial and smaller lateral portion; three rows of precloacal pores in males, 26–28 pores in total; first pair of infralabials in contact behind the mental; midbody scale rows ~129; 13–15 mostly paired lamellae under digit IV of pes. Dorsum and flanks purplish brown with a pattern of 4–5 dark brown, narrow, transverse bands between the limb insertions, with additional bands on the nape and tail base; each band preceded by a predominately pale blotch, but with no bordering line of white flecks and with relatively weak contrast between light and dark markings. Dark areas of background coloration on dorsum (anterior to pale blotches) bearing a contrasting mosaic of whitish or light brown scales. Little discrete patterning on dorsum head; dark canthal stripe poorly developed; paired pale longitudinal markings on upper temporal region and neck lacking. Pale blotches on tail well-demarcated but dull.

Among other members of the *B. montana* Clade, *B. koniambo* is distinguished from *B. mandjeliensis* sp. nov. and *B. renevierorum* sp. nov. by its typically lower number of precloacal pores (26–29 vs. 26–37 and 27–44, respectively), and from *B. kopeto* sp. nov. by its narrower head and more distinct neck. In contrast to *B. montana*, it usually has a poorly developed canthal streak and paired upper temporal streaks, if present, do not extend to the shoulder. Its relatively weakly contrasting light and dark dorsal markings and absence or reduction of white flecks on or just anterior to the dark transverse markings distinguish it from other members of the clade.

**Description:** Based on holotype — MNHN-RA-2022.0047 (ex. AMS R.161124), an adult male. Snout-vent length (SVL) 62.9 mm; trunk relatively long, robust, depressed. Head oblong, moderately long (HeadL 26% SVL), relatively wide (HeadW 69% HeadL), somewhat depressed (HeadD 36% HeadL), neck indistinct, only slightly narrower than head; from widest point at adductor muscles; interorbital/frontal depression present, canthus moderately well developed; snout relatively long (EyeSn 40% HeadL), more than double eye diameter (OrbD 19% HeadL). Granular scales on snout approximately twice to three times diameter of those on occipital region. Pupil vertically oriented with crenelated margins; posteriormost quarter of superciliary scales



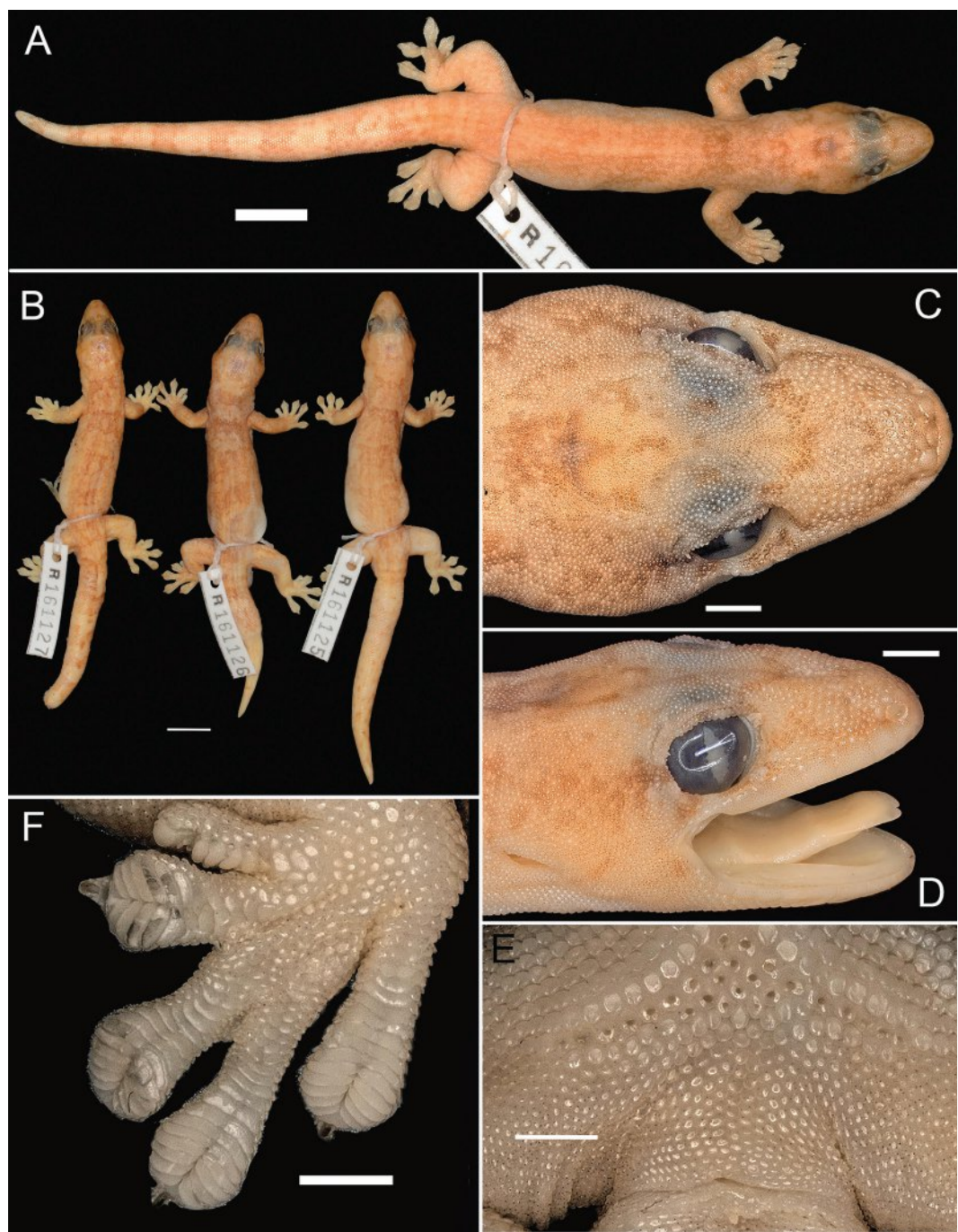


FIGURE 48. *Bavayia koniambo* sp. nov. A) Holotype MNHN-RA-2022.0047 (ex. AMS R.161124), whole body dorsal view; B) Paratype series; C–E) Holotype (MNHN-RA-2022.0057): C) dorsal view of head; D) right lateral view of head; E) cloacal region; F) ventral view of right pes. Scale bars: A–B = 10 mm, C–F = 2 mm.

slender, elongate, pointed. Ear opening approximately twice as high as wide, strongly canted posterodorsally to anteroventrally; eye to ear distance much greater than the diameter of eye (Eye-Ear 161% OrbD). Rostral rectangular, much broader than high, without median rostral crease, contacted posteriorly by one large internasals and two enlarged supranasals, contacted posteroventrally by first supralabial. Nostrils oval and anterolaterally oriented, surrounded by three postnasals, one supranasal, and the rostral, in broad contact with first supralabial. Five similarly sized, rounded internasal scales between supranasals. Mental subtriangular, wider than deep; first infralabials in extensive contact behind the mental, each in contact posteriorly with two enlarged anterior postmental chin shields, the median postmental contacting both infralabials. First three to four rows of chin shields larger than remaining throat scales. 8 L, 9 R enlarged supralabial scales, of which the posteriormost three are beneath the eye; 10 L, 10 R infralabial scales; 36 interorbital scale rows between superciliaries at midpoint of orbit, 11 interorbitals between the orbital margins of the frontal bone.

Dorsal scales tiny, homogeneous, very slightly conical, granular; ventral scales slightly larger than dorsals, subimbricate, enlarged posteriorly on the body. Posterior abdominal scales rounded, mid-abdominal scales elongate, diamond-shaped. Approximately 129 scale rows around midbody. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Pre-cloacal pores large and easily distinguishable, 26 in three rows; anterior continuous row of 17 pores, second continuous row of 6 pores, third continuous row of 3 pores. Forearm and crus short (12% and 154% of SVL, respectively), axillary pockets shallow. Digits short and wide distally, all bearing claws, those on digit I of both manus and pes greatly reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital lamellae paired distally, undivided basally. Distalmost lamella of digits II~V, manus and pes, undivided. Apical plates of digit I of manus and pes asymmetrical, with claw positioned in a notch between a larger medial and smaller lateral scissor. Lamellar counts from right side of holotype 7-12-12-14-12 manus and 7-13-13-15-13 pes.

Original tail 62.6 mm, approximately 100% of snout-vent length, tapered, stout, roughly oval in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, rectangular, arranged in regular rows. Surface of tail weakly segmented, caudal scale rows forming whorls, each whorl ~7 dorsal scale rows and 6 ventral scale rows long; midventral caudal scales not enlarged. Scales on pygal portion of tail much smaller ( $\frac{1}{2}$  to  $\frac{1}{3}$ ) than post pygal scales. Cloacal spurs consisting of a pair of smooth, conical, blunt-tipped, slightly compressed, posterodorsally directed, raised scales just posterior to each side of the cloaca.

**Color in preservative:** Specimen highly faded, dorsum and flanks beige to light brown, with a pattern of irregular medium brown broad transverse bands, only the band at the level of the shoulder is distinct, two additional bands between the limb insertions and one on the sacrum are faintly discernable. A nape band of intermediate prominence is present as well. Each dark band is formed by the partial fusion of dense dark flecks and small blotches, the paler areas between the dark bands are similarly speckled but much less densely so. Anterior to the dark nape marking most of the occiput and temporal regions, as well as the frontal are a pinkish beige with a large dark spot on the crown and smaller irregular dashes and blotches on the rest of the head. A thick dark line with irregular borders extends from the posterior margin of the orbit to over the ear, becoming fainter more posteriorly. A fainter irregular line extends from the nostril to the anterior margin of the orbit and additional brown markings pass beneath the eye, diagonally from the posteroventral margin of the eye to the corner of the mouth, and across the top of the head in an antorbital position. The limbs are faintly mottled and the flanks are less heavily pigmented ventrally. Pygal portion of the

tail with a very faint pale marking the same color as the body dorsum. The original post-pygial tail bears a series of nine pale dorsal markings (including the tail tip) alternating with somewhat narrower interspaces that are similar in color to the ground color of the trunk. Each pale marking is cream-colored and roughly oval in shape with a dark border and with up to three small dark interior markings. Body venter cream to beige, with only tiny speckles of pigment at the periphery of the venter.

**Color in life:** (based on photo of non-type specimen, see Fig. 43F). Ground color pale purplish brown overlain by diffuse purplish brown and smaller whitish speckles or small irregular markings on paler areas. Each darker transverse band purplish and most continuous anteriorly and becoming more incomplete posteriorly. In the reference specimen for life color there are a series of five narrow, indistinct whitish bars on the flanks between the limb insertions. The rims of the orbits and the light areas of the labial scales are a pale yellow. The iris is silvery. The pale markings on the original portion of the post-pygial tail are grayish white. Ventral coloration pale to bright yellow.

**Variation:** Mensural features of paratypes are presented in Table 16. The paratypes have from three to five larger internasals. In two of the paratypes (AMS R.161127, CAS 265739) there are five smaller anterior chin shields contacting the first infralabials posteriorly. In male paratype AMS R.161126 there are 28 precloacal pores arranged in three rows of 18, 7 and 3; females lack pores or dimples in the precloacal scales. Color pattern in paratypes similar to holotype, although the contrast between light and dark elements of the trunk pattern is more evident. In non-types five bands between shoulder and sacrum are sometimes present and the pattern may be asymmetrical, especially on the more posterior portion of the trunk.

TABLE 16. Mensural data from the type series of *Bavayia koniambo* sp. nov.; \*tail regenerated..

	Holotype	Paratypes			
	MNHN-RA 2022.0047	CAS 265739	AMS R.161126	AMS R.161127	
Sex	M	F	M	F	
SVL	62.9	60.3	59.3	57.8	
ForeaL	7.3	6.3	7.3	6.6	
CrusL	9.2	9.2	8.4	7.9	
TailL	62.6	54.3*	34.0*	39.4*	
HeadL	16.6	15.6	14.8	14.9	
HeadW	11.4	11.9	11.5	10.3	
HeadH	6.0	6.2	5.8	5.7	
OrbD	3.1	3.7	3.5	3.5	
EyeEar	5.0	4.6	4.7	4.9	
SnEye	6.7	6.8	6.6	6.7	
NarEye	4.9	5.5	4.8	4.9	
InterOrb	4.9	4.8	4.6	4.8	
EarL	1.8	1.6	1.9	1.7	
InterNar	2.0	2.0	2.1	2.2	

**Etymology:** The specific epithet is a toponym formed as a proper noun in apposition, signifying the only known area of occurrence of this species.

**Distribution:** All known specimens have been collected on the Massif de Koniambo, one of the northwestern ultramafic massifs in the Province Nord (Fig. 44).

**Natural History:** *Bavayia koniambo* sp. nov. has only been recorded from humid forest habitat on the massif above 550 m in elevation (Fig. 49C). It shelters by day under exfoliating bark of trees or in the axils of palm fronds and is active at night in canopy vegetation. Clutch size is two.

**Conservation Status:** *Bavayia koniambo* sp. nov. meets the criteria (B1ab(ii, iii, v) + 2ab(ii, iii, v)) to be categorized as Critically Endangered on the IUCN Red List. It has a small distribution, being known only from the Koniambo Massif in the northwest ranges at elevations above 550 m, with an estimated extent of occurrence of ~30 km<sup>2</sup> above this elevation, but with a signifi-



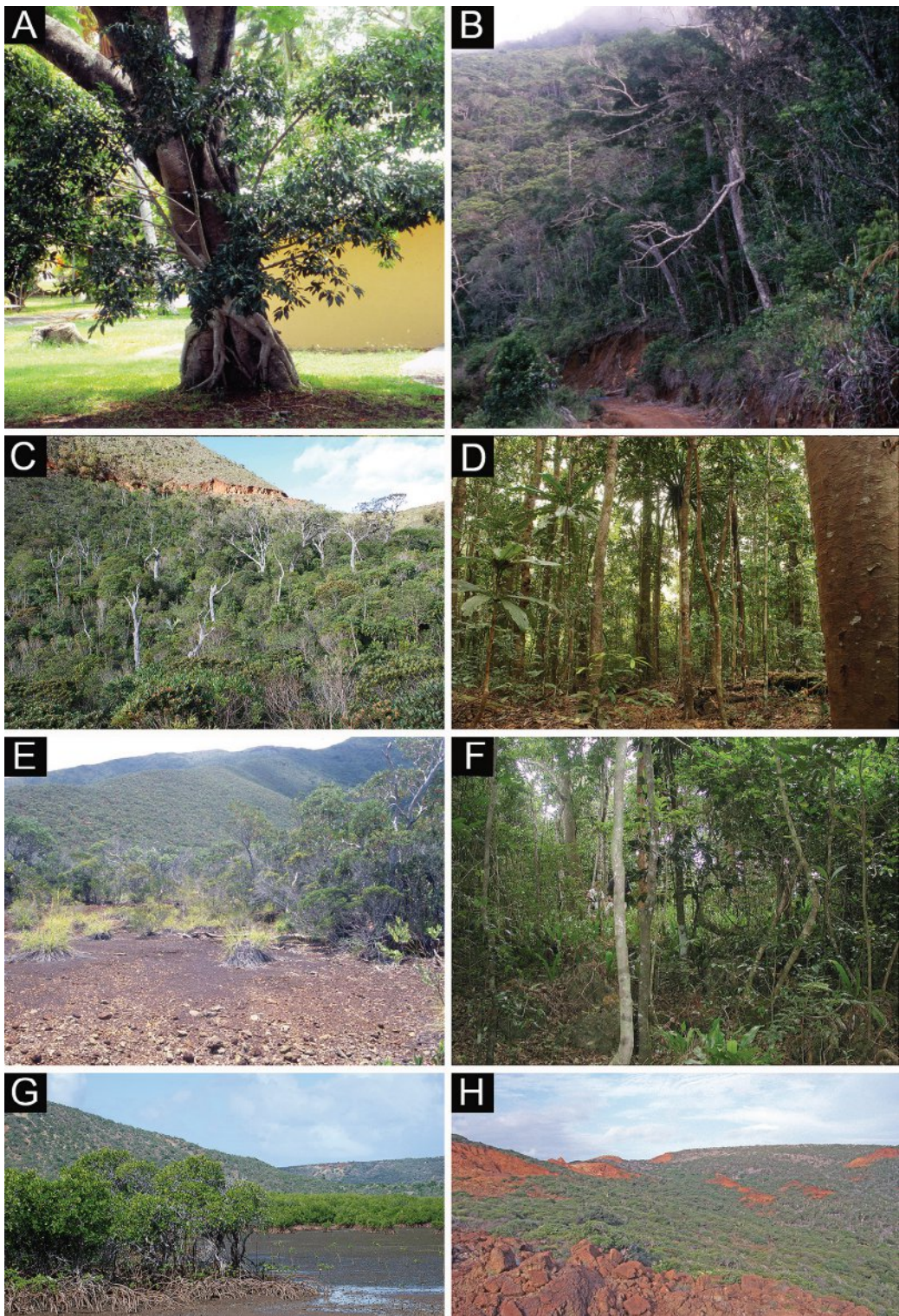


FIGURE 49. *Bavayia* habitats. A) *Ficus* in urban garden setting in Nouméa, Province Sud, habitat of *Bavayia robusta*; B) Forest edge on Mt. Kopéto, Province Nord. *Bavayia kopeto* sp. nov. is found at high elevation on this massif, often in crevices in road cuttings, and *B. ultramaficola* sp. nov. occurs in closed forest and maquis formations; C) High elevation humid forest on Mt. Koniambo, Province Nord, habitat of *Bavayia koniambo*, sp. nov.; D) Humid forest on Mé Maoya (600 m), Province Sud. habitat of *Bavayia jourdani* sp. nov.; E) Degraded maquis vegetation at Paagoumène, Province Nord, habitat of *Bavayia whitakeri* sp. nov., where it cooccurs with *Oedodera marmorata*; F) Lowland forest on Lifou, Loyalty Islands, habitat of *Bavayia crassicolis*; G) Coastal mangroves at Vavouto Peninsula; habitat of *Bavayia insularis* sp. nov. at the extreme south of its range. *Bavayia rhizophora* sp. nov. occurs in the same habitat at Oundjo, only a few kilometers further south; H) Shrubland at Panan, Île Pott, Îles Beleps, Province Nord; one of many habitat types occupied by the widespread *Bavayia insularis*, sp. nov. Photos A–B by G. Watkins-Colwell, photos C–D, G by R.A. Sadlier, photos E–F by A.M. Bauer, photo H by A.H. Whitaker.

cantly reduced area of occupancy given the scattered distribution of remnants its preferred habitat, humid forest. It is presumed to have suffered a significant reduction in population size and extent as a result of past loss and degradation of humid forest habitat from wildfires (Ibanez et al. 2019) and clearing for mining activities. It is considered to be at a high level of threat from ongoing mining activities (Pascal et al. 2008), and moderate level of threat from predation by cats (Palmas et al. 2017) and habitat degradation by introduced deer and pigs which threaten forest habitat quality (damaging ground daytime sheltering sites and the abundance and structure of understory shrubs used for foraging) (de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-Wichatitsky 2006).

**Remarks:** *Bavayia koniambo* sp. nov. was referred to as *B. aff. montana* sp. 1 by Whitaker et al. (2004) and Whitaker and Sadlier (2007), who provided a life photograph.

### *Bavayia jourdani* sp. nov.

Figures 2B, 43G, 50.

**Holotype:** MNHN-RA-2022.0044\* (ex. AMS R.149946), vic. Pic Néva, ranges west of Mé Adéo, 21°28'S, 165°33'E, coll. R.A. Sadlier and A.H. Whitaker, 31 October 1996.

**Paratypes:** AMS R.149943–44, R.149948, AMS R.149950, CAS 265740\* (ex. AMS R.149947), 265741 (ex. AMS R.149949), 265742 (ex. AMS R.149951), same data as holotype.

**Referred Material:** (all localities in Province Sud) NMBA 6954, Ni (ca. 250 m), 21°26'S, 165°29'E; AMS R.172740–41\*, R.172794, Mé Maoya (site 1), 21°26'19.84"S, 165°21'15.39"E; AMS R.172754, R.172755\*, R.172756, R.172788, R.172789\*, R.172790, Mé Maoya (campsite), 21°26'56.07"S, 165°20'56.95"E.

**Diagnosis:** A relatively small species of the *Bavayia montana* Clade (maximum SVL 64.0 mm, AMS R.149943), body robust, original tail 99% SVL. It can be distinguished from its congeners by the following combination of characteristics: claw of digit I positioned in a groove within the apical lamella, which is divided into a larger medial and smaller lateral portion; two to three rows of precloacal pores in males, 23–32 pores in total; first pair of infralabials in contact behind the mental; midbody scale rows ~137; 12–15 mostly paired lamellae under digit IV of pes. Dorsum and flanks yellowish brown to dark brown with a pattern of 4 (occasionally 5) dark brown, narrow, transverse bands between the limb insertions, with additional bands on the nape and tail base; each dark band with a transverse series of whitish flecks or spots and preceded by a predominately pale blotch, which may be bilaterally symmetrical or have left and right sides phase shifted. Dark areas of background coloration on dorsum (anterior to pale blotches) bearing a contrasting mosaic of whitish, yellowish, or light brown scales. Little discrete patterning on dorsum head; dark canthal stripe poorly developed; paired pale longitudinal markings on upper temporal region do not extend posteriorly beyond dark nape band. Pale blotches on tail well-demarcated, bright and contrasting with alternating darker interspaces.



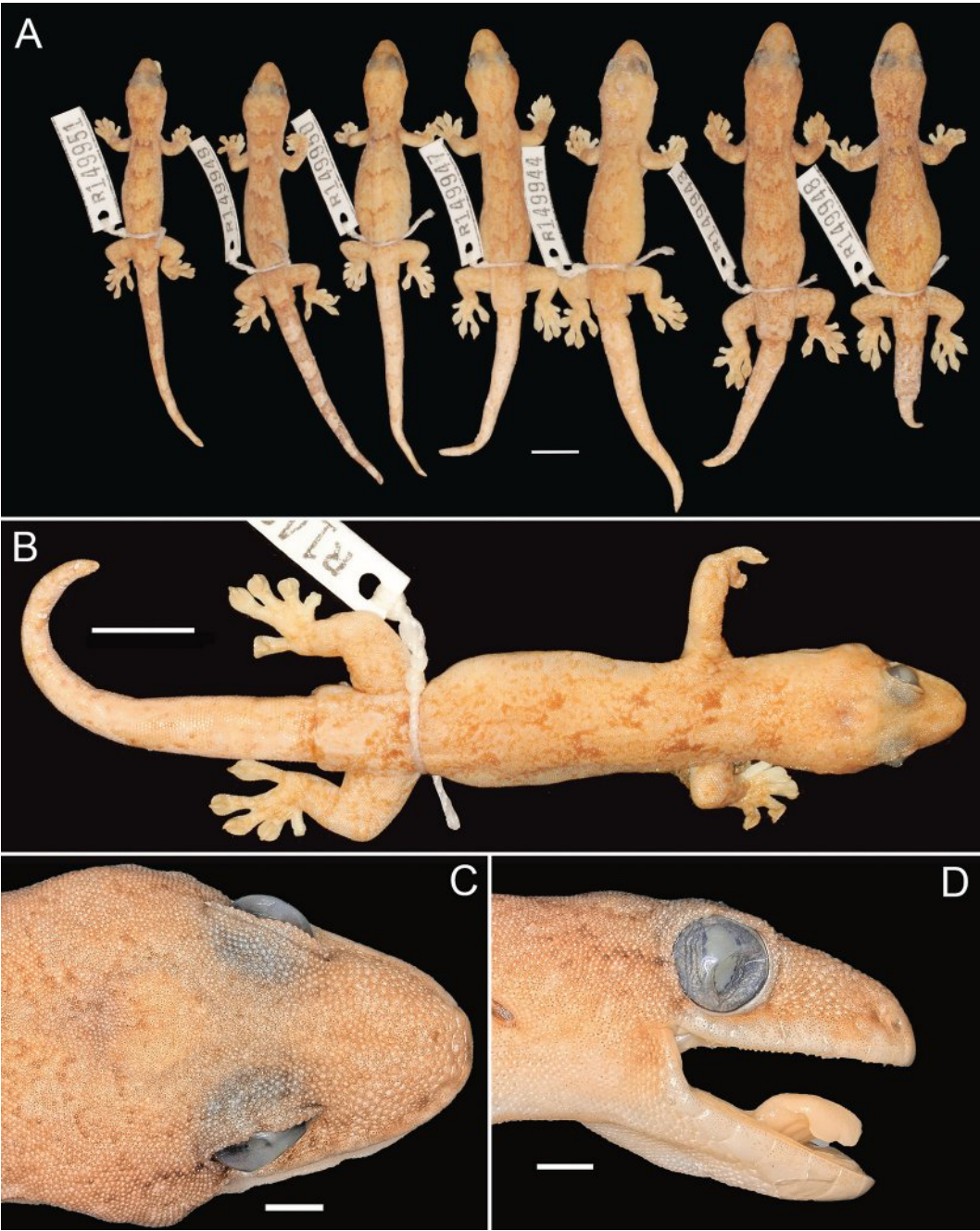


FIGURE 50. *Bavayia jourdani* sp. nov. A) Paratype series. B–E) Holotype MNHN-RA-2022.0044 (ex. AMS R.149946): B) whole body dorsal view; C) dorsal view of head; D) right lateral view of head. Scale bars: A–B = 10 mm, C–E = 2 mm.



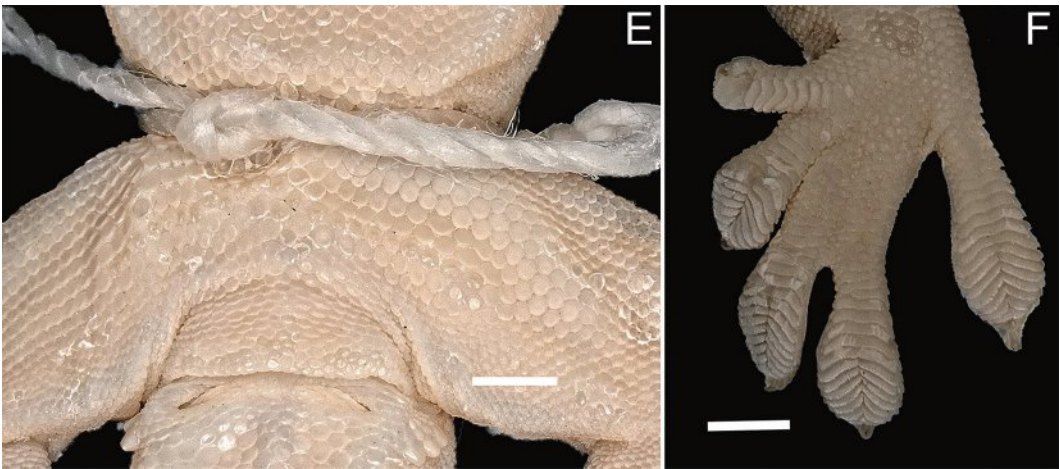


FIGURE 50 (continued). *Bavayia jourdani* sp. nov. Holotype MNHN-RA-2022.0044 (ex. AMS R.149946). E) cloacal region; F) ventral view of right pes. Scale bars = 2 mm.

Among other members of the *B. montana* Clade, *B. jourdani* is distinguished from *B. mandjeliensis* sp. nov. and *B. renevierorum* sp. nov. by its typically lower number of precloacal pores (23–32 vs. 26–37 and 27–44, respectively), and from *B. kopeto* sp. nov. by its narrower head and more distinct neck. In contrast to *B. montana*, it usually has a poorly developed canthal stripe and the paired upper temporal streaks, if present, are irregular do not extend to the shoulder. Its relatively strongly contrasting light and dark dorsal markings and presence of white flecks on or just anterior to the dark transverse markings distinguish it from *B. kopeto* sp. nov. and *B. koniambo* sp. nov. and its somewhat larger and less rugose snout scales differentiate it from *B. kanaky* sp. nov.

**Description:** Based on holotype — MNHN-RA-2022.0044 (ex. AMS R.149946), an adult male, Snout-vent length (SVL) 59.8 mm; trunk relatively long, robust, depressed. Head oblong, short (HeadL 23% SVL), wide (HeadW 81% HeadL), not depressed (HeadD 44% HeadL), neck indistinct; slight interorbital/frontal depression present, canthus weakly developed; snout relatively long (EyeSn 47% HeadL), much longer than eye diameter (OrbD 26% HeadL). Granular scales on snout approximately twice to three times diameter of those on occipital region. Pupil vertically oriented with crenelated margins; superciliary scales in posteriormost quadrant of orbit slender, elongate, pointed. Ear opening approximately. Twice as high as wide, canted posterodorsally to anteroventrally; eye to ear distance much greater than the diameter of eye (EyeEar 157% OrbD). Rostral rectangular, much broader than high, no rostral crease, contacted posteriorly by one small and one large internasal and two slightly enlarged supranasals, contacted posteroventrally by first supralabial. Nostrils oval and anterolaterally oriented, surrounded by three postnasals, one supranasal, and the rostral, in broad contact with first supralabial. One large rectangular internasal and one small squarish internasal between supranasals. Mental subtriangular, wider than deep; first infralabials in extensive contact behind the mental, each in contact posteriorly with three enlarged anterior postmental chin shields (both in contact with median postmental). First three to five rows of chin shields larger than remaining throat scales. 9 L, 7 R enlarged supralabial scales, of which the posteriormost three are beneath the eye; 9 L, 8 R infralabial scales; 39 interorbital scale rows between superciliaries at midpoint of orbit, 14 interorbitals between the orbital margins of the frontal bone.

Dorsal scales small, homogeneous, very slightly conical, granular; ventral scales slightly larger than dorsals, subimbricate, rounded to hexagonal, enlarged posteriorly on the body. Approxi-

mately 137 scale rows around midbody. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Preloacal pores difficult to distinguish, 25 in two rows; anterior continuous row of 23 pores, second row of 2 pores. Forearm and crus short (12% and 14% of SVL, respectively), axillary pockets shallow. Digits short and very wide distally, all bearing claws, those on digit I of both manus and pes greatly reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital lamellae paired distally, undivided basally. Distalmost lamella of digits II–V, manus and pes, undivided. Apical plates of digit I of manus and pes asymmetrical, with claw positioned in a notch between a larger medial and smaller lateral scansor. Lamellar counts from right side of holotype 7-11-14-14-12 manus and 8-12-14-15-13 pes.

TailL 45.0 mm (of which 36 mm is regenerated), approximately 75% of snout-vent length, tapered, stout, roughly oval in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, rectangular, arranged in regular rows. Surface of tail weakly segmented, caudal scale rows forming whorls, each whorl ~7 dorsal scale rows and 6 ventral scale rows long; midventral caudal scales not enlarged. Scales on pygal portion of tail much smaller ( $\frac{1}{2}$  to  $\frac{1}{3}$ ) than post pygal scales. Cloacal spurs consisting of three of smooth, conical, blunt-tipped, slightly compressed, posterodorsally-directed raised scales just posterior to each side of the cloaca.

**Color in preservative:** Dorsum and flanks beige to light brown with a pattern of irregular, darker brown, narrow transverse bands. Five bands from shoulder to sacrum, with an additional band on the nape. Central portions of each marking most distinct, posterior abdominal band altogether indistinct. Region between bands with speckles and small irregular markings matching the transverse bands in color. Anterior to each dark band is a pale cream to beige blotch or saddle within which there are scattered sparse dark markings; behind each bar is an area of denser spotting or speckling. Anterior to the dark band on nape the head is largely a uniform beige with scattered faint darker markings. Thin broken parallel lines extend posteriorly from the orbit but fade anterior to the ear. The limbs are patterned like the trunk with mottling and some larger pale blotches. The pygal portion of the tail bears an irregular cream-colored patch, bordered posteriorly by a darker brown chevron coincident with the tail base constriction. A single cream blotch with ill-defined borders is present on the small portion of original tail present; the regenerate is cream-colored with small, diffuse, scattered light brown spots and dashes. Body venter cream to pearly white, with no speckling or dark pigmentation.

**Color in life:** (based on life photos of a non-type specimen, see Fig. 43G). Ground color pale purplish brown with undertones of pale mustard yellow overlain by sparse to dense, irregular, dark brown markings and scattered white granules. Five large ashy blotches or saddles between shoulder and sacrum, each bordered posteriorly by bold, though incomplete dark brown border, itself incorporating or bordering an incomplete row of small white spots. Areas between the pale blotches occupied by bands band of speckled/mottled skin narrower than the blotches. A series of approximately ten diffuse off-white spots extends between the limb insertions on the lower flank. Majority of head dorsum pale; occiput and temporal regions covered by irregular ashy blotches subdivided by irregular brown lines, spots and dashes; from the interorbital region forward the pale areas are suffused with yellow and there is a yellow ring around the eye. There are irregular dark markings on the snout, antorbitally, and behind the eye; the labial scales are yellowish with brown markings. The limbs are mottled and speckled like the ground pattern of the trunk. The light marking over the sacrum is nearly identical in color to those of the trunk but is slightly brighter. On the postpygal portion of the tail there are seven light markings proximal to the regenerated tail tip. Each is off white with a slight yellowish tint and has at least partial dark brown borders and internal mark-

ings. The interspaces, which are equal to or less than the length of the pale markings are mottled with purplish-brown and yellowish-white. The regenerated tail tip is a pale purplish brown with scattered irregular dark brown markings. The ventral surface of the trunk is a pale yellow, palest under the throat and more intense under the thighs and in the precloacal region. The tail venter is also pale yellow with scattered diffuse brown markings and areas of more intense yellow, especially distally.

**Variation:** Mensural features of paratypes are presented in Table 17. Heads of most specimens more clearly offset from necks in most specimens. The paratypes have from one to four internasals. In some specimens the first infralabials are bordered posteriorly by a total of only three enlarged postmental chin shields. Male paratypes have 23–32 precloacal pores arranged in either two or three rows, the third row, when present, invariably having a single pore; no pores or dimples in females. Longest original tail 99% SVL (CAS 265742, ex. AMS R.149951). Color pattern highly variable, but always with a series of 4–5 mostly symmetrical dark transverse bars or chevrons, each preceded by a pale blotch (if asymmetrical, pattern still regular with left and right sides more-or-less phase shifted). Paratypes with complete or near complete tails exhibit seven or eight pale markings on the tail (including the tip), with mostly well-delineated anterior and especially posterior thin brown borders; the pale markings and brown interspaces are approximately equal in length.

TABLE 17. Mensural data from the type series of *Bavayia jourdani* sp. nov.; \*tail regenerated.

	Holotype	Paratypes						
	MNHN-RA 2022.0044	AMS R.149944	AMS R.149950	AMS R.149943	AMS R.149951	AMS R.149949	AMS R.149948	AMS R.149947
Sex	M	M	F	M	F	M	F	M
SVL	59.8	56.2	50.0	64.0	42.8	49.1	62.3	55.5
ForeaL	7.3	7.0	5.0	7.6	5.0	5.4	7.0	6.6
CrusL	8.6	8.0	6.0	8.3	6.0	6.8	8.5	7.6
TailL	45.0*	43.5*	48.3	35.6*	42.3	47.1	23.7*	41.1*
HeadL	13.6	14.7	11.9	14.7	10.9	12.9	15.5	14.1
HeadW	11.0	11.0	8.4	11.6	7.5	8.7	10.5	9.5
HeadH	6.0	5.9	4.6	6.0	4.3	4.5	5.3	5.4
OrbD	3.5	3.3	3.1	3.7	2.4	3.2	3.5	3.1
EyeEar	5.5	5.1	4.2	5.7	3.8	4.2	5.2	4.5
SnEye	6.4	6.4	5.2	6.4	4.7	5.2	7.0	5.6
NarEye	5.1	4.7	4.1	5.0	3.6	3.9	5.0	4.2
InterOrb	4.6	4.5	4.3	4.9	3.5	4.0	5.0	4.5
EarL	1.6	1.4	1.3	1.5	1.0	1.1	2.1	1.7
InterNar	1.8	1.6	1.4	2.0	1.2	1.5	1.7	1.7

**Etymology:** The specific epithet is a patronym honoring our friend and colleague Hervé Edmond Henri Jourdan (born 1967) of IRD (Institut de Recherche pour le Développement) Nouméa, whose assistance has facilitated our work in localities throughout New Caledonia.

**Distribution:** All known specimens have been collected on the ultramafic Massif de Mé Maoya, or nearby Pic Néva in the western Chaîne Centrale (Fig. 44). NMBA 6954 from Ni is likely *B. jourdani* sp. nov. and is plotted here, but the specimen requires reexamination.

**Natural History:** Recorded active at night on trees and understory vegetation in mid elevation closed-forest habitat (Mé Maoya, Fig. 49D), and from the edge of low-mid elevation semi-cleared closed-forest habitat (Pic Néva area). The species is insectivorous and females produce two-egg clutches. Trombiculid mites have been found on the trunk, limbs and tails of individuals of this species.

**Conservation Status:** *Bavayia jourdani* sp. nov. meets the criteria (D2) to be categorized as Endangered (B1ab(ii, iii) + B2ab(ii, iii)) on the IUCN Red List. It has a very small distribution and comprises two disjunct populations, one on the Mé Maoya Massif in the central-west ranges of



Grande Terre with an estimated area of potential occurrence of 100 km<sup>2</sup>, and the other on the ranges near Bourail with an estimated area of potential occurrence of 60 km<sup>2</sup>. It is presumed to have suffered a reduction in population size and extent as a result of past loss and degradation of humid forest habitat from wildfires across its range (Ibanez et al. 2019), and from clearing for agriculture in the ranges near Bourail. It is considered to be at a high (Bourail) to moderate (Mé Mayoia) level of threat from habitat degradation by introduced deer and pigs which threaten forest habitat quality (damaging ground daytime sheltering sites and the abundance and structure of understory shrubs used for foraging) (de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-Wichatitsky 2006), and a high (Bourail) to moderate (Mé Mayoia) level of threat from the introduced Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from arboreal sheltering and foraging sites, and to affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001). The population at Mé Mayoia is also at a moderate level of threat from predation by cats (Palmas et al. 2017), and from competition for resources by the introduced House Gecko (*Hemidactylus frenatus*) which is able to migrate into forest habitat along man-made tracks.

***Bavayia renevierorum* sp. nov.**

Figures 43I–J, 51.

**Holotype:** MNHN-RA-2022.0042 (ex. AMS R.146390), Mt. Aoupinié (1 km radius of logging camp, Province Nord, New Caledonia, 21°09'19"S, 165°19'12"E, coll. R.A. Sadlier and A.M. Bauer, 6 January 1995).

**Paratypes:** AMS R.167292\*, Massif du Tchingou, 20°53'44.42"S, 165°00'55.28"E, coll. A.H. Whitaker and V.A. Whitaker, 1 July 2006; AMS R.146391, CAS 265743 (ex. AMS R.146389), 198723, data as for holotype; AMS R.146421, locality and collectors as for holotype, 7 January 1995; AMS R.146397, Mt. Aoupinié (between forestry camp and tower), Province Nord, New Caledonia, 21°10'25"S, 165°18'42"E, coll. R.A. Sadlier, 17 June 1996; CAS 198739, Mt. Aoupinié (925 m), Province Nord, New Caledonia, 21°10'35.58"S, 165°16'3.69"E, coll. R.A. Sadlier and A.M. Bauer, 6 January 1995; CAS 265744\* (ex. AMS R.149479), 265745–46 (ex. AMS R.149480–81), Forêt Plate (campsite), Province Nord, New Caledonia, 21°06'56"S, 165°06'54"E, coll. R.A. Sadlier, 23 June 1996.

**Referred Material:** (all localities in Province Nord) CAS 198721, AMS R.167260–61\*, Massif du Tchingou, 20°53'44.42"S, 165°00'55.28"E; CAS 157694, Poindimié, 20°57'S, 165°20'E (180 m); CAS 265990\*, 265991–94, Nemeretina, 6.2 km from coast road on track to Pic d'Amoa, 20°57'11"S, 165°17'19"E; AMS R.149482\*, Forêt Plate (campsite), 21°06'56"S, 165°06'54"E; MNHN 1985.113, Forêt Plate, 21°07'36"S, 165°06'42"E; MNHN-RA-1981.172–173, Forêt Plate [no precise locality]; AMS R.77665–75, R.77772–81, R.90189, CAS 198722\*, Mt. Aoupinié (forestry camp), 21°09'19"S, 165°19'12"E; AMS R.146393–96, R.149403–04, Mt. Aoupinié (between forestry camp and tower), 21°10'25"S, 165°18'42"E; AMS R.149431\*, UMMZ 219097–98, Mt. Aoupinié (creek crossing 1 km NE of forestry camp by road), 21°08'S, 165°19'E; QM J44031, J43978, Mt. Aoupinié, 21°10'S, 165°18'E.

**Diagnosis:** A relatively large species of the *Bavayia montana* Clade (maximum SVL 68.5 mm, AMS R.146391, see Remarks), body robust, original tail 103% SVL. It can be distinguished from its congeners by the following combination of characteristics: claw of digit I positioned in a groove within the apical lamella, which is divided into a larger medial and smaller lateral portion; two to four rows of precloacal pores in males, 27–44 pores in total; first pair of infralabials usually in contact behind the mental; midbody scale rows ~144; 13–16 mostly paired lamellae under digit IV of pes. Dorsum and flanks chocolate brown with a pattern of 4 (occasionally 5) dark brown, narrow, transverse bands between the limb insertions, with additional bands on the nape and tail base; each

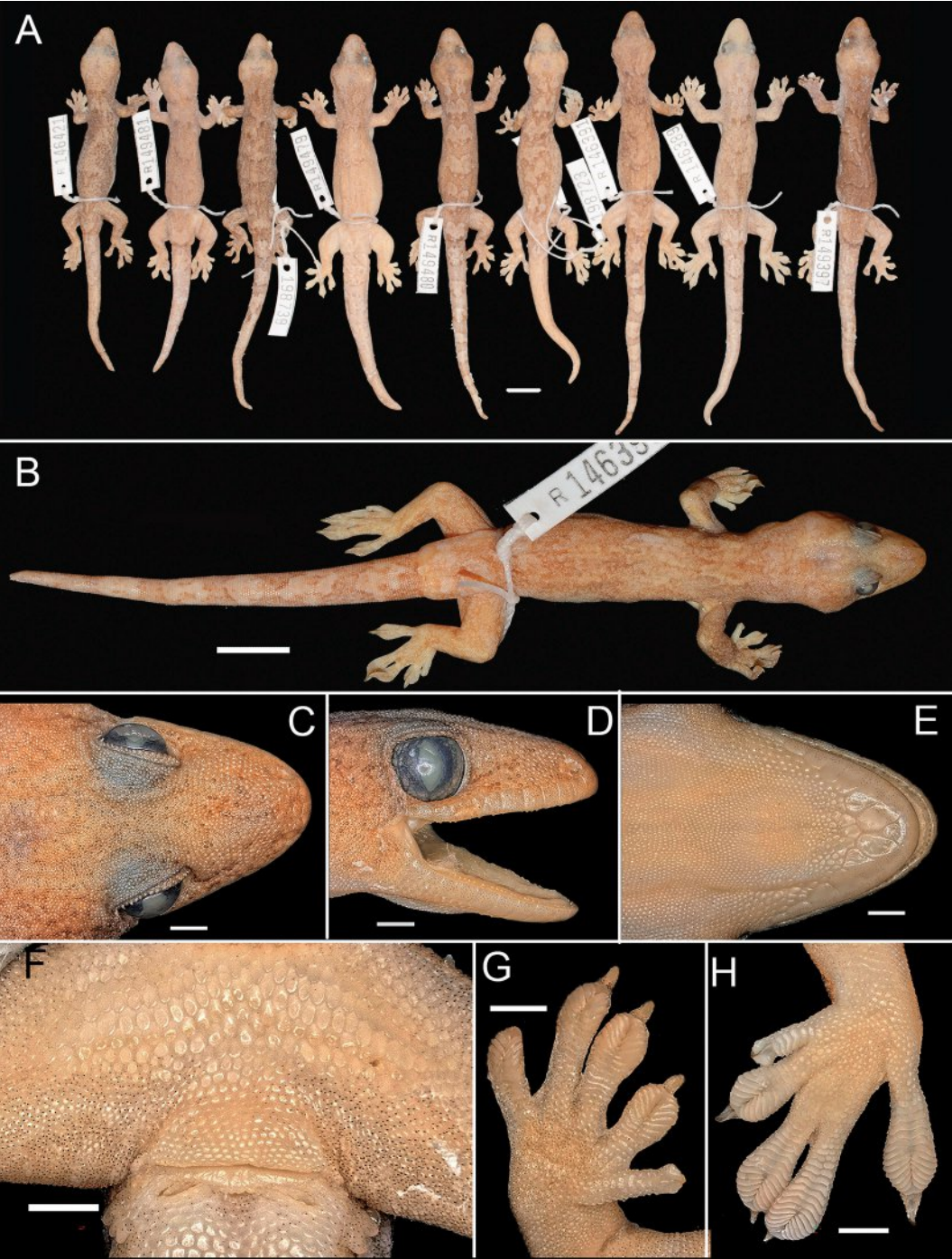


FIGURE 51. *Bavayia renevierorum* sp. nov. A) Paratype series. B–H) Holotype MNHN-RA-2022.0042 (ex. AMS R.146390): B) whole body dorsal view; C) dorsal view of head; D) right lateral view of head; E) ventral view of head; F) cloacal region; G) ventral view of right manus; H) ventral view of right pes. Scale bars: A–B = 10 mm, C–H = 2 mm.

dark band with a transverse series of whitish flecks or spots and preceded by a predominately pale blotch, which may be bilaterally symmetrical or have left and right sides phase shifted. Dark areas of background coloration on dorsum (anterior to pale blotches) bearing a contrasting dense mosaic of whitish, yellowish, or light brown scales, sometimes continuing on to the dorsum of the head. Dark canthal stripe poorly developed; paired pale longitudinal markings or patches on upper temporal region do not extend posteriorly beyond dark nape band. Pale blotches on tail well-demarcated, bright and contrasting with alternating darker interspaces, up to 8 on original tails.

Among other members of the *B. montana* Clade, *B. renevierorum* sp. nov. is distinguished from all species by its larger number of precloacal pores (27–44), although there is extensive overlap with *B. mandjeliensis* sp. nov. (26–37). It further differs from *B. kopeto* sp. nov. by its considerably larger size (68.5 mm vs. 59.0 mm maximum SVL), narrower head, and more pronounced neck. In contrast to *B. montana*, it usually has a poorly developed canthal streak and paired upper temporal streaks, if present, do not extend uninterrupted to the shoulder. Its strongly contrasting light and dark dorsal markings distinguish it from, *B. koniambo* sp. nov., in which the contrast is more subdued. *Bavayia renevierorum* sp. nov. is most similar to *B. mandjeliensis* sp. nov., but differs in lacking a pronounced frontonasal depression and in having the pale pygal blotch whitish or ashy (vs. similar in color to the pale blotches of the trunk).

**Description:** Based on holotype — MNHN-RA-2022.0042 (ex. AMS R.146390), an adult male. Snout-vent length (SVL) 65.2 mm; trunk relatively long and gracile, depressed. Head oblong, moderately long (HeadL 27% SVL), moderately wide (HeadW 69% HeadL), not depressed (HeadD 36% HeadL), distinct from neck; interorbital/frontal depression present, canthus weakly developed; snout of moderate length (EyeSn 44% HeadL), twice eye diameter (OrbD 22% HeadL). Granular scales on snout approximately twice diameter of those on occipital region. Pupil vertically oriented with crenelated margins; superciliary scales of posterior quadrant of orbit slender, elongate, pointed. Ear opening approximately twice as high as wide, canted posterodorsally to anteroventrally; eye to ear distance much greater than the diameter of eye (EyeEar 147% OrbD). Rostral rectangular, much broader than high, divided by a partial rostral crease running downward for a distance of <20% of the rostral height, contacted posteriorly by two rectangular internasal scales and several internasal granules, and two enlarged supranasals, contacted posteroventrally by first supralabial. Nostrils rounded and anterolaterally oriented, surrounded by five postnasals, one supranasal, and the rostral, in narrow contact with first supralabial. Mental subtriangular, somewhat wider than deep; first infralabials in extensive contact behind the mental, each in contact posteriorly with two enlarged postmental chin shields (both contacting median pentagonal postmental). First three rows of chin shields larger than remaining throat scales. Ten enlarged supralabial scales, of which the posteriormost three are beneath the eye; 9 L, 10 R infralabial scales; 45 interorbital scale rows between superciliaries at midpoint of orbit, 15 interorbitals between the orbital margins of the frontal bone.

Dorsal scales small, homogeneous, very slightly conical, granular; ventral scales slightly larger than dorsals, subimbricate, enlarged posteriorly on the body. Posterior abdominal scales rounded, mid-abdominal scales elongate, diamond-shaped. Approximately 144 scale rows around mid-body. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Precloacal pores large but difficult to distinguish, 27 in three rows; anterior continuous row of 21 pores, second row of 5 pores, third row a single midline pored scale. Forearm and crus short (12% and 15% of SVL, respectively), axillary pockets shallow. Digits long and relatively wide distally, all bearing claws, those on digit I of both manus and pes greatly reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital



lamellae paired distally, undivided basally. Distalmost lamella of digits II–V, manus and pes, undivided. Apical plates of digit I of manus and pes asymmetrical, with claw positioned in a notch between a larger medial and smaller lateral scansor. Lamellar counts from right side of holotype 5-10-13-13-11 manus and 6-11-13-15-13 pes.

TailL 63.4 mm (distal 9.0 mm regenerated), approximately 97% of snout-vent length, tapered, stout, roughly oval in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, rectangular, arranged in regular rows. Surface of tail weakly segmented, caudal scale rows forming whorls, each whorl ~7 dorsal scale rows and 6 ventral scale rows long; midventral caudal scales not enlarged. Scales on pygal portion of tail much smaller ( $\frac{1}{2}$  to  $\frac{1}{3}$ ) than post pygal scales. Cloacal spurs consisting of a set of three of smooth, conical, blunt-tipped, slightly compressed, posterodorsally directed, raised scales just posterior to each side of the cloaca.

**Color in preservative:** Dorsum and flanks mottled and speckled light to medium brown with a series of paler blotches or saddles more-or-less symmetrically arranged on the trunk, four such markings between the nape and sacrum. Blotches whitish to beige with some small scattered brown markings within it; posterior margins bordered by a narrow, wavy, more-or-less continuous mid-brown border; pale marking between shoulder and midbody largest. Dorsum of head anterior to dark nape band mostly beige with scattered darker granules; an extensive, ill-defined dark area from posterior margin of orbit onto temporal region. Labial scales mostly cream-colored with sparse brown speckling. Limbs similar to trunk, with light and mid-brown mottling and speckling. Pygal portion of tail dorsum with a whitish-cream marking having posterior apex coinciding with the tail base constriction and two less extensive lateral points. The original portion of the post-pygal tail bears five cream-colored markings, each longer than wide and surrounded by a thin medium brown border. Near the middle of each marking are a pair of brown markings that either lie within the beige field, or which mark the edge of a constriction in it. The regenerated part of the tail has the same colors as the remainder but lacks any definite pattern. Venter pearly white to very pale yellow with fine brown speckles scattered sparsely around the lateral margins of the body, head and limbs.

**Color in life:** (based on life photos of non-type specimens, see Figs. 43I–J). Ground color purplish- to chocolate brown overlain by a dense network of whitish to yellowish, more-or-less uniformly distributed speckles. In the representative individuals 4–5 light purplish brown, mostly symmetrical blotches or saddles, each containing both light speckles and dark, purplish brown vermiform markings and bounded, at least posteriorly, by a narrow, more-or-less, purplish-brown transverse line. An additional pair of pale markings, separated medially, on the nape and occiput. Head dorsum either beige and patternless, with scattered darker areas on the snout and temporal regions, or mottled and speckled like the trunk with extensive whitish speckling on the temporal region, interorbital region and posterior portion of the snout. Limbs speckled like the trunk, with or without pale blotches; pale yellowish markings crossing the digits and metapodial segments, especially of hindfeet, at right angles to their long axes. Pale marking on pygal portion of tail whiter than those on trunk, with a thin dark brown posterior border. Pale markings on post-pygal tail (only one per tail in specimens in life photographs) pale yellowish cream to ashy with a thick brown posterior border. Ventral coloration pale to bright yellow.

**Variation:** Mensural features of paratypes are presented in Table 18. The paratypes have from one to four internasals. The first infralabials are bordered posteriorly by either three or four enlarged chin shields, but in AMS R.146421 the infralabials are short and separated posteriorly by the mental and there are two bordering chin shields plus a series of small granules. Male paratypes with 27–44 precloacal pores in two to four rows of precloacal pores, first row with 18–23 pores, second row with 5–15 pores, third row with 0–7 pores, fourth row, if present, with a single pore;

TABLE 18. Mensural data from the type series of *Bavayia renevierorum* sp. nov.; \*tail regenerated.

	Holotype	Paratypes									
	MNHN-RA 2022.0042	AMS R.149481	AMS R.149479	CAS 198739	CAS 198723	AMS R.146421	AMS R.149397	AMS R.149480	CAS 265743	AMS R.146391	AMS R.167292
Sex	M	F	F	M	M	F	F	M	M	M	M
SVL	65.2	61.6	66.5	60.0	65.2	63.5	68.2	62.2	67.6	68.5	57.4
ForeaL	8.0	7.2	7.9	7.0	7.9	7.9	8.2	7.5	7.9	8.0	7.4
CrusL	9.7	8.4	9.6	8.7	9.0	8.8	9.2	9.0	9.6	9.4	8.5
TailL	63.4	47.1*	56.0	59.5*	51.6*	50.8*	69.5*	64.1	62.6*	67.4	47.9*
HeadL	17.3	16.3	17.2	15.8	17.2	16.1	17.9	16.9	18.4	17.2	14.4
HeadW	12.0	11.4	12.4	11.0	11.9	11.2	12.7	12.7	12.7	12.0	11.1
HeadH	6.3	6.1	6.6	5.8	6.4	6.0	7.2	6.3	6.8	6.9	5.5
OrbD	3.8	3.5	3.6	3.3	3.6	3.8	3.7	3.4	4.1	3.9	3.5
EyeEar	5.6	5.6	5.5	5.8	5.3	5.3	6.0	5.4	6.0	5.7	5.3
SnEye	7.6	6.9	7.2	7.2	7.2	7.3	7.7	7.1	7.8	7.4	6.5
NarEye	5.9	5.3	5.7	5.3	5.2	5.0	5.4	5.3	5.3	5.2	4.8
InterOrb	5.3	4.8	5.3	4.8	5.2	4.9	6.0	4.8	5.1	6.0	5.6
EarL	2.3	1.7	1.7	1.8	2.0	2.0	1.8	2.0	1.7	1.7	1.8
InterNar	2.1	2.1	2.1	2.0	2.1	1.9	2.1	2.1	2.0	2.0	1.9

no pores or dimples in females. Longest original tail 103% SVL (CAS 265745). Color pattern highly variable, but always with a series of 4–5 regular to irregular, pale dorsal markings, sometimes fragmented, on a background of light and dark speckling. Brown posterior margins of pale spots sometimes incorporating a transverse series of small whitish spots. Pale occipital marking mostly divided, but single in AMS R.167892, which has the most divergent pattern of any of the types. Up to eight pale dorsal markings on original post-pygal portion of tail.

**Etymology:** Named for our friends of more than 35 years, the Renevier family (Roseline, Alain, and their now grown children Yann and Cybèle), formerly of Poindimié and for many years of Nouméa. Their hospitality was instrumental in making us return again and again to New Caledonia.

**Distribution:** Restricted to the eastern portion of the Chaîne Centrale between Forêt Plate and the Massif de Tchingou in the Province Nord (Fig. 44).

**Natural History:** *Bavayia renevierorum* sp. nov. has been recorded from humid forest habitat, primarily at mid elevation, but also at high elevation on Mt. Aoupinié (925 m) and low elevation at Poindimié (180 m), and from high elevation maquis on Massif du Tchingou (900 m). On Mt. Aoupinié at middle elevations it has been recorded on trunks and branches of smaller trees in closed-forest habitat and at the edge of forest clearings.

At Poindimié it has been found sheltering by day inside moist rotten logs. Rösler (1998, 2003) reported on reproduction in captive conditions, noting egg size averages of 14.3 x 8.6 mm, with an average initial weight of 0.61 g and incubation times of 50–60 days, with laying taking place during most months of the year. Some specimens have trombiculid mites on the trunk, limbs or tail.

**Conservation Status:** *Bavayia renevierorum* sp. nov. meets the criteria (B1ab(iii) + 2ab(iii)) to be categorized as Endangered on the IUCN Red List. It has a limited distribution, being known only from five locations in the central and central-east ranges, with an estimated extent of occurrence of ~900 km<sup>2</sup>. Population trend is unknown but it is presumed to have suffered a reduction in population size and extent as a result of past loss and degradation of humid forest habitat from wildfires, and clearing of humid forest for forestry activities at Mt. Aoupinié and Forêt Plate. It is considered to be at a high level of ongoing threat from the impact of fire on forest edge habitat (Ibanez et al. 2019), and the population on Massif du Tchingou is potentially under threat from mining activities (Pascal et al. 2008). It is also at a high level of threat from habitat degradation by introduced deer which impact on forest habitat quality by altering the abundance and structure of understory shrubs used for foraging (de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-

Wichatitsky 2006), and from the introduced Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from arboreal sheltering and foraging sites, and to affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001).

**Remarks:** Rösler (2003) reported a captive female “*B. montana*” from Poindimié as reaching 75 mm SVL, but this size exceeds any wild caught adults we have examined and it is possible that such a size may only be reached under optimized artificial conditions. The karyology of this species (as *B. montana*) was discussed and mitotic chromosomes figured by King (1987) and King and Mengden (1990). CAS 157694 was illustrated and identified by Bauer and Vindum (1990) as *B. montana* and Rösler (1998, 2003) provided reproductive data under this name as well. This species was illustrated by a color life photo in Whitaker and Whitaker (2007) as *B. montana*. *Bavayia montana* from Mt. Aoupinié referred to by Watkins-Colwell (2003) are likewise referable to this species.

### *Bavayia borealis* Clade

**Content:** *Bavayia borealis* sp. nov.; *B. cocoensis* sp. nov.; *B. bouldina* sp. nov.; *B. ultramaficola* sp. nov.; *B. periclitata* sp. nov.; *B. whitakeri* sp. nov.

**Definition:** Members of the *B. borealis* Clade are distinguished from other *B. cyclura* Group taxa by their moderate body size (maximum 52.8–69.5 mm SVL vs. most species reaching larger sizes in the *B. cyclura* and *B. crassicolis* clades). First infralabials in contact behind the mental or separated by the contact of the mental and median postmental scale. Jaw adductors not hypertrophied (vs. enlarged in most *B. crassicolis* Clade taxa and in *B. kopeto* sp. nov.). Distal portions of digits II–V moderately narrow to wide. Males with 1–3 (usually 1–2) rows of precloacal pores, maximum 46 pores in total, usually <33 (except in *B. periclitata* sp. nov.). The dorsum typically bears 4–6 alternating dark, transverse bands and pale blotches between the limb insertions (vs. 5–6 in the *B. goroensis* Clade) and usually with extensive, contrasting whitish to yellowish speckling across areas of background color (vs. typically absent in other clades except *B. montana*), dorsal pattern often asymmetrical; venter pale to bright yellow.

#### *Bavayia borealis* sp. nov.

Figures 52G–H, 53.

**Holotype:** MNHN-RA-2022.0048 (ex. AMS R.163152), Île Balabio, Bweroro, Province Nord, New Caledonia, 20°08'15"S, 164°12'25"E, coll. A.H. Whitaker and V.A. Whitaker, 8 October 2002.

**Paratypes:** AMS R.163136\*, R.163137, R.163153, Île Balabio, Maa la Xweni, Province Nord, New Caledonia, 20°08'33"S, 164°12'32"E, coll. A.H. Whitaker and V.A. Whitaker, 8 October 2002; AMS R.163138, Île Balabio, Bweroro, Province Nord, New Caledonia, 20°08'09"S, 164°12'36"E, coll. A.H. Whitaker and V.A. Whitaker, 8 October 2002; AMS R.163140, CAS 265754\* (ex. AMS R.163139), 265755 (ex. AMS R.163141), 265756\* (ex. AMS R.163151), Île Balabio, Bweroro, Province Nord, New Caledonia, 20°08'15"S, 164°12'25"E, coll. A.H. Whitaker and V.A. Whitaker, 8 October 2002.

**Referred Material:** (all localities in Province Nord) AMS R.188657, Rivière Néhoué, 20°25'03"S, 164°13'15"E; AMS R.188635–36\*, Rivière Néhoué, 20°25'12.3"S, 164°13'04.5"E; AMS R.188637\*, Vallée Punu, Forêt d'Ougne, 24 km N Koumac, 20°20'25.4"S, 164°17'33.5"E; AMS R.150725–26, R.151345, Mt. Mandjelia (western slopes – south of Ouegoa), 20°24'15"S, 164°31'18"E; AMS R.146352\*, Mt. Mandjelia, 20°25'09"S, 164°28'29"E; QM J43970, Mt. Mandjelia, ca. 20°24'S, 164°32'E; NMBA 6895–96, 6898–903, Oubatche, 20°29'22"S, 164°40'28"E;



AMS R.165027–28\*, R.165029–30, Ouaième 20°36'57"S, 164°51'00"E; CAS 202804, 202806–07, Ouaième (0 m), 20°36'57"S, 164°51'00"E; AMS R.149330\*, CAS 205523–25, Gite Galarino, 20°30'44"S, 164°45'35"E; CAS 157695, Îlot de Hienghène, 20°38'S, 164°56'E; UMMZ 93832(1–10), Tanghène Mission, 20°40'32.25"S, 164°54'13.71"E; NMBA 6904–05, UMMZ 93830(1–9), Hienghène, 20°41'S, 164°56'E; CAS 158548, Mt. Koyaboa, 20°57'S, 165°20'E (> 110 m); CAS 158550, southern Poindimié, 20°56'S, 165°20'E; CAS 165877, 1 km W of Rte. 3 on Vallée d'Amoa road, 20°54'58.81"S, 165°17'34.15"E; CAS 159551, 162204, 162207–09, 162219, 162221, Vallée d'Amoa, 0.1–1.0 km W of Rte 3, ca. 3.3 km N Poindimié, 20°55'S, 165°17'E; CAS 165879, Hotel de la Plage, Poindimié, 20°55'50.13"S, 165°19'11.32"E; CAS 265811–14, 265815\*, 265816–21, Houailou, old airstrip, 21°15'25"S, 165°37'09"E; AMS R.172541, Mwöxö Nèbi, Cap Bocage, 21°10'55.80"S, 165°35'09.52"E; AMS R.172541, R.172543, R.172545–47, Mwöxö Nèbi, Cap Bocage, 21°11'16.23"S, 165°35'44.21"E; SAMA R57275–76, Ho Valley, 21°11'46"S, 165°31'26"E.

**Diagnosis:** A relatively large species of the *Bavayia borealis* Clade (maximum SVL 62.9 mm, AMS R.163153), body robust, neck distinct, but inflated, original tail 100% SVL. It can be distinguished from its congeners by the following combination of characteristics: claw of digit I positioned in a groove within the apical lamella, which is divided into a larger medial and smaller lateral portion; two rows of precloacal pores in males, 20–33 pores in total; first pair of infralabials in contact behind the mental or separated; midbody scale rows ~124; 10–13 mostly paired lamellae under digit IV of pes. Dorsum and flanks grayish brown to chocolate brown with a pattern of 4 mostly fragmented, narrow, dark brown, transverse markings between the limb insertions, each preceded by a pale blotch, often indistinct in preserved specimens. A pair of pale streaks extending back from the upper temporal region to the pale blotch over the shoulders, lateral edges of streaks bordered by darker brown lines or dashes that may or may not be confluent with the dark transverse markings immediately posterior to the axillae, a ground color longitudinal marking between the pale streaks on the occiput and nape. Head weakly patterned above; canthal stripe weakly developed; a pair of cream to pale yellowish spots often present at the posterolateral corners of the head dorsum in life. Left and right dark elements on tail base do not meet in the midline or barely touch. Pale markings on tails large and elongate, with short darker interspaces. Ventral coloration pale yellow.

Among other members of the *B. borealis* Clade, *B. borealis* sp. nov. is distinguished from *B. cocoensis* sp. nov., *B. ultramaficola* sp. nov., and *B. whitakeri* sp. nov. by its larger size (maximum SVL 62.9 mm vs. 53.9 mm, 52.8 mm and 53.3 mm, respectively), from *B. cocoensis* sp. nov. and *B. whitakeri* sp. nov. by its larger number of precloacal pores (20–33 vs. 16–17 and 12–19, respectively), from *B. periclitata* sp. nov. by its smaller number of precloacal pores (20–33 vs. 35–46), and from *B. bouldina* sp. nov. by having two (vs. three) rows of precloacal pores. In *Bavayia borealis* the dark, transverse dorsal markings are generally more fragmented and reduced than in other members of the clade.

**Description:** Based on holotype — MNHN-RA-2022.0048, an adult male (formerly AMS R.163152). Snout-vent length (SVL) 55.9 mm; trunk relatively short, robust, depressed. Head oblong, moderately long (HeadL 26% SVL), wide (HeadW 77% HeadL), somewhat depressed (HeadD 33% HeadL); neck relatively indistinct; slight interorbital/frontal depression present, canthus weakly demarcated; snout relatively long (EyeSn 43% HeadL), more than twice eye diameter (OrbD 20% HeadL). Granular scales on snout approximately two to three times diameter of those on occipital region. Pupil vertically oriented with crenelated margins; posterior superciliary scales slender, elongate, pointed. Ear opening about 1.5 times higher than wide, canted posterodorsally to anteroventrally; eye to ear distance much greater than the diameter of eye (Eye-Ear 182% OrbD). Rostral rectangular, much broader than high, a short median crease divides the

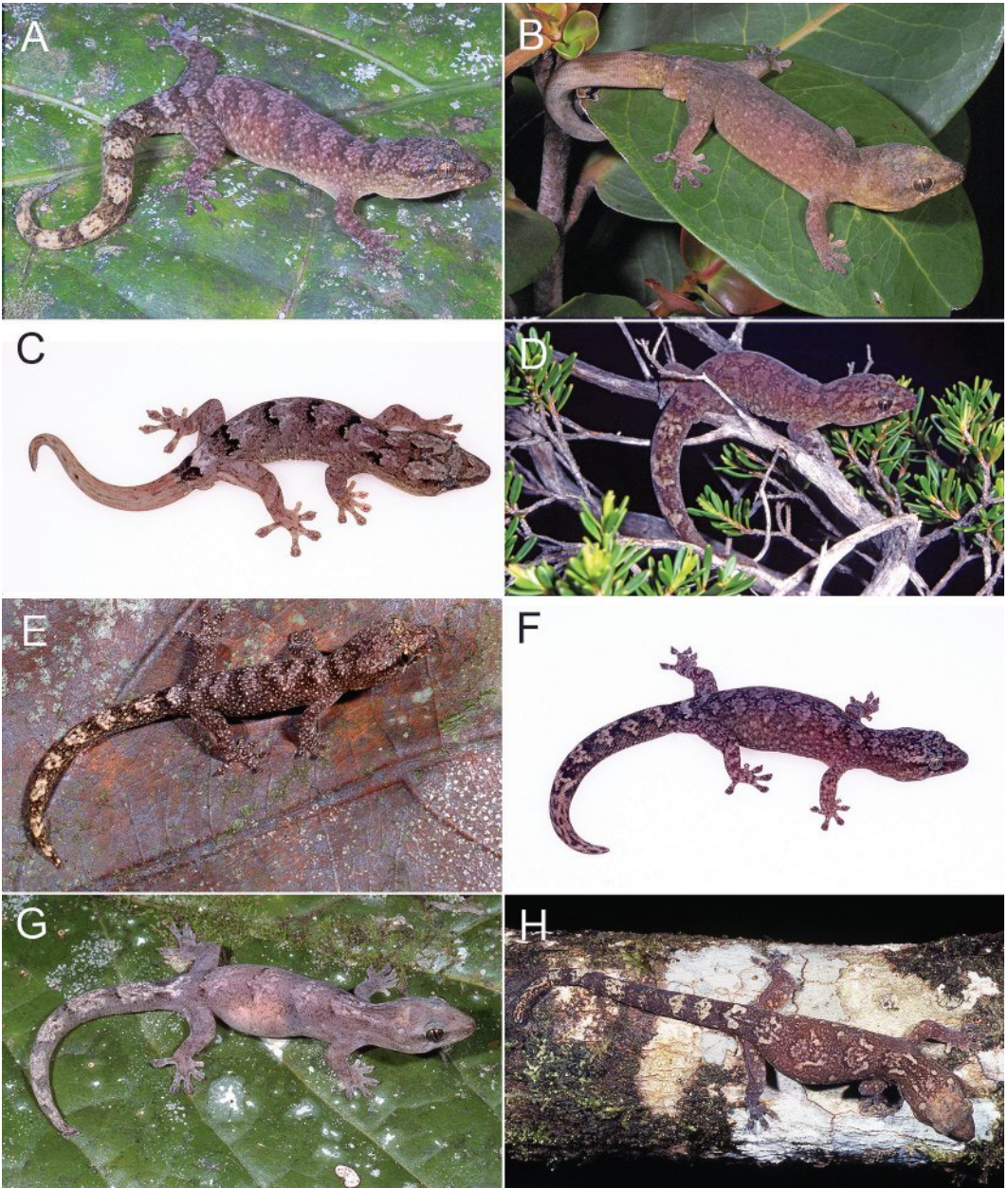


FIGURE 52. Life photographs of representatives of the *Bavayia borealis* clade. A) *B. cocoensis* (non-type AMS R.174997), Creek Coco; B) *B. cocoensis*, Creek Coco; C) *B. periclitata* (paratype AMS R.153557), Koumac Caves; D) *B. whitakeri* (holotype MNHN-RA-2022.0035), Tiébaghi. E) *B. ultramaficola* (paratype CAS 265997), Massif de Kopéto. F) *B. ultramaficola*, Plateau de Tia. G) *B. borealis* (CAS 265811), Houaïlou. H) *B. borealis*, Panié Massif. Photo D by A.H. Whitaker, all others by R.A. Sadlier.



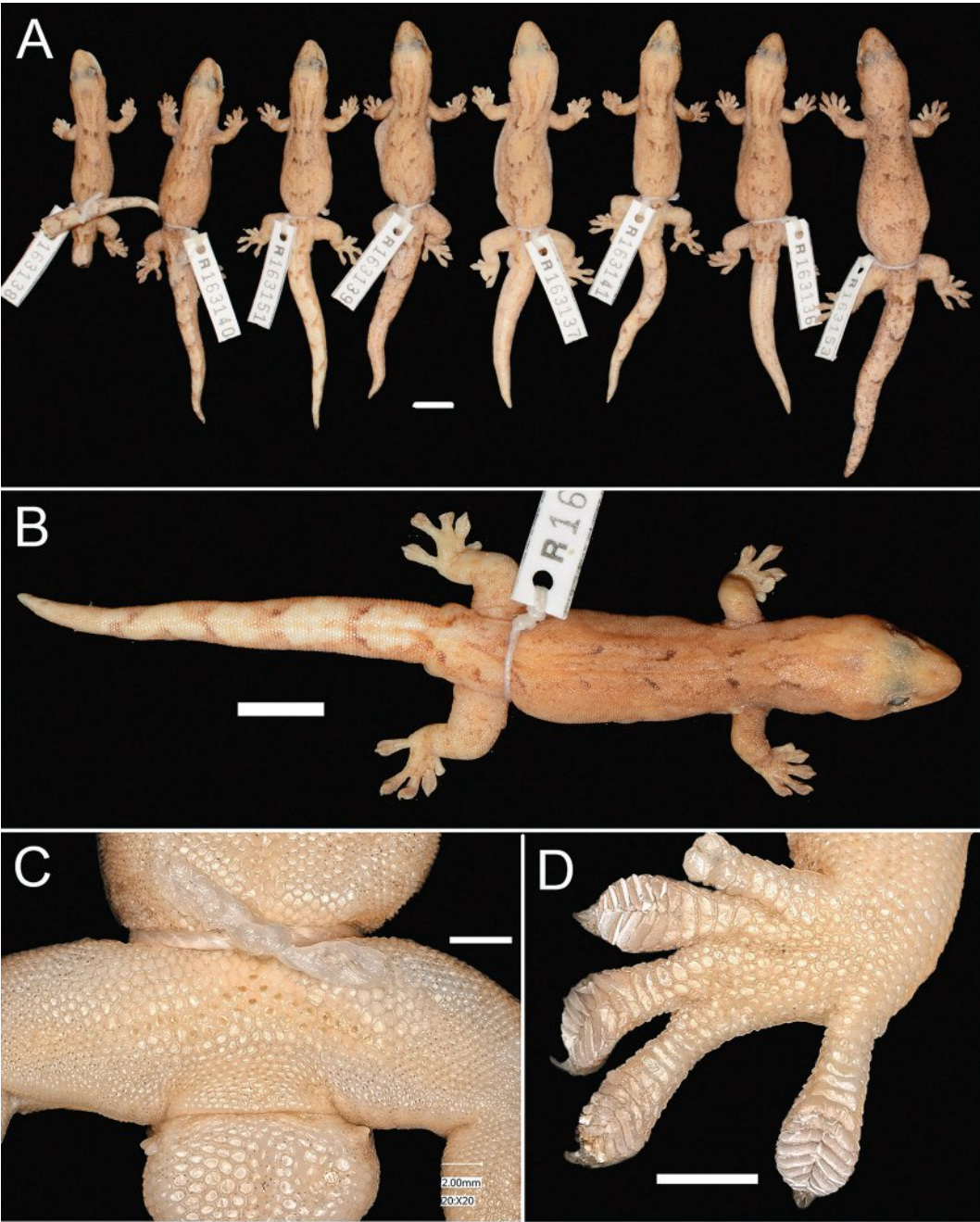


FIGURE 53. *Bavayia borealis* sp. nov. A) Paratype series. B–E) Holotype MNHN-RA-2022.0048 (ex. AMS R.163152): B) whole body dorsal view; C) cloacal region; D) ventral view of right pes. Scale bars: A–B = 10 mm, C–E = 2 mm.



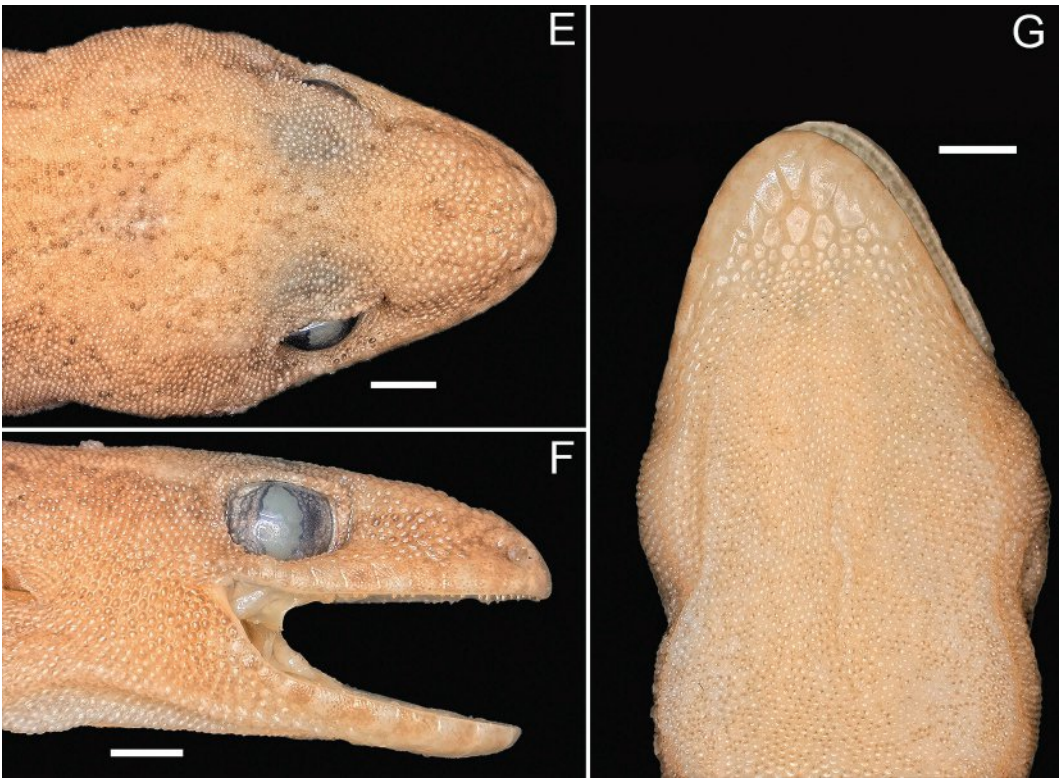


FIGURE 53 (continued). *Bavayia borealis* sp. nov. Holotype MNHN-RA-2022.0048 (ex. AMS R.163152). E) dorsal view of head; F) right lateral view of head; G) ventral view of head. Scale bars = 2 mm.

upper portion of the rostral, contacted posteriorly by a single internasal scales and two enlarged supranasals, contacted posteroventrally by first supralabial. Nostrils rounded and anterolaterally oriented, surrounded by three postnasals, one supranasal, and the rostral, in broad contact with first supralabial. Mental triangular, deeper than wide, first infralabials in separated posteriorly by an enlarged median postmental chin shield, each in contact posteriorly with median and one additional postmental chin shield. First three to five rows of chin shields larger than remaining throat scales. 10 L, 11 R enlarged supralabial scales, of which the posteriormost 3 are beneath the eye; 9 L, 9 R infralabial scales; 40 interorbital scale rows between superciliaries at midpoint of orbit, 14 interorbitals between the orbital margins of the frontal bone.

Dorsal scales small, homogeneous, very slightly conical, granular; ventral scales slightly larger than dorsals, subimbricate, enlarged posteriorly on the body. Posterior abdominal scales rounded, mid-abdominal scales elongate, diamond-shaped. Approximately 124 scale rows around midbody. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Precloacal pores large and easily distinguishable, 27 in two rows; anterior continuous row of 18 pores, second continuous row of 9 pores. Forearm and crus very short (10% and 13% of SVL, respectively), axillary pockets shallow. Digits long and wide distally, all bearing claws, those on digit I of both manus and pes greatly reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital lamellae paired distally, undivided basally. Distalmost lamella of digits II–V, manus and pes, undivided. Apical plates of digit I of

manus and pes asymmetrical, with claw positioned in a notch between a larger medial and smaller lateral scensor. Lamellar counts from right side of holotype 5-10-11-11-10 manus and 7-10-11-11-11 pes.

TailL 53.2 mm (distal 11.2 mm regenerated), approximately 95% of snout-vent length, tapered, stout, roughly oval in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, rectangular, arranged in regular rows. Surface of tail weakly segmented, caudal scale rows forming whorls, each whorl ~7 dorsal scale rows and 6 ventral scale rows long; midventral caudal scales not enlarged. Scales on pygal portion of tail approximately one-half size those of post pygal scales. Cloacal spurs consisting of 3 L and 2 R large conical, blunt-tipped, slightly compressed, posterodorsally-directed, raised scales just posterior to each side of the cloaca.

**Color in preservative:** Dorsum and flanks more-or-less uniform light to mid-brown with scattered small darker brown flecks on the dorsum and ill-defined small whitish spots on the flanks. A series of four dark brown dorsal markings on trunk between shoulder and sacrum; each roughly V-shaped but very faded and incomplete in the caudally-directed apex of the V (except for sacral marking, which is complete). The lateral surfaces of the neck just anterior to the limb insertions are separated by a wavy dark brown line into a ventral area of ground color that extends across the temporal region, through the eye, and on to the nostril and a more dorsal area that is beige and extends forward across the entire dorsum of the head. This beige area, which incorporates scattered medium brown granules, is bifid posteriorly and its arms embrace an elongate patch of ground color that is bordered posteriorly by the light blotch in front of the dark shoulder marking and anteriorly by the posteromedial parietal table. Labial scales with alternating light and dark markings. Forelimbs similar in color pattern to trunk, hindlimbs paler, mottled beige and cream with scattered medium brown granules. Pygal portion of tail with a broken V-shaped dark marking at the tail constriction, preceded by diffuse cream-colored roughly triangular blotch, with its apex directed caudally. Original portion of post-pygal tail similar in ground color to trunk and bearing four cream-colored dorsal markings and the anterior portion of a fifth. Each cream marking is bordered posteriorly by a full or partial darker brown border; anterior three cream blotches roughly oval in shape, becoming more irregular thereafter. Little or no space between adjacent pale markings. Regenerated portion of tail beige to light brown with a few scattered darker markings. Venter beige to off white with faint brownish wash and more discrete brown pigmentation spots around the lateral margins, and on throat.

**Color in life:** (based on life photos of two non-types, see Figs. 52G–H). Ground color grayish brown to chocolate brown with a series of four moderately distinct, dark chevrons or transverse wavy markings between shoulders and sacrum, each bordered anteriorly by a series of individual white granules, forming an irregular dotted line. Dark transverse markings preceded by multi-lobed grayish to ashy blotches, each well separated from one another by a band of ground color. Background and pale markings with small, irregular medium brown markings. Flanks bearing a series of small white spots between the limb insertions and carrying forward to the jaw adductors. Ashy coloration extending forward from pale shoulder patch into paired markings on either side of neck. A pair of ashy spots present on posterolateral corners of head. Darker coloration from snout through eye to shoulder present. Limbs weakly patterned, similar to dorsal ground color. Pale marking on pygal portion of tail brighter than those on trunk. Original tail grayish to chocolate brown with up to eight light-colored (ashy to cream to yellowish cream) markings on dorsum; variable in length, but as long or longer than intervening interspaces. Most boldly patterned individual (Fig. 53A) with all pale markings on head neck and trunk fragmented into multiple elements, each with a dark border; pale spots over temporal region especially evident. In this specimen most of the lighter markings have a slight yellowish cast. Ventral coloration pale yellow.

**Variation:** Mensural features of paratypes are presented in Table 19. The paratypes have 1–3 internasals. The first infralabials of all members of the type series are bordered posteriorly by 3 enlarged postmental chin shields, with both infralabials touching the largest (median) one. The first infralabials may be broad contact behind the mental or may be separated by the contact of the mental with the enlarged median postmental. The rostral may be creased or not. Adult male specimens with 20–33 precloacal pores in two rows, first row with 15–21 pores, second row with 3–12; no pores or dimples in females. Longest original tail among paratypes 100% SVL (AMS R.163151). Color pattern fairly uniform, with four more-or-less prominent, mostly symmetrical, V-shaped to wavy transverse dark brown markings between shoulders and sacrum, each preceded by a weakly to moderately well-defined pale blotch or saddle. Light blotch anterior to dark shoulder marking continuous with paired pale neck markings that are contiguous with the pale dorsum of the head. Pale head and neck markings enclose a medium brown narrow central area narrower posteriorly and broader anteriorly where it ends abruptly posteromedially on the parietal table. Dark streak from nostril to temporal region always present. Limbs relatively patternless. 8–9 cream markings (including tip) on intact tails; usually with little intervening darker spaces between them (except paratype AMS R.163153).

TABLE 19. Mensural data from the type series of *Bavayia borealis* sp. nov.; \*tail regenerated..

	Holotype	Paratypes							
	MNHN-RA 2022.0048	AMS R.163140	AMS R.163137	AMS R.163138	AMS R.163153	AMS R.163136	AMS R.163139	AMS R.163141	AMS R.163151
Sex	M	F	M	M	F	F	F	M	F
SVL	55.9	47.0	56.2	45.6	62.9	52.0	52.0	49.9	48.9
ForeaL	5.6	5.3	6.0	5.4	7.0	5.5	5.7	5.4	5.7
CrusL	7.4	6.8	7.7	6.2	8.4	7.1	7.1	6.9	6.8
TailL	53.2*	44.6	40.9*	40.0*	50.3	41.9*	42.0*	46.6	49.1
HeadL	14.3	11.7	13.8	12.0	15.6	14.3	13.5	14.8	14.0
HeadW	11.0	8.8	10.0	8.7	11.2	8.7	8.6	8.5	8.7
HeadH	4.7	3.5	4.8	3.7	5.0	4.4	4.6	3.7	3.8
OrbD	2.8	2.3	2.9	2.6	3.2	2.7	2.9	2.7	2.6
EyeEar	5.1	3.7	4.5	3.6	4.9	4.6	4.2	4.4	4.0
SnEye	6.2	5.1	6.0	5.6	6.8	5.5	5.3	5.6	5.5
NarEye	4.3	3.4	4.4	4.1	4.9	4.1	4.0	4.2	4.0
InterOrb	5.1	4.3	4.9	4.1	5.0	4.3	4.2	4.3	4.2
EarL	1.3	1.4	1.3	1.2	1.7	1.4	1.5	1.5	1.4
InterNar	1.5	1.3	1.7	1.3	1.9	1.5	1.6	1.6	1.4

**Etymology:** The adjective *borealis* means northern in Latin and refers to the distribution of this species across much of the Province Nord.

**Distribution:** This species has one of the most extensive distributions of any *Bavayia*, extending from Houaïlou on the middle of the east coast northwestward to Mt. Mandjelia and to Île Balabio and across the island to Vallée Punu and Rivière Néhoué (Fig. 54).

**Natural History:** *Bavayia borealis* sp. nov. is known from a number of sites across a broad range of forest habitats and elevations. On Île Balabio it was found to be common in all habitats (Whitaker et al. 2004), being recorded in closed forest habitat, gaïac shrubland, supralittoral shrubland, and mangroves. Large aggregations (>40) were found beneath the loose bark of gaïac (*Acaccia spirorbis*) trees, and it was located sheltering beneath loose stones on the floor of closed-forest habitat. Across the northern Grande Terre and down the east coast it has been recorded from low elevation closed-forest at Forêt d'Ougne and on Mt. Koyaboa and elsewhere near Poindimié (Bauer and Devaney 1987; Bauer and Vindum 1990), mid-high elevation closed-forest on Mt. Mandjelia, low elevation gallery forest at Rivière Néhoué (Fig. 24A), and modified coastal forest at Galarino, Ouaième and Houaïlou (24C–D). As with all congeners, clutch size is two and the diet is insectivorous.



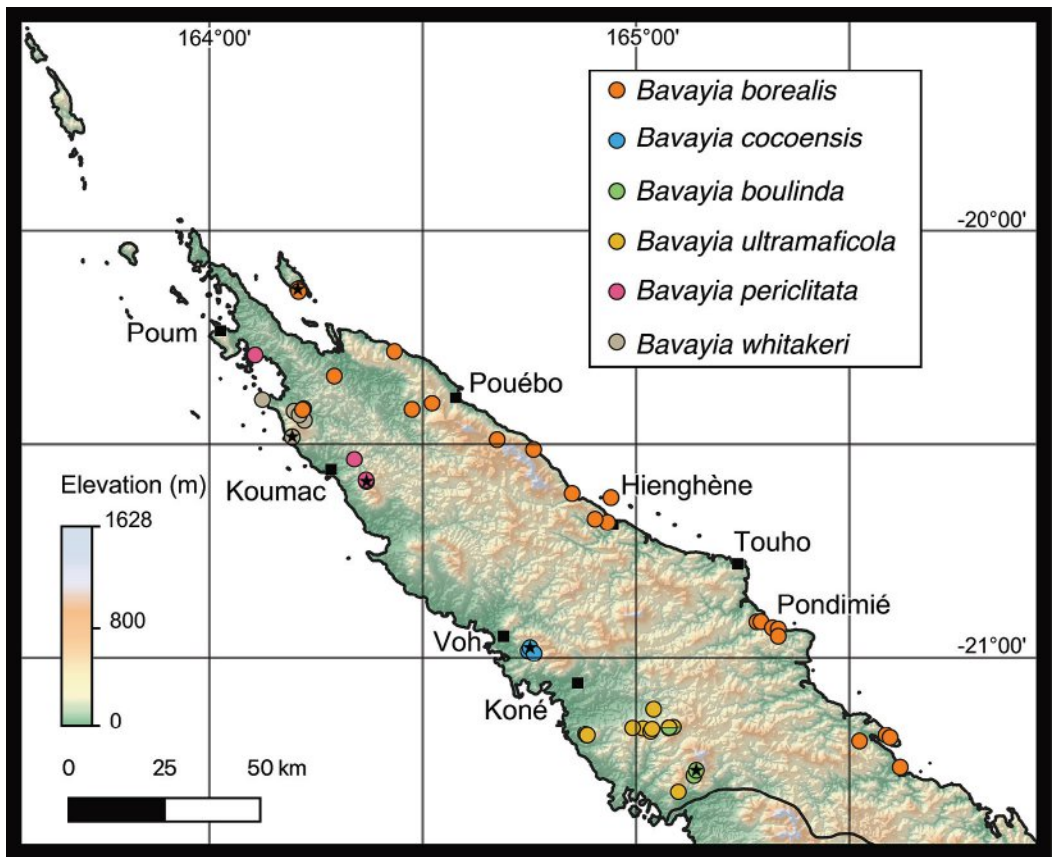


FIGURE 54. Map showing the distribution of members of the *Bavayia borealis* Clade. *Bavayia borealis* (orange), *B. cocoensis* (blue), *B. periclitata* (pink), *B. boulinda* (green), *B. ultramaficola* (mustard), *B. whitakeri* (gray). Stars indicate type localities. Cartography by J. DeBoer.

**Conservation Status:** *Bavayia borealis* sp. nov. meets the criteria to be categorized as Near Threatened on the IUCN Red List. It has a broad distribution extending as far north as Île Balabio off the northern coast, down the east coast and ranges to as far south as Houailou. It is known from a number of sites across a broad range of forest habitats and elevation, and the extent of occurrence is broadly estimated at ~1200 km<sup>2</sup>. The population trend is unknown but it is presumed to have suffered some reduction in extent as a result of loss and modification of forest habitats from a wide range of causes. In forest habitat it is likely to be threatened by the introduced Fire Ant *Wasmania auropunctata* which has the potential to displace geckos from ground sheltering sites and arboreal foraging sites (Jourdan et al. 2000, 2001), and in coastal forests from predation by rodents and cats (Whitaker 1978; Palmas et al. 2017).

**Remarks:** Specimens of *B. cyclura* from Hienghène and Oubatche reported by Roux (1913) and by Bauer and Devaney (1987) and Bauer and Vindum (1990; Fig. 2) from Îlot de Hienghène (CAS 157695) are referable to *B. borealis*. Referred to *B. aff. cyclura* sp. 2 by Whitaker Consultants Limited (2002) and Whitaker et al. (2004).

***Bavayia cocoensis* sp. nov.**

Figures 52A–B, 55.

**Holotype:** MNHN-RA-2022.0053 (ex. AMS R.172044) Massif de Koniambo, Creek Coco (North Branch), Province Nord, New Caledonia, 20°58'35.58"S, 164°45'05.78"E, coll. R.A. Sadlier and A.H. Whitaker, 29 January 2009.

**Paratypes:** AMS R.172045\*, same data as holotype. AMS R.172046\*, Massif de Koniambo, Creek Coco (North Branch), Province Nord, New Caledonia, 20°58'35.58"S, 164°44'49.86"E, coll. R.A. Sadlier and A.H. Whitaker, 29 January 2009; AMS R.172047, Massif de Koniambo, Creek Coco (North Branch), Province Nord, New Caledonia, 20°58'35.58"S, 164°45'05.80"E, coll. R.A. Sadlier and A.H. Whitaker, 29 January 2009.

**Referred Material:** AMS R.174997, Massif de Koniambo, Creek Coco (South Branch), Province Nord, 20°59'24.77"S, 164°45'39.10"E.

**Diagnosis:** A small species of the *Bavayia borealis* Clade (maximum SVL 53.9 mm, MNHN-RA-2022.0053), body robust, neck distinct, head extremely wide across the adductor musculature, longest regenerated tail 91% SVL. It can be distinguished from its congeners by the following combination of characteristics: claw of digit I positioned in a groove within the apical lamella, which is divided into a larger medial and smaller lateral portion, digit I of pes wide; one or two rows of precloacal pores in males, 16–17 pores in total; first pair of infralabials separated from one another by mental or median postmental; midbody scale rows ~147; 12–14 mostly paired lamellae under digit IV of pes. Dorsum and flanks pinkish to purplish brown with a pattern of 4–6 regular to irregular, narrow, mostly complete, dark brown, transverse markings between the limb insertions, each with a transverse series of white dots along its anterior margin and preceded by a pale blotch. Additional dark transverse markings on the nape and (less pronounced) on the occiput; no pale nape streaks, pale markings of nape and shoulder not connected. Head pale above with scattered darker mottling and a darker snout region. Flanks bearing several longitudinal series of whitish or cream-colored spots. Pale markings on original portion of tails approximately as long as darker interspaces. Ventral coloration pale yellow.

Among other members of the *B. borealis* Clade, *B. cocoensis* sp. nov. is distinguished from *B. borealis* sp. nov. and *B. periclitata* sp. nov. by its smaller size (maximum SVL 53.9 mm vs. 62.9 mm and 66.0 mm, respectively), from *B. borealis* sp. nov. *B. bouldina* sp. nov., and *B. periclitata* sp. nov. by its lower number of precloacal pores (16–17 vs. 20–33, 28–31, and 35–46, respectively), from *B. bouldina* sp. nov. in having 1–2 (vs. 3) rows of precloacal pores, and from *B. whitakeri* sp. nov. in having 0–1 (vs. 4–5) precloacal pores in the second pore row. It differs from *B. ultra- maficola* sp. nov. and *B. periclitata* in having a less strongly delineated dorsal pattern and from all other *B. borealis* Clade members by its relatively short snout and broad head.

**Description:** Based on holotype — MNHN-RA-2022.0053 (ex. AMS R.172044), an adult male. Snout-vent length (SVL) 53.9 mm; trunk relatively long, robust, depressed. Head oblong, long (HeadL 28% SVL), very wide (HeadW 80% HeadL), not depressed (HeadD 43% HeadL); neck relatively indistinct; slight interorbital/frontal depression present, canthus weakly demarcated; snout short (EyeSn 37% HeadL), less than twice eye diameter (OrbD 23% HeadL). Granular scales on snout approximately two to three times diameter of those on occipital region. Pupil vertically oriented with crenelated margins; posterior superciliary scales slender, elongate, pointed. Ear opening about 1.5 times higher than wide, canted posterodorsally to anteroventrally; eye to ear distance much greater than the diameter of eye (EyeEar 182% OrbD). Rostral rectangular, much broader than high, no median rostral crease, contacted posteriorly by a single internasal scales and two enlarged supranasals, contacted posteroventrally by first supralabial. Nostrils rounded and anterolaterally oriented, surrounded by three postnasals, one supranasal, and the rostral, in broad

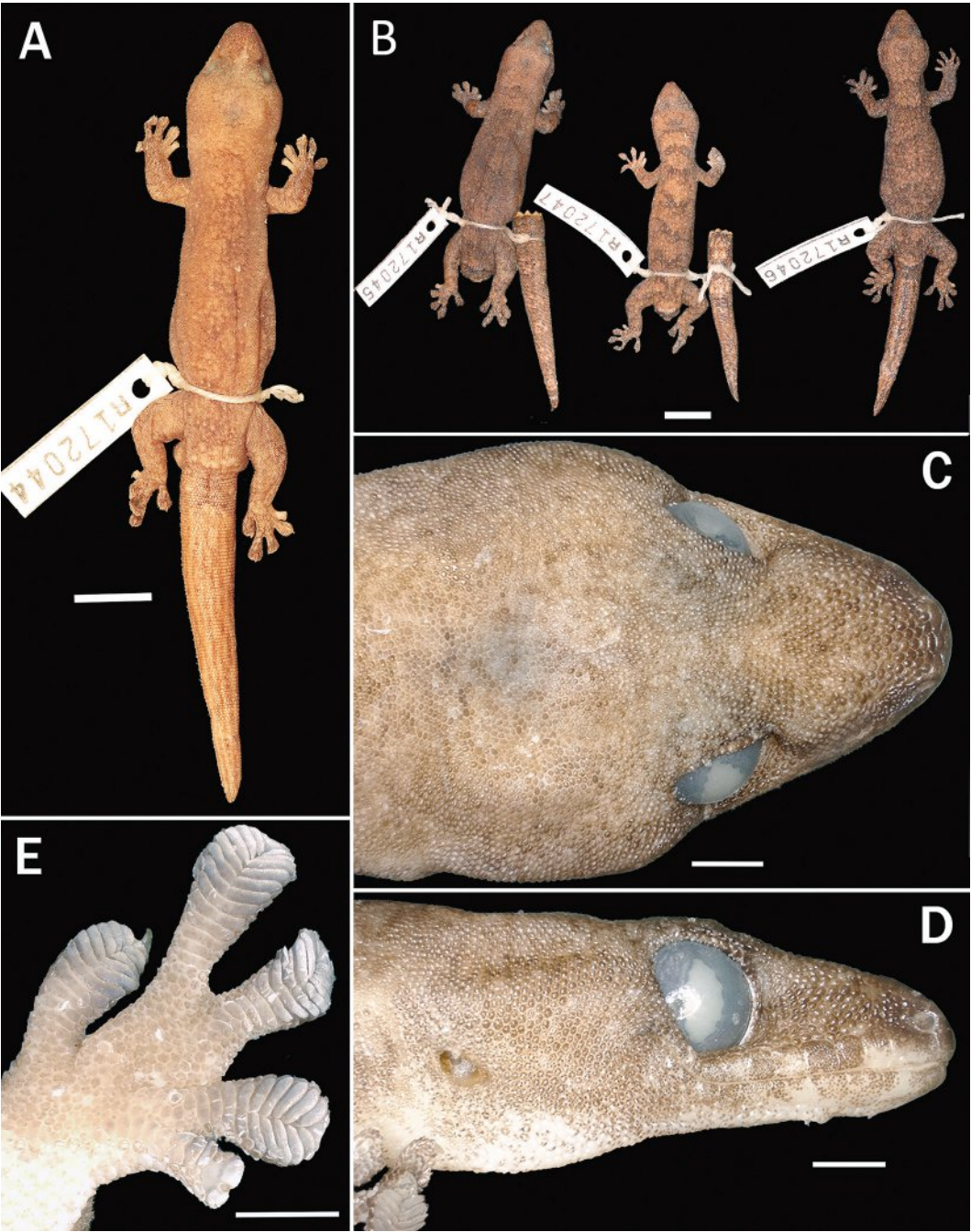


FIGURE 55. *Bavayia cocoensis* sp. nov. A) Holotype MNHN-RA-2022.0053 (ex. AMS R.172044), whole body dorsal view; B) Paratype series. C–E) Holotype MNHN-RA-2022.0053 (ex. AMS R.172044): C) dorsal view of head; D) right lateral view of head; E) ventral view of right pes. Scale bars: A–B = 10 mm, C–E = 2 mm.



contact with first supralabial. Mental triangular, deeper than wide, first infralabials in separated posteriorly by and enlarged, median, pentagonal, postmental chin shield, each in contact posteriorly with median and one additional postmental chin shield. First three to five rows of chin shields larger than remaining throat scales. 10 L, 12 R enlarged supralabial scales, of which the 7<sup>th</sup> through 12<sup>th</sup> are beneath the eye on the right side; 10 L, 9 R infralabial scales; 41 interorbital scale rows between superciliaries at midpoint of orbit, 17 interorbitals between the orbital margins of the frontal bone.

Dorsal scales small, homogeneous, very slightly conical, granular; ventral scales slightly larger than dorsals, subimbricate, enlarged posteriorly on the body. Posterior abdominal scales rounded, mid-abdominal scales elongate, diamond-shaped. Approximately 147 scale rows around mid-body. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Precloacal pores large and easily distinguishable, 16 in a continuous single row. Forearm and crus short (12% and 15% of SVL, respectively), axillary pockets shallow. Digits short and wide distally, all bearing claws, those on digit I of both manus and pes greatly reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital lamellae paired distally, undivided basally. Distalmost lamella of digits II–V, manus and pes, undivided. Apical plates of digit I of manus and pes asymmetrical, with claw positioned in a notch between a larger medial and smaller lateral scissor. Lamellar counts from right side of holotype 7-10-10-13-11 manus and 7-11-11-13-11 pes.

TailL 49.1 mm (distal 39.1 mm regenerated), approximately 91% of snout-vent length, tapered, stout, roughly oval in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, rectangular, arranged in regular rows. Surface of tail weakly segmented, caudal scale rows forming whorls, each whorl ~7 dorsal scale rows and 6 ventral scale rows long; midventral caudal scales not enlarged. Scales on pygal portion of tail approximately one-half size those of post-pygal scales. Cloacal spurs consisting of 2–3 large conical, blunt-tipped, slightly compressed, posterodorsally-directed, raised scales just posterior to each side of the cloaca.

**Color in preservative:** Dorsum and flanks very heavily mottled, with pattern elements difficult to discern. Five diffuse, asymmetrical medium brown transverse elements, each containing or bordered anteriorly by small cream to beige spots; separated from adjacent dark markings by a heavily mottled, irregular, buff blotches. Flanks grayish brown with vague small pale spots between the limb insertions and extending on to the neck. Dorsal nape marking similar to blotches on trunk but with paler elements predominating. Head buff to cream with a darker (medium brown) snout. Dark streak continuing from snout to orbit and posterior to eye with a diffuse streak across the lower temporal region and another, shorter brown streak extending a short distance from the posteroventral quadrant of the orbit. Labial scales mostly brown with extensive cream patches on some scales where pigment granules are in very low density. Limbs mottled light brown with medium brown reticulations. Pygal portion of tail with a mottled beige marking at the tail base constriction; post-pygal tail light to medium brown with a pair of small cream-colored lateral spots followed by the first portion of a cream dorsal marking with a medium brown anterior border. Regenerated tail light brown to buff with irregular, mostly longitudinal faint brown streaks. Ventral coloration whitish medially, with more extensive brown pigmentation under the limbs, throat and lateral body margins and around the cloaca.

**Color in life:** (based on life photo of the holotype, MNHN-RA-2022.0053 and non-type AMS R.174997 (see Figs. 52A–B). Pattern in holotype obscure, with dark bands of shoulders and nape, as well as band across the occiput (not notable in the preserved specimen) most clearly evident in the holotype and the small whitish spots more obviously distributed over the entire trunk and limbs.

Paler areas suffused with a pinkish undertone. Mustard brown to yellowish areas on the tail base and original post-pygial tail, on lateral surfaces of throat, rims of orbits, and on labial scales. Dorsum of head very complexly and irregularly patterned, with anterior snout darkest, nasofrontal region lightest, with vague, narrow dark brown markings, and parietal table with a diversity of subtly varying shades of brown, lacking the pinkish suffusion of the trunk. Venter a pale yellow, brighter under the throat and limbs. AMS R.174997 with a much more discrete dorsal pattern of six dark bands between the shoulder and hindlimb insertions, with an additional dark marking on the sacrum, one on the nape and one on the occiput, the last confluent with the mark marking on the temporal region. Darkest markings chocolate brown, light dorsal blotches a pale purplish brown, flanks becoming notably paler ventrally; small white markings over the body generally very bright. Brightest white on the margins of a short posteroventrally-oriented streak behind the orbit and on the labial scales. Pale pygal blotch ashy with a transverse row of bright white spots. Original post-pygial tail with eight cream markings with dark chocolate brown anterior and posterior borders separated by slightly shorter medium brown interspaces. In Fig 52A, the undersurface of the tail tip can be seen, showing the two regular rows of scansorial scales that are typical of the original tail tips of all *Bavayia* species, but which are usually inconspicuous.

**Variation:** Mensural features of paratypes are presented in Table 20. The paratypes have a single internasal. The first infralabials of all members of the type series are bordered posteriorly by 3–4 enlarged postmental chin shields, with both infralabials touching the largest (median) postmental. The first infralabials are separated from one another by the extension of the mental or by the median enlarged chin shield. AMS R.172045 is missing digit I on the right pes. Male paratype 17 precloacal pores in two rows, first row with 16 pores in a continuous row, second row with a single median pore-bearing scale; no pores or dimples in females. All paratypes with partly regenerated tails, proportionally shorter than holotype. Color pattern fairly similar among type series. AMS R.172045 similar to holotype, but with mostly original tail exhibiting six cream-colored dorsal markings. AMS R.172046 with dorsal pattern more clearly discernable, with alternating predominantly dark and light alternating transverse markings. Four dark markings between the limb insertions an additional one over the sacrum and one on the nape. Head more strongly patterned than holotype with buff to lighter brown blotches across much of the parietal table separated from one another by medium brown marks and reticulations and becoming more mottled towards the orbits. Snout mostly medium brown with many lighter granules forming a pale arc around the dorsal rim of the snout and other more irregular light spots one or a few granules in size. Dark snout and temporal markings as well as white spotting on the temporal region and neck more

TABLE 20. Mensural data from the type series of *Bavayia cocoensis* sp. nov.; \*tail regenerated.

	Holotype	Paratypes		
	MNHN-RA 2022.0053	AMS R.172045	AMS R.172046	AMS R172047
Sex	M	M	F	F
SVL	53.9	56.0	51.9	46.6
ForeaL	6.6	6.2	5.6	5.0
CrusL	8.2	7.6	7.4	6.8
TailL	49.1*	50.1*	37.3*	38.8*
HeadL	14.9	15.6	14.1	14.6
HeadW	11.9	11.9	10.4	9.6
HeadH	6.4	6.6	6.0	4.8
OrbD	3.4	3.2	3.1	3.0
EyeEar	5.3	4.6	4.4	3.9
SnEye	5.5	6.0	5.2	4.9
NarEye	3.8	4.1	3.3	3.0
InterOrb	5.8	5.1	5.6	5.1
EarL	1.6	1.2	1.2	1.1
InterNar	2.3	2.1	1.7	1.7

pronounced than in holotype. Juvenile paratype AMS R.172047 very clearly marked, with four dark bands between the limb insertions, another on the sacrum, one on the nape and seventh across the occiput. Head, body and limbs nearly uniformly covered by rather regular rows of small whitish spots.

**Etymology:** The specific epithet refers to the type locality, Creek Coco.

**Distribution:** *Bavayia cocoensis* occupies a tiny area along the north and south branches of Creek Coco, a small stream draining westward from the Koniambo Massif (Fig. 54).

**Natural History:** The species was recorded actively foraging at night in the secondary forest margins along the valley floor at low elevation (<100 m) in the north branch of Creek Coco. Two were on low rock faces adjacent to a track and four on trunks and branches of trees up to canopy height (5 m) in closed secondary forest with *Gymnostoma*. The single individual from the south branch of Creek Coco was located active at night in the twigs of a small shrub in maquis shrubland (Whitaker and Sadlier 2012). The two female paratypes (AMS R.172046–47) are both gravid, with two-egg clutches.

**Conservation Status:** *Bavayia cocoensis* sp. nov. meets the criteria (B1ab(iii, v) + 2ab(iii, v)) to be categorized as Critically Endangered on the IUCN Red List. It has an extremely restricted distribution being known from a single area on the Koniambo Massif on the northwest coast of Grande Terre. It appears to be restricted to low elevation maquis habitat adjacent to creek lines which is estimated at ~2 km<sup>2</sup> connecting the two known sites. It has likely suffered a reduction in population size and extent as a result of past habitat loss from wildfires. It is considered to be at a high level of threat from further loss and degradation of habitat from wildfires (Ibanez et al. 2019), and at a high level of threat from the introduced Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from ground sheltering sites and arboreal foraging sites, and to affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001). It is also considered to be at a moderate level of threat from nearby activities of nickel mining on the massif (Pascal et al. 2008).

### *Bavayia bouldina* sp. nov.

Figure 56.

**Holotype:** MNHN-RA-2022.0034 (ex. AMS R.163173), headwaters of Oua Népoua, 1.5 km SW Mont Boulinda, Massif du Boulinda, 6.5 km N Basse Poya, Province Nord, New Caledonia, 21°15'50.7"S, 165°08'28.2"E, coll. A.H. Whitaker and V.A. Whitaker, 17 October 2002.

**Paratypes:** CAS 265747\* (ex. AMS R.163169), 265748 (ex. AMS R.163170), data as for holotype; CAS 265749 (ex. AMS R.163188), headwaters of Oua Népoua, 1.5 km SW Mont Boulinda, Massif du Boulinda, 6.5 km N Basse Poya, Province Nord, New Caledonia, 21°15'50.7"S, 165°08'2 8.2"E, coll. A.H. Whitaker and V.A. Whitaker, 19 October 2002; AMS R.163186, Headwaters of Oua Népoua, 2 km SW Mont Boulinda, Massif du Boulinda, 21°16'34"S, 165°08'08.6"E, coll. A.H. Whitaker and V.A. Whitaker, 19 October 2002.

**Referred Material:** (all localities in Province Nord) AMS R.163171–72, R.163174, R.163190, headwaters of Oua Népoua, 1.5 km SW Mont Boulinda, Massif du Boulinda, 6.5 km N Basse Poya, 21°15'50.7"S, 165°08'2 8.2"E; AMS R.168180, Paéoua, Carrière des Sapins, 21°09'46.42"S, 165°05'14.47"E; AMS R.168207–08\*, Paéoua, Ouamango, 21°09'50.60"S, 165°04'39.21"E.

**Diagnosis:** A mid-sized species of the *Bavayia borealis* Clade (maximum SVL 58.5 mm, MNHN-RA-2022.0034), body robust, neck distinct but inflated, snout relatively acuminate, longest regenerated tail 89% SVL. It can be distinguished from its congeners by the following combination of characteristics: claw of digit I positioned in a groove within the apical lamella, which



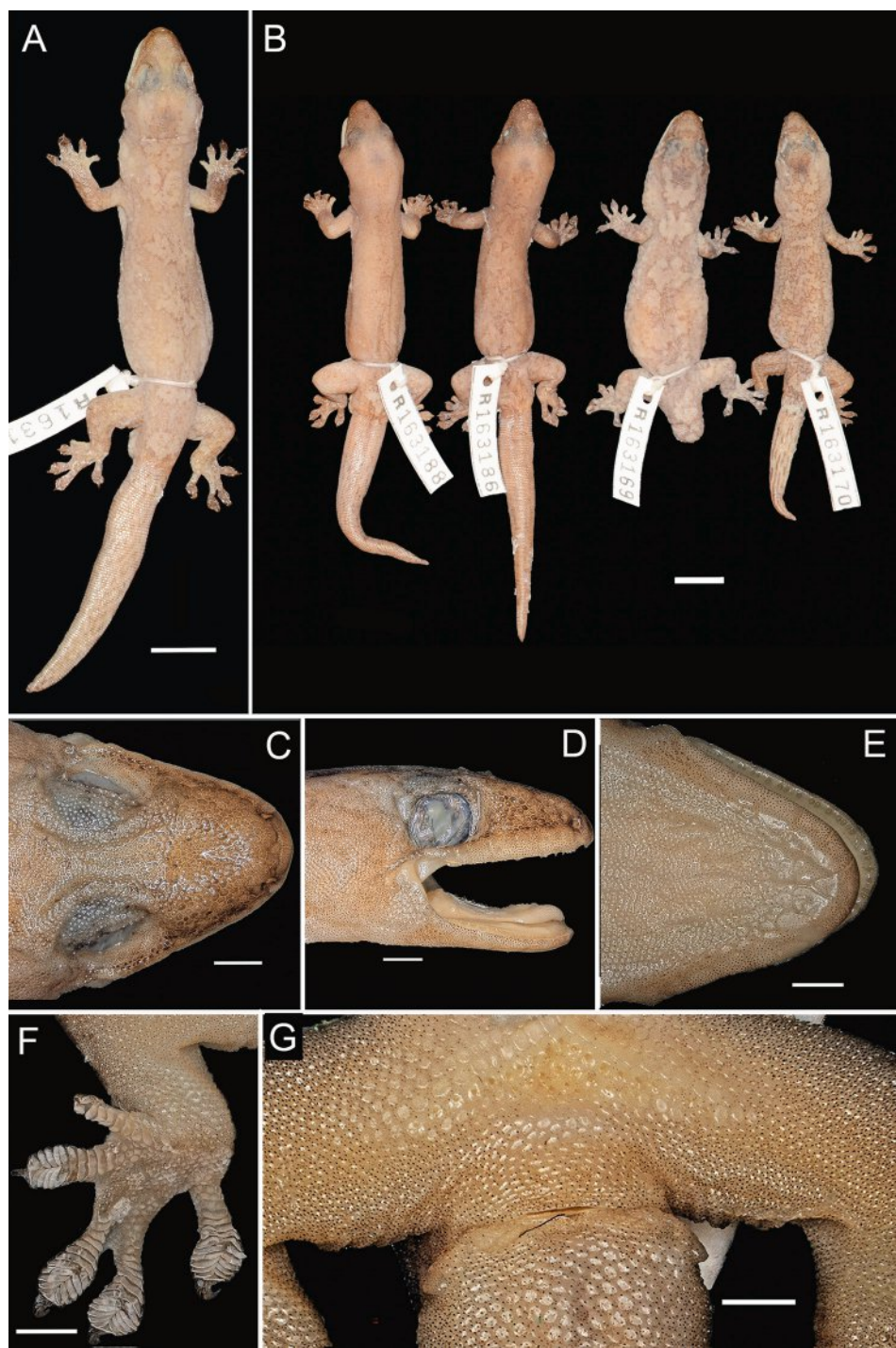


FIGURE 56. *Bavayia boullinda* sp. nov. A) Holotype MNHN-RA-2022.0034 (ex. AMS R.163173) whole body dorsal view. B) Paratype series. C–G) Holotype MNHN-RA-2022.0034 (ex. AMS R.163173): C) dorsal view of head; D) right lateral view of head; E) ventral view of head; F) ventral view of right pes; G) cloacal region. Scale bars: A–B = 10 mm, C–G = 2 mm.

is divided into a larger medial and smaller lateral portion, digit I of pes relatively narrow; three rows of precloacal pores in males, 28–31 pores in total; first pair of infralabials in broad contact behind the mental; midbody scale rows ~124; 12 mostly paired lamellae under digit IV of pes. Dorsum and flanks with a pattern of 4 mostly irregular, narrow, mostly complete, dark brown, transverse markings between the limb insertions, each preceded by a pale blotch. Additional dark transverse markings on the nape (sometimes continuous with dark streak on lateral surface of head) and tail base. Pale shoulder blotch typically partly bifid and separated from more anterior pale markings by the dark nape band (nuchal loop).

Among other members of the *B. borealis* Clade, *B. bouldinda* sp. nov. is distinguished from all other members by having three rows of precloacal pores (vs. 1 or 2). With 28–31 pores it greatly exceeds *B. cocoensis* sp. nov. (16–17), *B. ultramaficola* sp. nov. (19–23), and *B. whitakeri* sp. nov. (12–19) and has fewer pores than *B. periclitata* (35–46). It further differs from all other *B. borealis* Clade members by its relatively acuminate snout.

**Description:** Based on holotype MNHN-RA-2022.0034 (ex. AMS R.163173), an adult male, digits of manus slightly damaged by prefixation dehydration. Snout-vent length (SVL) 58.5 mm; trunk relatively short, robust, depressed. Head oblong, moderately long (HeadL 26% SVL), relatively narrow (HeadW 70% HL), not depressed (HeadD 36% HL); neck relatively indistinct; pronounced interorbital/frontal depression present, canthus moderately well demarcated; snout relatively long (EyeSn 41% HeadL), nearly twice eye diameter (OrbD 22% HeadL). Granular scales on snout approximately two to three times diameter of those on occipital region. Pupil vertically oriented with crenelated margins; posterior superciliary scales slender, elongate, pointed. Ear opening about 1.5 times higher than wide, canted posterodorsally to anteroventrally; eye to ear distance much greater than the diameter of eye (EyeEar 145% OrbD). Rostral rectangular, much broader than high, a short median crease divides the upper portion of the rostral, contacted posteriorly by a three internasal scales (lateral pair larger) and two enlarged supranasals, contacted posteroventrally by first supralabial. Nostrils rounded and anterolaterally oriented, surrounded by three postnasals, one supranasal, and the rostral, in broad contact with first supralabial. Mental triangular, approximately as deep as wide, first infralabials in broad contact behind the mental; each in contact posteriorly with two enlarged postmental chin shields, no median postmental present. First three to five rows of chin shields larger than remaining throat scales. 10 R enlarged supralabial scales, of which the posteriormost 3 are beneath the eye; 10 R infralabial scales; 36 interorbital scale rows between superciliaries at midpoint of orbit, 13 interorbitals between the orbital margins of the frontal bone.

Dorsal scales small, homogeneous, very slightly conical, granular; ventral scales slightly larger than dorsals, subimbricate, enlarged posteriorly on the body. Posterior abdominal scales rounded, mid-abdominal scales elongate, diamond-shaped. Approximately 124 scale rows around midbody. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Precloacal pores large and easily distinguishable, 31 in three rows; anterior continuous row of 20 pores, second continuous row of 8 pores, third row of 3 contiguous pored scales. Forearm and crus short (12% and 14% of SVL, respectively), axillary pockets shallow. Digits long and relatively narrow, all bearing claws, those on digit I of both manus and pes greatly reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital lamellae paired distally, undivided basally. Distalmost lamella of digits II–V, manus and pes, undivided. Apical plates of digit I of manus and pes asymmetrical, with claw positioned in a notch between a larger medial and smaller lateral scansor. Lamellar counts from right side of holotype 6-11-11-11-11 manus and 7-11-13-12-11 pes.

TailL 43.5 mm (distal 35.8 mm regenerated), approximately 74% of snout-vent length, tapered, stout, roughly oval in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, rectangular, arranged in regular rows. Surface of original portion of tail weakly segmented, caudal scale rows forming whorls, one intact whorl 7 dorsal scale rows and 6 ventral scale rows long; midventral caudal scales not enlarged. Scales on pygal portion of tail approximately  $\frac{1}{3}$  to  $\frac{1}{2}$  size those of post pygal scales. Cloacal spurs consisting of a single large conical, blunt-tipped, slightly compressed, posterodorsally-directed, raised scale and several smaller, flatter subtending scales just posterior to each side of the cloaca.

**Color in preservative:** Ground color a mottled light brown, more uniform dorsally and with more beige intermingled on flanks. A series of middorsal pale (beige), asymmetrical blotches bordered by a thin, medium brown margin on all sides; those on shoulders, anterior trunk, and sacrum fairly well-defined, a similar, distinct marking near midtrunk, but a smaller marking, with paler margins in lumbar region. Each pale marking containing small, scattered medium brown dots and flecks. Flanks grading from mottled to predominantly whitish ventrally. Shoulder pale blotch distinctly bilobed and separated from a similarly-colored marking on the head and neck by a light brown nape band that is contiguous with a dark streak passing across the temporal region and through the eye on to the snout. Pale area on head and neck with a darker median patch near the occiput, and with numerous small, irregular punctations on the crown. Labial scales cream-colored with relatively uniformly distributed pigment spots, dorsal margins of supralabials darker. Limbs mottled similar to trunk. Pygal portion of tail with a thick V-shaped medium brown marking at the tail constriction, preceded by a cream-colored roughly oval blotch. Tail mostly regenerated, similar in color to ground color of trunk and bearing slightly darker brown dashes and lines in an irregular pattern. Entire specimen relatively faint, with no bold or highly contrasting pattern elements. Venter beige to off white with faint brownish wash and more discrete brown pigmentation spots around the lateral margins, beneath limbs, and on chin and throat.

**Color in life:** No data available.

**Variation:** Mensural features of paratypes are presented in Table 21. The paratypes all have 3 internasals. The first infralabials of all members of the type series are bordered posteriorly by 3–4 enlarged chin shields or by 3 enlarged scales and a number of smaller granules (AMS R.163188). The first infralabials are in broad contact behind the mental in all paratypes. The rostral may be creased or not. The male paratype (AMS R.163186) has 28 precloacal pores in three continuous rows, first row with 17 pores, second row with 8 pores, third row with 3 pores; no pores or

TABLE 21. Mensural data from the type series of *Bavayia boullinda* sp. nov.; \*tail regenerated, \*\* broken.

	Holotype	Paratypes			
	MNHN-RA 2022.0034	AMS R.163186	CAS 265748	CAS 265747	CAS 265749
Sex	M	M	F	F	M
SVL	58.5	57.8	54.4	57.3	57.5
ForeaL	7.0	6.0	6.3	6.5	7.0
CrusL	8.2	7.7	7.2	8.1	8.3
TailL	43.5*	51.1*	29.6*	8.0**	44.9*
HeadL	15.3	14.6	14.1	15.8	13.0
HeadW	10.7	10.3	10	11.3	10.3
HeadH	5.5	5.4	5.5	5.8	5.7
OrbD	3.3	3.2	3.2	3.2	3.1
EyeEar	4.8	4.6	4.0	4.4	4.8
SnEye	6.2	6.2	5.8	6.3	6.5
NarEye	4.5	4.5	4.2	4.5	4.7
InterOrb	4.5	4.8	4.2	4.4	4.6
EarL	1.4	1.6	1.6	1.6	1.6
InterNar	1.9	1.8	1.8	2.0	2.0



dimples in females. Longest regenerated tail among paratypes 89% SVL (AMS R.163186). Color pattern fairly uniform, with four or five faint to very faint pale markings between shoulders and sacrum and an additional pale marking on the anterior neck and head, separated from the shoulder blotch by a complete nape band of ground color that is continuous with the dark streak passing across the temporal region and on to the snout. The trunk and head pattern is especially faint in CAS 265749 (formerly AMS R.163188). All paratypes share a distinct pale pygal marking, which is cream to beige in most, but pale russet in AMS R.163186. All types have regenerated or broken tails with no more than part of one post-pygal dorsal marking, which is somewhat brighter and more contrasting than any of the other dorsal markings.

**Etymology:** Named for the Massif du Boulinda, where the type series was collected.

**Distribution:** High elevation near coastal ranges of the mid-west coast, including the Paéoua and Boulinda massifs in the Province Nord (Fig. 54).

**Natural History:** *Bavayia boulinda* sp. nov. was recorded at Oua Népoua on the Massif du Boulinda in maquis (MNHN-RA-2022.0034, CAS 265747–49, AMS R.163171–72, R.163174, R.163190) and closed forest (AMS R.163186) habitat (as *Bavayia* aff. *cyclura* sp. 6 by Whitaker et al. 2004) between 880–1200 m in elevation. It was observed active at night in vegetation at all levels including in the canopy in closed forest. Whitaker et al. (2004) reported that this species uses terrestrial retreat sites such as crevices in clay banks, rock crevices or beneath stones. At Oua Népoua it occurs with the related *Bavayia ultramaficola* sp. nov. It was not recorded on the lower slopes of the Massif du Boulinda or at sites surveyed near Mine St. Louis (300–400 m) on the southern slopes of Pic Poya. Clutch size is two and the diet, although unconfirmed, is assumed to be insectivorous, like all known congeners.

**Conservation Status:** *Bavayia boulinda* sp. nov. meets the criteria (B1ab(ii, iii) + 2ab(ii, iii)) to be categorized as Endangered on the IUCN Red List. It is restricted in distribution to a small area on the high elevation ultramafic surfaces of the Boulinda and Paéoua massifs in central-west Grande Terre. The two populations are disjunct, ~12 km apart and separated by the low-lying Nepoui River valley, and have an estimated extent of occurrence of ~5 km<sup>2</sup> on Paéoua and ~10 km<sup>2</sup> or less on Boulinda. The species occurs in both maquis and closed forest habitats but has likely suffered a reduction in population size and extent resulting from past habitat loss and degradation from wildfires. It is considered to be at a high level of threat through loss and degradation of habitat from wildfires (Ibanez et al. 2019), and at Paéoua from the rapidly expanding nickel mining industry (Pascal et al. 2008). The species is also considered to be at a moderate level of threat from habitat degradation by introduced deer and pigs which threaten forest habitat quality (damaging ground daytime sheltering sites and the abundance and structure of understory shrubs used for foraging) (de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-Wichatitsky 2006), and from the introduced Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from ground sheltering sites and arboreal foraging sites, and to affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001). Both sites from which the species is known are near the summit area of the massifs, and on the Paéoua Massif extensive mine tracks are present.

**Remarks:** Referred to as *Bavayia* aff. *cyclura* sp. 6 by Whitaker et al. (2004).

### ***Bavayia ultramaficola* sp. nov.**

Figures 52E–F, 57.

**Holotype:** MNHN-RA-2022.0049 (ex. AMS R.163191), Headwaters of Oua Népoua, 2 km SW Mont Boulinda, Massif du Boulinda, 6.5 km N Basse Poya, Province Nord, New Caledonia, 21°16'34.2"S, 165°08'08.6"E, coll. A.H. Whitaker and V.A. Whitaker, 19 October 2002.

**Paratypes:** AMS R.163192, same data as holotype. CAS 265997\*, Massif de Kopéto, Hibis-

cus area, 21°09'59"S, 165°02'14"E, coll. A.M. Bauer and R.A. Sadlier, 21 January 2003; AMS R.163220, R.163222, CAS 265750\* (ex. AMS R.163221), Mine St. Louis, Pic Poya, Massif du Boulinda, 4 km NW Basse Poya, Province Nord, New Caledonia, 21°18'53.3"S, 165°05'56.9"E, coll. A.H. Whitaker and V.A. Whitaker, 24 October 2002.

**Referred Material:** (all localities in Province Nord) AMS R.167202–03, Massif de Kopéto, Papainda, 21°07'15"S, 165°00'41"E; AMS R.168209\*, R.168210–16, Ouamango, Paéoua, 21°09'50.596"S, 165°04'39.208"E; AMS R.168179, Ouamango, Paéoua, 21°09'55.704"S, 165°04'37.546"E; AMS R.168181–82, Carrière des Sapins, Paéoua, 21°09'48.044"S, 165°05'10.415"E; AMS R.168202, Ouamango, Paéoua 21°09'49.263"S, 165°04'37.924"E; AMS R.167204–08, Massif de Kopéto, Paidi, Mt. Tiaoué, 21°09'54"S, 164°59'31"E; AMS R.163107–08, R.163109\*, R.163110, R.163113–16, R.163126\*, R.163127–28, Mt. Tiaoué, Massif de Kopéto, 11 km SE Pouembout (870 m), 21°10'12.9"S, 164°59'25.5"E; AMS R.167246–47, 'Hibiscus,' Mont Vert, Massif de Kopéto 21°10'24"S, 165°02'03"E; AMS R.163117, Papainda, Massif de Kopéto, 14 km SE Pouembout (860 m), 21°10'38.5"S, 165°01'15.4"E; AMS R.153734–41, R.153742–44\*, R.153745–49, Plateau de Tia, 21°10'45"S, 164°52'54"E; AMS R.163154–59, Plateau de Tia, S Pouembout, 21°10'57.4"S, 164°53'03.9"E; AMS R.163223–24, Mine St. Louis, Pic Poya, Massif du Boulinda, 4 km NW Basse Poya, 21°18'53.3"S, 165°05'56.9"E.

**Diagnosis:** A small species of the *Bavayia borealis* Clade (maximum SVL 52.8 mm AMS R.163220), body robust, neck distinct, snout relatively elongate, TailL 108% SVL (CAS 265750). It can be distinguished from its congeners by the following combination of characteristics: claw of digit I positioned in a groove within the apical lamella, which is divided into a larger medial and smaller lateral portion, digit I of pes relatively narrow; 1–2 rows of precloacal pores in males, 19–23 pores in total; first pair of infralabials in broad contact behind the mental or narrowly separated; midbody scale rows ~126; 12–14 mostly paired lamellae under digit IV of pes. Dorsum and flanks purplish brown to chocolate brown, with a pattern of 4–5 mostly irregular, narrow, complete, dark brown, transverse markings between the limb insertions, each bordered anteriorly by a transverse series of whitish spots and preceded by a pale blotch or a pair of pale blotches. Additional dark transverse markings on the nape, occiput, sacrum and tail base. Dark shoulder and nape markings usually boldest. No paired pale nape markings. Flanks and dorsum heavily patterned with whitish spots, yielding a "starry" appearance in some individuals (see Fig. 52E). Canthal stripe and postorbital streak well developed, dorsum of head highly mottled. Pale markings on tail mostly forming bands or approximately the same length as darker interspaces. Ventral coloration yellowish.

Among other members of the *B. borealis* Clade, *B. ultramaficola* sp. nov. is distinguished from *B. boulinda* sp. nov. and *B. periclitata* sp. nov. by its lower number of precloacal pores (19–23 vs. 28–31 and 35–46, respectively) and from *B. boulinda* sp. nov. in having 1–2 (vs. 3) rows of precloacal pores. It differs from *B. borealis* sp. nov. and *B. periclitata* sp. nov. in its small size (maximum SVL 52.8 mm vs. 62.9 and 66.0 mm, respectively). It has a narrower head than *B. cocoensis* sp. nov. and a longer tail (108% vs. 102% SVL) relative to *B. whitakeri* sp. nov. and its extensive spotting on both the flanks and dorsum is distinctive within its clade.

**Description:** Based on holotype MNHN-RA-2022.0049 (ex. AMS R.163191), an adult male. Snout-vent length (SVL) 48.7 mm; trunk relatively short, robust, depressed. Head oblong, moderately long (HeadL 25% SVL), moderately wide (HeadW 73% HeadL), not depressed (HeadD 36% HeadL); neck slightly narrower than head; slight interorbital/frontal depression present, canthus moderately-well demarcated; snout long (EyeSn 47% HeadL), more than twice eye diameter (OrbD 23% HeadL). Granular scales on snout approximately two to three times diameter of those on occipital region. Pupil vertically oriented with crenelated margins; posterior superciliary scales

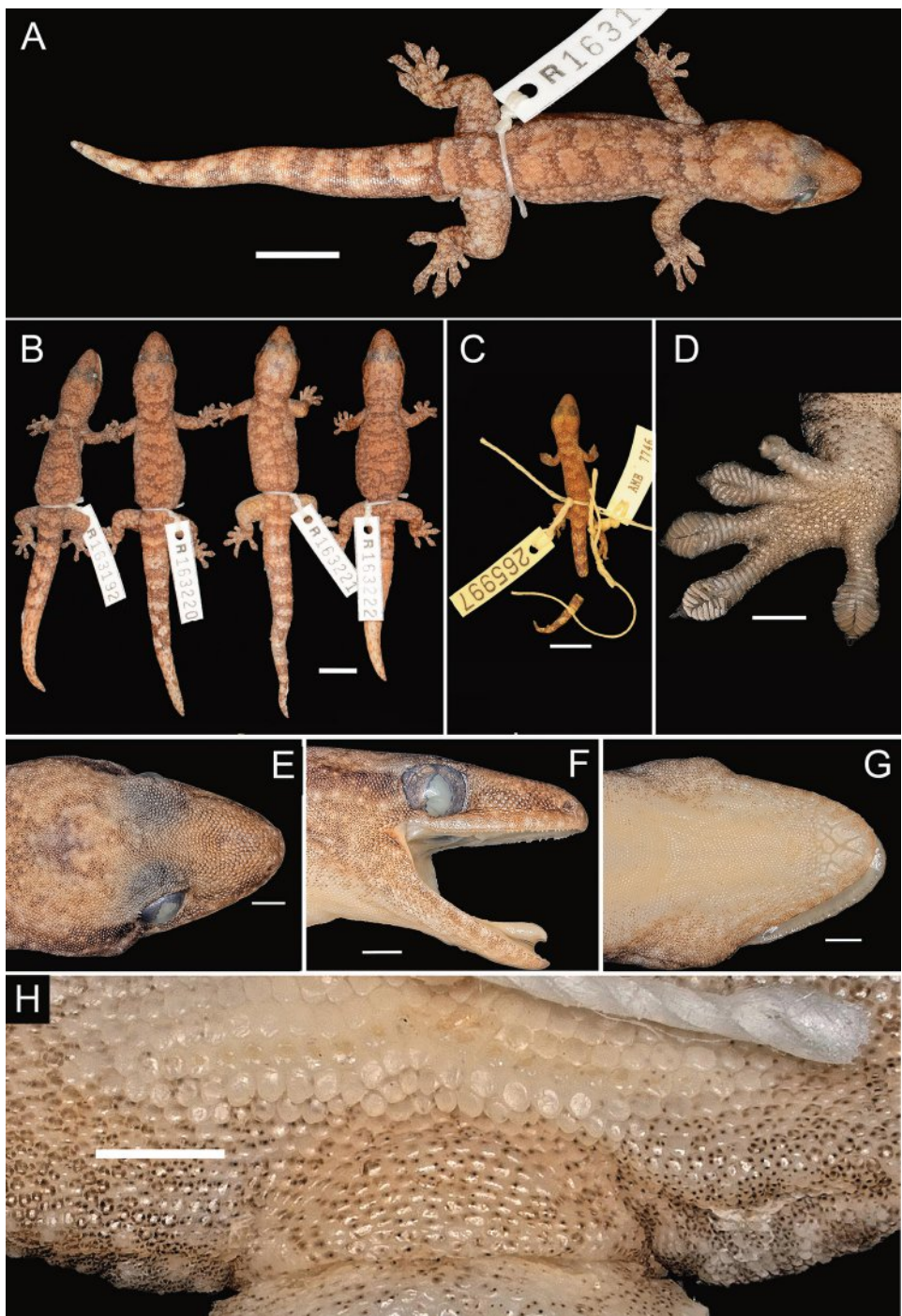


FIGURE 57. *Bavayia ultramaficola* sp. nov. A) Holotype MNHN-RA-2022.0049 (ex. AMS R.163191) whole body dorsal view; B) Paratype series; C–G) Holotype MNHN-RA-2022.0049 (ex. AMS R.163191): C) ventral view of right pes; D) dorsal view of head; E) right lateral view of head; F) ventral view of head; G) cloacal region. Scale bars: A = 20 mm, B = 10 mm, C–G = 2 mm.



slender, elongate, pointed. Ear opening more than twice higher than wide, canted posterodorsally to anteroventrally; eye to ear distance much greater than the diameter of eye (Eye:Ear 139% OrbD). Rostral rectangular, much broader than high, a short median crease divides the upper portion of the rostral, contacted posteriorly by three rounded internasal scales and two enlarged supranasals, contacted posteroventrally by first supralabial. Nostrils rounded and anterolaterally oriented, surrounded by three postnasals, one supranasal, and the rostral, in broad contact with first supralabial. Mental triangular, approximately as deep as wide, first infralabials in contact behind the mental, each in contact posteriorly with enlarged, pentagonal, median postmental chin shield and one additional chin shield. First three to four rows of chin shields larger than remaining throat scales. 9 L, 10 R enlarged supralabial scales, of which the posteriormost three are beneath the eye; 10 L, 10 R infralabial scales; 40 interorbital scale rows between superciliaries at midpoint of orbit, 14 interorbitals between the orbital margins of the frontal bone.

Dorsal scales small, homogeneous, very slightly conical, granular; ventral scales slightly larger than dorsals, subimbricate, enlarged posteriorly on the body. Posterior abdominal scales rounded, mid-abdominal scales elongate, diamond-shaped. Approximately 126 scale rows around midbody. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Precloacal pores difficult to discern, 23 in a single continuous row. Forearm and crus relatively long (13% and 15% of SVL, respectively), axillary pockets shallow. Digits short and wide distally, all bearing claws, those on digit I of both manus and pes greatly reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital lamellae paired distally, undivided basally. Distalmost lamella of digits II–V, manus and pes, undivided. Apical plates of digit I of manus and pes asymmetrical, with claw positioned in a notch between a larger medial and smaller lateral scissor. Lamellar counts from right side of holotype 5-9-10-10-9 manus and 5-10-11-13-10 pes.

TailL 48.5 mm (tip only regenerated), 100% of snout-vent length, tapered, stout, roughly oval in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, rectangular, arranged in regular rows. Surface of tail weakly segmented, caudal scale rows forming whorls, each whorl ~7 dorsal scale rows and 6 ventral scale rows long; midventral caudal scales not enlarged. Scales on pygal portion of tail approximately  $\frac{1}{3}$  to  $\frac{1}{2}$  size those of post pygal scales. Cloacal spurs consisting of one enlarged and one smaller subtending conical, blunt-tipped, slightly compressed, posterodorsally-directed, raised scale just posterior to each side of the cloaca.

**Color in preservative:** Dorsum and flanks a highly mottled mid-brown with densely distributed beige, cream or whitish spots. A series of six pale dorsal blotches or pairs of blotches between the shoulders and sacrum, each light brown faintly mottled with paler scales with a series of small whitish spots along its periphery. Shoulder and first trunk blotch single but bilobed, remaining trunk markings paired with the right blotches slightly anterior to the left; Sacral marking narrowly divided but not offset. Flanks dominated by larger and brighter whitish spots arranged in multiple more-or-less regular rows. Dark ground color bands separating light blotches each darkest at its anterior margin; that behind shoulder blotch boldest. A similar, thick, dark, wavy band anterior to the shoulder blotch runs across the nape. Anterior to this is another pale, multi-lobed blotch and anterior to this a slightly paler brown and more homogeneous thick band crosses the occiput and joins laterally with a medium to dark brown thick stripe that extends from the snout through and beneath the eye, across the temporal region and posteriorly to the lateral borders of the dorsal trunk blotches. In the temporal region a series of small bright white spots marks the ventral boundary of this dark stripe. The crown of the head is cream to beige-colored with a medium brown transverse marking with its ends curved forward running across the parietal table and several other small

irregular brown markings. From midorbital position forward the dorsal surface, including that of the entire snout, is slightly darker than the crown. The labial scales are a mottled white and brown, with the posterior supralabials mostly weakly pigmented and the posterior infralabials strongly so; anterior labials are chiefly brown with white patches, mostly near the anterior margins of each scale. Limbs mottled like trunk with brown reticulations and whitish spots particularly evident on thighs and pedes with alternating light and dark banding on the toes. Pygal part of tail with alternating light and dark, mostly straight, thick band. Post-pygal portion of tail with 10 or more alternating medium brown and beige to cream bands of approximately equal length. Anteriormost pale two bands fused on right side; banding pattern becoming more irregular after eighth pale band with the pale bands becoming fragmented and the brown interspaces narrowing. Venter cream with relatively dense brown pigmentation on scales bordering the body margins, limbs, cloaca and throat.

**Color in life:** (based on life photos of paratype CAS 265997 and another non-type specimen from Plateau de Tia, Figs. 52E–F). Ground color chocolate brown to purplish brown strongly marked with dense off white to bright white spots on the dorsum and especially flanks. Darkest dorsal markings immediately posterior to the pale dorsal blotches and darkest blotches those on shoulders and nape. Pale dorsal blotches, or pairs of blotches and pale areas of head ashy or pale grayish lavender. Limbs with banding or reticulation of lighter and darker ground color overlain by numerous white dots. Pygal and post-pygal pale tail markings brighter than those of dorsum. In CAS 265997 pale dorsal tail blotches on autotomic portion of tail number eight and are cream-colored, with a broken line of cream scales running across the dark interspaces about midway between adjacent pale blotches. In the other specimen imaged there are five pale grayish blotches anterior to the regenerate, which is pinkish brown with irregular, more-or-less longitudinal purplish-brown markings. Iris silvery to coppery. Ventral coloration pale yellow.

**Variation:** Mensural features of paratypes are presented in Table 22. The paratypes have 1 or 3 internasals. The first infralabials are mostly in broad contact behind the mental in the paratypes but are narrowly separated from one another in AMS R.163193. Between two and four enlarged chin shields border the first infralabials posteriorly, with each sharing contact with the medialmost shield. The rostral may be creased or not. Both male paratypes with 18 precloacal pores in a single continuous row and with a second rows of either 1 (CAS 265750) or 2 (AMS R.163220) pored scales in median position; no pores or dimples in females. Longest original tail among paratypes 108% SVL (CAS 265750). Color pattern fairly uniform, with six pale blotches or pairs of blotches between the shoulder and sacrum, another on the occiput, and two on the tail base. Cream to

TABLE 22. Mensural data from the type series of *Bavayia ultramaficola* sp. nov.; \*tail regenerated.

	Holotype	Paratypes				
	MNHN-RA 2022.0049	AMS R.163220	AMS R.163222	CAS 265750	AMS R.163192	CAS 265997
Sex	M	M	F	M	F	J
SVL	48.7	52.8	49.8	49.3	48.5	30.3
ForeaL	6.4	6.4	6.0	5.8	6.1	3.9
CrusL	7.4	7.8	7.0	7.3	7.2	4.1
TailL	48.5	32.0	41.8*	53.0	43.8*	28.5
HeadL	12.4	13.7	13.2	12.4	12.5	9.0
HeadW	9.1	9.8	9.7	9.6	9.0	6.0
HeadH	4.5	4.9	4.7	4.9	4.3	3.9
OrbD	2.8	3.0	3.2	3	3.1	2.0
EyeEar	3.9	4.4	3.8	4	3.8	2.7
SnEye	5.9	6.3	5.7	5.8	5.3	3.7
NarEye	4.3	4.4	4.1	4.5	4.3	2.1
InterOrb	4.4	4.8	4.6	4.3	4.0	4.1
EarL	1.6	1.4	1.5	1.6	1.5	0.8
InterNar	1.5	1.6	1.6	1.7	1.5	1.6

white spotting clearly evident in all individuals. Snout to temporal dark streak common to all paratypes but some variation in pattern on dorsum of head; more clearly spotted with cream or white than in the holotype. Twelve pale bands (including tip) on original tail CAS 265750).

**Etymology:** Dweller (*-cola*) on ultramafic surfaces, in reference to the species restriction ultramafic features in the northwestern Grande Terre.

**Distribution:** Occurs on the massifs of Kopéto and Boulinda and the Plateau de Tia in the Province Nord (Fig. 54).

**Natural History:** *Bavayia ultramaficola* sp. nov. has been recorded from low elevation maquis on the Plateau de Tia, high elevation maquis and closed forest habitat on the Massif du Kopéto (Fig. 49B), high elevation closed forest on the Massif du Boulinda between 880 and 1200 m, and low to mid-elevation closed forest near Mine St. Louis (300–400 m) on the southern slopes of Pic Poya (as *Bavayia* aff. *cyclura* sp. 5 by Whitaker et al., 2004). At Oua Népoua on the Massif du Boulinda it was observed active at night in vegetation at all levels including canopy level in closed forest. Here it occurs with the related *Bavayia boulinda* sp. nov. Whitaker et al. (2004) reported that this species uses terrestrial retreat sites such as crevices in clay banks, rock crevices or beneath stones. Clutch size is two and the diet is presumed to be insectivorous.

**Conservation Status:** *Bavayia ultramaficola* sp. nov. meets the criteria (B1ab(ii, iii) + 2ab(ii, iii)) to be categorized as Endangered on the IUCN Red List. It is restricted to ultramafic surfaces over a broad altitudinal range in central-west Grande Terre, including the Kopéto, Paéoua and Boulinda massifs, and Plateau de Tia. These massifs are all in close proximity (the Paéoua and Kopéto massifs lie within 10 km of each other), and the estimated extent of occurrence is estimated to be ~400 km<sup>2</sup>. It occurs in both maquis and closed forest habitats, but has likely suffered a reduction in population size and extent as a result of past habitat loss and degradation from wildfires and mining activities. It is considered to be at a high level of threat from ongoing loss and degradation of habitat from wildfires (Ibanez et al. 2019) and from the rapidly expanding nickel mining industry (Pascal et al. 2008). The species is also considered to be at a moderate level of threat from habitat degradation by introduced deer and pigs which threaten forest habitat quality (damaging ground daytime sheltering sites and the abundance and structure of understory shrubs used for foraging) (de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-Wichatitsky 2006), and a low (high elevation populations) to moderate (mid-low elevation populations) level of threat from the introduced Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from ground sheltering sites and arboreal foraging sites, and to affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001).

**Remarks:** This species was referred to as *Bavayia* aff. *cyclura* sp. 5 by Whitaker et al. (2004). At Ouamango *B. ultramaficola* and *B. boulinda* occur in sympatry. This is one of the only cases in which two members of the same *Bavayia* clade occur in sympatry.

### ***Bavayia periclitata* sp. nov.**

Figures 52C, 58.

**Holotype:** MNHN-RA-2022.0046 (ex. AMS R.161102), Mt. Kaala, East side Piton de Pandop, 9 km SE Koumac, Province Nord, New Caledonia, 20°35'16"S, 164°22'05"E, coll. A.H. Whitaker and V.A. Whitaker, 3 June 2002.

**Paratypes:** AMS R.161103\*, R.161105, CAS 265753 (ex. AMS R.161104), data as for holotype; AMS R.153557\*, Koumac Caves (~ 9 km E Koumac), Province Nord, New Caledonia, 20°32'07"S, 164°20'22"E, coll. R. Sadlier, 24 November 1998; AMS R.161109\*, Piton de Pandop, northeast of Piton de Pandop, headwaters of Vallée Frère, Province Nord, 20°35'04"S, 164°22'01"E, coll. A.H. Whitaker and V.A. Whitaker, 3 June 2002.



**Referred Material:** AMS R.144305, Koumac Caves (~ 9 km E Koumac), Province Nord, 20°32'07"S, 164°20'22"E; CAS 265751–52, Malabou Beach Hotel, Baie de Néhoué, S of Poum, Province Nord, New Caledonia, 20°17'29"S, 164°06'25"E. [Note: In the absence of molecular data, specimens from Malabou Beach are tentatively assigned to this species based on geographic proximity. However, they are from an area of coastal scrub, differing from the forested habitats in which the types were collected and differ somewhat in color pattern (although this may in part reflect their greater specimen age and hence fading)].

**Diagnosis:** A large species of the *Bavayia borealis* Clade (maximum SVL 66.0 mm, MNHN-RA-2022.0046), body robust, neck distinct, snout relatively elongate, TailL 99% SVL (AMS R.161109). It can be distinguished from its congeners by the following combination of characteristics: claw of digit I positioned in a groove within the apical lamella, which is divided into a larger medial and smaller lateral portion, digit I of pes relatively narrow; two rows of precloacal pores in males, 35–46 pores in total; first pair of infralabials usually separated behind the mental (more rarely in narrow contact); midbody scale rows ~136; 14–16 mostly paired lamellae under digit IV of pes. Dorsum and flanks grayish to pinkish brown, with a pattern of 4 mostly symmetrical, narrow, complete, dark brown, transverse markings between the limb insertions, each bordered anteriorly by a transverse series of whitish spots and preceded by a pale blotch. An additional series of three dark brown markings across the nape, with the lateral elements larger, usually present. Tail base with a prominent pair of dark brown oval to triangular markings. Head markings usually prominent, including pale upper temporal patches, sometimes extending posteriorly as paired streaks, a pair of dark occipital markings, and a dark snout connecting via a canthal stripe and postorbital tripe to the nape or shoulder. Flanks, but not dorsum spotted with white. Tail banding of original tails usually strongly contrasting. Ventral coloration yellowish.

Among other members of the *B. borealis* Clade, *B. periclitata* sp. nov. is distinguished from all other clade members by its large size (66.0 maximum SVL vs. 62.9 mm in *B. borealis* sp. nov. and less in all other species) and its greater number of precloacal pores (35–46 vs. a maximum of 33 in *B. borealis* sp. nov. and less in all other clade members). It differs from *B. bouldina* sp. nov. in having 2 (vs. 3) rows of precloacal pores, from *B. ultramaficola* sp. nov. in lacking extensive dorsal white spotting, from *B. cocoensis* sp. nov. and *B. whitakeri* sp. nov. in generally having bold dark transverse markings (vs. more weakly demarcated), and from most individuals of other species in having a relatively prominent pattern of head markings.

**Description:** Based on holotype MNHN-RA-2022.0046 (ex. AMS R.161102), an adult male. Snout-vent length (SVL) 66.0 mm; trunk relatively long, robust, depressed. Head oblong, moderately long (HeadL 25% SVL), wide (HeadW 77% HeadL), not depressed (HeadD 36% HeadL); neck somewhat narrower than head width; slight interorbital/frontal depression present, canthus weakly demarcated; snout long (EyeSn 50% HeadL), more than twice eye diameter (OrbD 23% HeadL). Granular scales on snout approximately two to four times diameter of those on occipital region. Pupil vertically oriented with crenelated margins; several posterodorsal superciliary scales slender, elongate, pointed. Ear opening more than twice higher than wide, canted posterodorsally to anteroventrally; eye to ear distance less than 1.5 times greater than the diameter of eye (EyeEar 131% OrbD). Rostral rectangular, much broader than high, a short median crease divides the upper portion of the rostral, contacted posteriorly by four small internasal scales and one granule, and by two enlarged supranasals, contacted posteroventrally by first supralabial. Nostrils rounded and anterolaterally oriented, surrounded by four postnasals, one supranasal, and the rostral, in broad contact with first supralabial. Mental triangular, deeper than wide, first infralabials in narrow contact behind the mental, each contacting an enlarged, median, postmental chin shield and one additional somewhat smaller chin shield. First three to four rows of chin shields larger than remaining

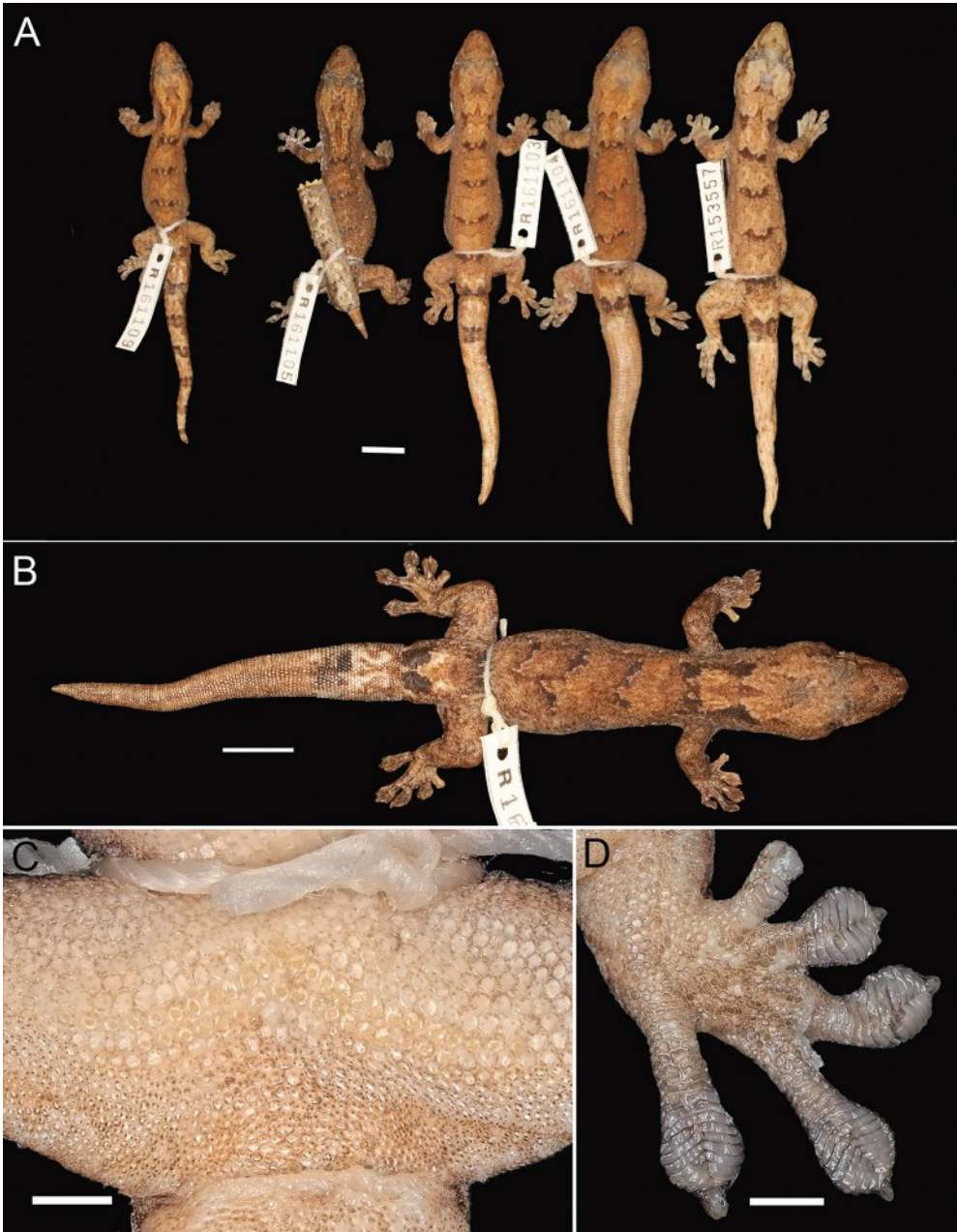


FIGURE 58. *Bavayia periclitata* sp. nov. A) Paratype series. B–E) Holotype MNHN-RA-2022.0046 (ex. AMS R.161102): B) whole body dorsal view; C) cloacal region; D) ventral view of right pes. Scale bars: A–B = 10 mm, C–D = 2 mm.

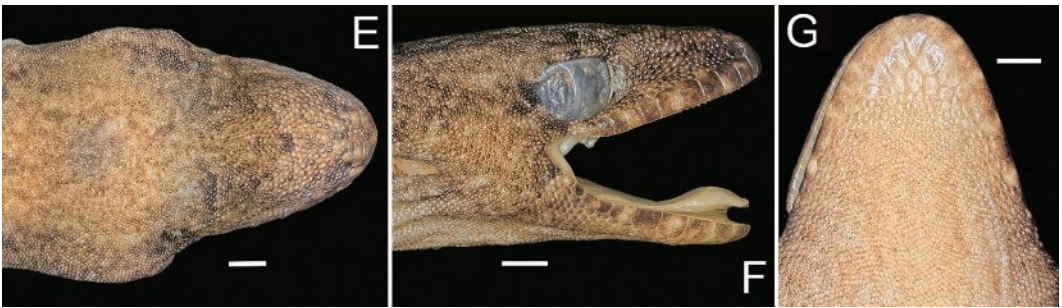


FIGURE 58 (continued). *Bavayia periclitata* sp. nov. Holotype MNHN-RA-2022.0046 (ex. AMS R.161102). E) dorsal view of head; F) right lateral view of head; G) ventral view of head. Scale bars = 2 mm.

throat scales. 10 L, 11 R enlarged supralabial scales, of which the posteriormost three are beneath the eye; 10 L, 9 R infralabial scales; 45 interorbital scale rows between superciliaries at midpoint of orbit, 12 interorbitals between the orbital margins of the frontal bone.

Dorsal scales small, homogeneous, very slightly conical, granular; ventral scales slightly larger than dorsals, subimbricate, enlarged posteriorly on the body. Posterior abdominal scales rounded, mid-abdominal scales elongate, diamond-shaped. Approximately 136 scale rows around mid-body. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Precloacal pores large and easily distinguishable, 41 in two rows; anterior continuous row of 15 pores, second continuous row of 16 pores. Forearm and crus short (11% and 14% of SVL, respectively), axillary pockets shallow. Digits long and wide distally, all bearing claws, those on digit I of both manus and pes greatly reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital lamellae paired distally, undivided basally. Distalmost lamella of digits II–V, manus and pes, undivided. Apical plates of digit I of manus and pes asymmetrical, with claw positioned in a notch between a larger medial and smaller lateral scansor. Lamellar counts from right side of holotype 4-11-12-13-12 manus and 7-13-13-15-13 pes.

TailL 53.2 mm (distal 35.5 mm regenerated), approximately 81% of snout-vent length, tapered, stout, roughly oval in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, rectangular, arranged in regular rows. Surface of tail weakly segmented, caudal scale rows forming whorls, each whorl ~7 dorsal scale rows and 6 ventral scale rows long; midventral caudal scales not enlarged. Scales on pygal portion of tail approximately  $\frac{1}{3}$  to  $\frac{1}{2}$  size those of post-pygal scales. Cloacal spurs consisting of one pair of large conical, blunt-tipped, slightly compressed, posterodorsally-directed, raised scales just posterior to each side of the cloaca.

**Color in preservative:** Dorsum and flanks medium, slightly grayish brown mottled with darker brown and cream to whitish markings. Line of small, more-or-less discrete, white spots along the flanks. A series of four dark brown, transverse dorsal markings on trunk between shoulder and sacrum; those on shoulders and sacrum more-or-less straight, first and second trunk markings asymmetrical and chevron-shaped, left side more extensive than right. A third trunk band anterior to the hindlimb insertion is present on the left side only and is connected to the chevron marking anterior to it. Each dark band several granules wide and bordered anteriorly by white granules forming a fragmentary to mostly complete margin. Anterior to each dark band is a large blotch or saddle of russet mottled with beige to cream. That preceding the dark shoulder band is bilobed and contains cream to whitish longitudinal markings. The dark shoulder band is connected laterally to a pair of dark marking on either side of the nape, between which lies a medium brown diamond-shape. The top of the head from midorbital position caudally and onto the nape to the level of the



dark lateral markings and median diamond-shaped marking is a mottling of light brown and beige with scattered medium brown and cream markings. There is a pair of small, discrete, medium brown oblong markings posterior to the bulge of the adductor musculature; medial to these, a vague pair of cranially converging cream lines enclose a space somewhat darker than the rest of the head dorsum. A thick, irregular, and partly incomplete dark brown streak extends from the snout, through and beneath the eyes, and across the temporal region to become confluent with the patterning of the upper flanks, just lateral to the dark brown shoulder and nape markings. A thin (one granule wide) dark brown line runs in an arc, bowing forward to the level of the nasal bones, to connect the anterodorsal aspects of the orbits to one another. An incomplete, thicker, dark brown line runs in a straight line across the interorbital area between the same anterodorsal points of the orbits, delineating an approximate triangle within which the ground color is somewhat darker than the rest of the snout, which itself bears several small, scattered, dark brown markings dorsally. The labial scales are primarily medium to dark brown with whitish spots within some individual scales. Limbs mottled various shades of brown and beige forming irregular reticulations and spots. The pygal portion of the tail bears a prominent pair of bold, dark brown ovals just anterior to the tail constriction and this is preceded by a pair of off-white markings that are linked to one another via a thin white line that borders the anterior margins of the bold pygal ovals. The post-pygal part of the original tail bears a single alternating pair of light (off white to cream) and dark (dark brown) markings of equal length that abut one another; the pale marking is symmetrical and has a well-defined medium brown anterior border, whereas the dark marking is asymmetrical and well-defined anteriorly but not laterally or posteriorly. The regenerated portion of the tail is medium brown with a diffuse, slightly darker, middorsal streak. Venter with more discrete brown pigmentation around the lateral margins, cloaca, limb margins and on throat.

**Color in life:** (based on life photo of paratype AMS R.153557, see Fig. 52C). Ground color grayish brown with a series of four bold dark chevrons between shoulders and sacrum, each bordered anteriorly by a series of individual white granules, forming an irregular dotted line. Dark transverse markings preceded by multi-lobed grayish to ashy blotches, each well separated from one another by a band of ground color and the next dark chevron. Flanks bearing 2–3 series of small white spots between the limb insertions and carrying forward to the jaw adductors. Pale shoulder blotch with a pair of ashy dashes in paravertebral position. Pair of dark nape markings almost in midline contact and linked to dark shoulder chevron by a longitudinal extension of dorsal trunk ground color. Patterning on head distinct; ashy markings on snout, across mid-orbital position, and covering much of the postorbital region to the occiput where the marking is M-shaped, with a small, separated ashy triangle anteromedially and a pair of dark brown markings posteromedially. This leaves a ground color antorbital triangle with its apex pointed cranially and a similar postorbital triangle with its apex directed caudally. The rim of the orbit is white with several interruptions by brown pattern elements. Two ashy to white streaks extend anteroventrally and posteroventrally from the rim of the orbit. The limbs are similar to the base ground color and bear thin dark brown bands and sparse scattered white granules. The pygal markings are bold — ashy and dark brown; the regenerated tail is tannish to grayish brown with some russet highlights and numerous irregular, broken, mostly longitudinal, faded dark brown lines. Ventral coloration pale yellow.

**Variation:** Mensural features of paratypes are presented in Table 23. The paratypes have 1–3 internasals. The first infralabials of all members of the type series are bordered posteriorly by 3–6 (usually 3) enlarged chin shields, with both infralabials touching the largest median chin shield. The first infralabials are separated behind the mental by an enlarged pentagonal to septagonal enlarged chin shield (except in paratype AMS R.161105 in which they are in narrow contact behind

Table 23. Mensural data from the type series of *Bavayia periclitata* sp. nov.; \*tail regenerated, \*\* broken.

	Holotype	Paratypes				
	MNHN-RA 2022.0046	AMS R.153557	AMS R.161103	AMS R.161104	AMS R.161109	AMS R.161105
Sex	M	M	M	M	F	F
SVL	66.0	69.5	59.4	64.2	48.8	58.2
ForeaL	7.3	8.4	7.2	7.0	5.5	6.4
CrusL	9.0	10.5	8.7	9.6	6.5	8.3
TailL	53.2*	51.4	49.3*	57.5	48.5	41.5**
HeadL	16.2	19.7	15.4	16.0	12.6	15.0
HeadW	12.4	13.15	11.8	12.4	9.5	11.2
HeadH	5.8	7.14	5.6	6.2	4.2	4.7
OrbD	3.8	3.7	3.4	3.6	3.0	3.5
EyeEar	5.0	5.6	5.2	5.3	4.0	4.6
SnEye	8.1	8.1	6.8	7.6	6.0	7.1
NarEye	6.0	6.1	5.1	5.5	4.3	5.0
InterOrb	5.5	5.2	4.8	5.6	4.8	4.8
EarL	2.1	2.0	1.9	1.7	1.6	1.9
InterNar	2.1	2.2	1.9	2.2	1.7	2.0

the mental. Male paratypes with 35–46 precloacal pores in two rows, first row with 21–28 pores, second row with 14–18; no pores or dimples in females. Longest original tail among paratypes 99% SVL (AMS R.161109). Color pattern fairly uniform, with four more-or-less prominent, mostly symmetrical chevrons or wavy transverse dark brown markings between shoulders and sacrum, each preceded by a relatively weakly-defined pale blotch or saddle. Light blotch anterior to dark shoulder marking either separated from (as in holotype) or continuous with paired pale neck markings that are contiguous with the pale dorsum of the head. Antorbital dark tringle invariably present, but sometimes fused posteriorly with other pattern elements. White spots on flanks variable in number and extent, never particularly bright. Most complete original tail (AMS R.161109) with eight pale markings (including tip); CAS 265751 very faintly marked in general and banding of tail not strongly contrasting.

**Etymology:** The specific epithet *periclitata* is the feminine singular nominative Latin participle meaning endangered. The name was selected by Gemma Farquhar, who won a contest to name a species of *Bavayia*. It is appropriate for this species, which has a particularly restricted range.

**Distribution:** The species' known distribution extends from the Kaala Massif northwards to the Koumac Caves area, a distance of about 10 km, in the northwest of the Province Nord (Fig. 54).

**Natural History:** The species is recorded from closed sclerophyll forest in the vicinity of outcropping limestone karst formations at Koumac (Koumac Caves) and from mid-elevation closed forest (460–500 m) on the Kaala Massif (Whitaker et al. 2004).

**Conservation Status:** *Bavayia periclitata* sp. nov. meets the criteria (B1ab(iii) + 2ab(iii)) to be categorized as Endangered on the IUCN Red List. It known with certainty only from two locations in a small area in northwest Grande Terre, with an estimated extent of occurrence of 140 km<sup>2</sup>. It has been recorded from 'sclerophyll' forest at Koumac and mid elevation closed forest on the Kaala Massif and is considered to have likely suffered a reduction in population size and extent from past habitat loss from wildfires and mining activities on Kaala, and from clearing for agriculture at Koumac. On the Kaala Massif it is considered to be at a high level of threat from loss and degradation of habitat from wildfires and from the expansion of the nickel mining industry (Pascal et al. 2008), and at Koumac from wildfire, particularly during periods of prolonged dryness (Ibanez et al. 2019). It is also regarded to be at a high level of threat from browsing by introduced deer in forest habitat resulting in a negative impact on the abundance and structure of understory shrubs used by geckos for foraging (de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-

Wichatitsky 2006), and from the introduced Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from arboreal sheltering and foraging sites, and to affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001).

**Remarks:** Referred to as *Bavayia* aff. *cyclura* sp. 3 by Whitaker et al. (2004).

***Bavayia whitakeri* sp. nov.**

Figures 52D, 59.

**Holotype:** MNHN-RA-2022.0035\* (ex. AMS R.188660\*, ex. AMB 6617), Paagoumène, watershed between Paagoumène Creek and Creek à Paul, 12 km NW of Koumac, Province Nord, 20°28'57.3"S, 164°11'37.9"E, by A.H. & V.A. Whitaker 17 Sep. 2005.

**Paratypes:** (all localities in Province Nord) AMS R.188662\* (ex. AMB 6632), Dôme de Tiébaghi, Sommet Yago, NW Tiébaghi Massif, 20°23'55"S, 164°07'56"E, coll. A.H. Whitaker and V.A. Whitaker, 23 Sep. 2005; CAS 265866 (ex. AMB 6616), Paagoumène, watershed between Paagoumène Creek and Creek à Paul, 12 km NW of Koumac, 20°28'57.3"S, 164°11'37.9"E, coll. A.H. Whitaker and V.A. Whitaker, 16 September 2005; CAS 265867–68\* (ex. AMB 6618–19), Paagoumène, watershed between Paagoumène Creek and Creek à Paul, 12 km NW of Koumac, 20°28'57.3"S, 164°11'37.9"E, coll. A.H. Whitaker and V.A. Whitaker, 17 September 2005; CAS 265869 (ex. AMB 6620), Dôme de Tiébaghi, Ouambayée, 13 km NW Koumac, 20°26'40.8"S, 164°13'20.6"E, coll. A.H. Whitaker and V.A. Whitaker, 19 September 2005; CAS 265870 (ex. AMB 6622), Tiébaghi Massif (north side), 17 km NW of Koumac, 20°25'24.3"S, 164°11'54.2"E, coll. A.H. Whitaker and V.A. Whitaker, 18 October 2005; CAS 265871\* (ex. AMB 6623), Tiébaghi Massif (north side), 15 km NW of Koumac, 20°25'54.6"S, 164°12'37.5"E, coll. A.H. Whitaker and V.A. Whitaker, 18 October 2005; CAS 265876–77\* (ex. AMB 6633–34), Dôme de Tiébaghi, Sommet Yago, NW Tiébaghi Massif, 20°23'45.4"S, 164°07'26"E, coll. A.H. Whitaker and V.A. Whitaker, 23 October 2005.

**Referred Material:** AMS R.161264\*, Sommet Noir, Paagoumène, 11 km NW Koumac, Province Nord, 20°30'06"S, 164°12'01"E.

**Diagnosis:** A small species of the *Bavayia borealis* Clade (maximum SVL 53.3 mm, CAS 265858), body robust, neck distinct, snout relatively acuminate, TailL 102% SVL. It can be distinguished from its congeners by the following combination of characteristics: claw of digit I positioned in a groove within the apical lamella, which is divided into a larger medial and smaller lateral portion, digit I of pes relatively narrow; 1–2 rows of precloacal pores in males, 12–19 pores in total; first pair of infralabials in contact behind the mental; midbody scale rows ~136; 12–14 mostly paired lamellae under digit IV of pes. Dorsum and flanks purplish brown to chocolate brown, with a pattern of 4–5 mostly irregular and asymmetrical, narrow, complete, dark brown, transverse markings between the limb insertions, each bordered anteriorly by a transverse series of whitish spots and preceded by a pale blotch or pair of blotches. Additional dark markings across the nape and sacrum. Head dorsum mottled and/or spotted, with a dark marking on the occiput; shoulder, nape and occipital markings often partly connected. Pale upper temporal patches not strongly delineated, not forming paired streaks on nape. Flanks and dorsum with white spots but absent from pale areas of the dorsum. Ventral coloration yellowish.

Among other members of the *B. borealis* Clade, *B. whitakeri* sp. nov. is distinguished by its small size (53.3 maximum SVL) from *B. borealis* sp. nov. (62.9 mm) and *B. periclitata* sp. nov. (66.0 mm) and by its low number of precloacal pores (12–19) from *B. borealis* sp. nov. (20–33), *B. bouldina* sp. nov. (28–31), and *B. periclitata* sp. nov. (35–46). It differs from *B. bouldina* sp. nov. in having 1–2 (vs. 3) rows of precloacal pores, from *B. ultramaficola* sp. nov. in lacking extensive white spotting in pale areas of the dorsum, and from *B. cocoensis* sp. nov. in having a narrower head and more extensive markings on the crown of the head.



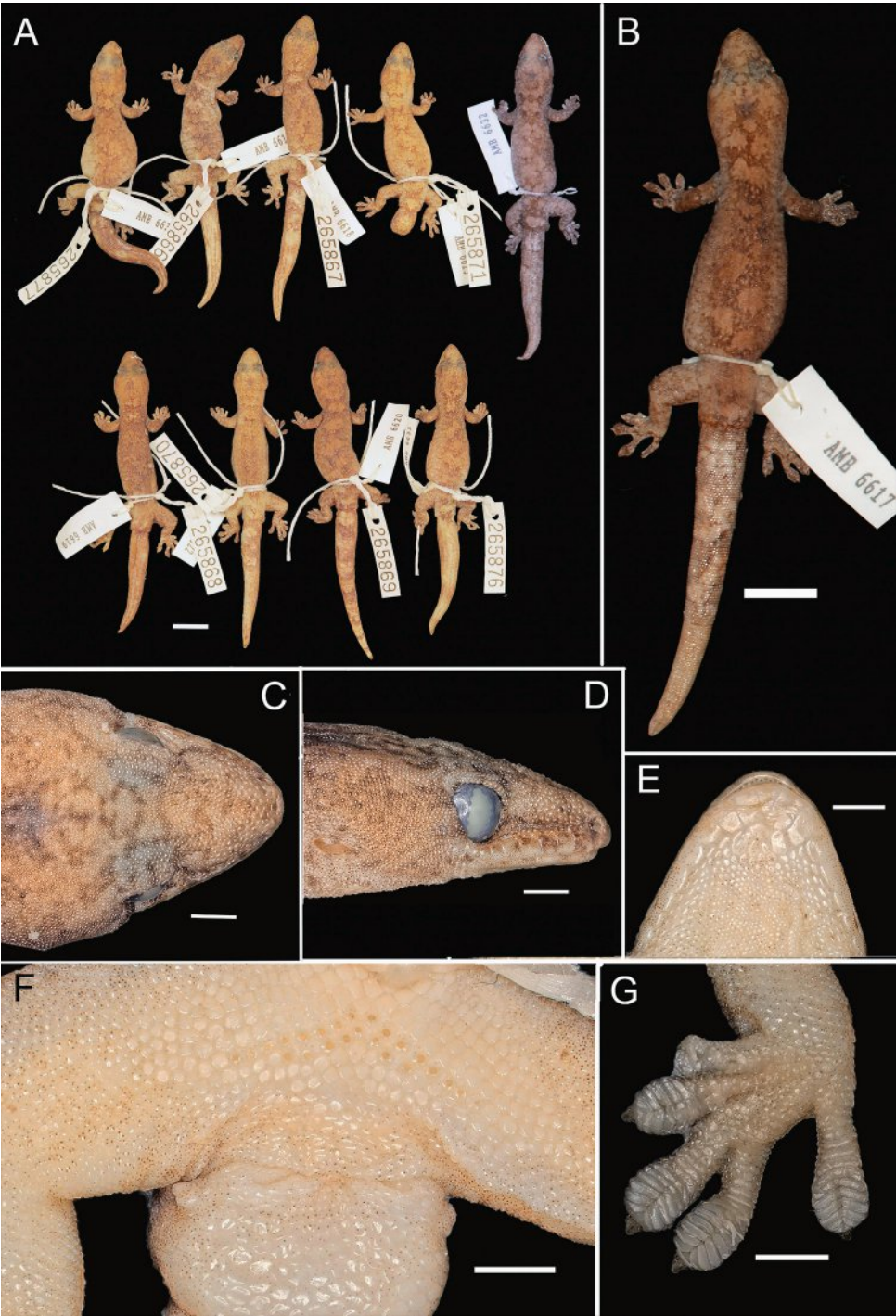


FIGURE 59. *Bavayia whitakeri* sp. nov. A) Paratype series. B–E) Holotype MNHN-RA-2022.0035 (ex. AMB 6617): B) whole body dorsal view; C) dorsal view of head; D) right lateral view of head; E) ventral view of right pes; F) cloacal region; G) ventral view of right pes. Scale bars: A–B = 10 mm, C–E = 2 mm.

**Description:** Based on holotype MNHN-RA-2022.0035 (ex. AMS R.188660\*, ex. AMB 6617), an adult male. Snout-vent length (SVL) 52.0 mm; trunk relatively short, robust, depressed. Head oblong, very large (HeadL 28% SVL), wide (HeadW 73% HeadL), depressed (HeadD 30% HeadL); neck distinct; slight interorbital/frontal depression present, canthus weakly demarcated; snout relatively short (EyeSn 41% HeadL), less than twice eye diameter (OrbD 22% HeadL). Granular scales on snout approximately two to four times diameter of those on occipital region. Pupil vertically oriented with crenelated margins; several posterodorsal superciliary scales slender, elongate, pointed. Ear opening twice higher than wide, canted posterodorsally to anteroventrally; eye to ear distance 1.5 times greater than the diameter of eye (EyeEar 151% OrbD). Rostral rectangular, much broader than high, no rostral crease, contacted posteriorly by a single large rhomboidal internasal scale, and by two enlarged supranasals, contacted posteroventrally by first supralabial. Nostrils rounded and anterolaterally oriented, surrounded by three postnasals, one supranasal, and the rostral, in broad contact with first supralabial. Mental triangular, approximately as deep as wide, first infralabials in narrow contact behind the mental, each contacting an enlarged, median, postmental chin shield and one additional somewhat smaller chin shield. First three to four rows of chin shields larger than remaining throat scales. 11 R enlarged supralabial scales, of which the 8<sup>th</sup> through 11<sup>th</sup> on the right side are beneath the eye; 11 R infralabial scales; 39 interorbital scale rows between superciliaries at midpoint of orbit, 15 interorbitals between the orbital margins of the frontal bone.

Dorsal scales small, homogeneous, very slightly conical, granular; ventral scales slightly larger than dorsals, subimbricate, enlarged posteriorly on the body. Posterior abdominal scales rounded, mid-abdominal scales elongate, diamond-shaped. Approximately 136 scale rows around midbody. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Precloacal pores large and easily distinguishable, 24 in two rows; anterior continuous row of 16 pores, second continuous row of 8 pores. Forearm and crus short (11% and 13% of SVL, respectively), axillary pockets shallow. Digits long and wide distally, all bearing claws, those on digit I of both manus and pes greatly reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital lamellae paired distally, undivided basally. Distalmost lamella of digits II~V, manus and pes, undivided. Apical plates of digit I of manus and pes asymmetrical, with claw positioned in a notch between a larger medial and smaller lateral scan-sor. Lamellar counts from right side of holotype 6-9-10-10-8 manus and 7-10-10-12-10 pes.

TailL 47.0 mm (distal 17.7 mm regenerated), approximately 90% of snout-vent length, tapered, stout, roughly oval in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, rectangular, arranged in regular rows. Surface of tail weakly segmented, caudal scale rows forming whorls, each whorl ~7 dorsal scale rows and 6 ventral scale rows long; midventral caudal scales not enlarged. Scales on pygal portion of tail approximately  $\frac{1}{3}$  to  $\frac{1}{2}$  size those of post-pygal scales. Cloacal spurs consisting of a pair of large conical, blunt-tipped, slightly compressed, posterodorsally-directed, raised scales just posterior to each side of the cloaca.

**Color in preservative:** Dorsum a reticulated network of medium brown mottled with russet and with russet dorsal blotches. Flanks a gray-brown mottled with medium brown and grayish markings and blotches with an irregular longitudinal row of pale spots on the upper flanks and continuing on to the ventrolateral margins of the tail. Dark reticulations forming four main transverse markings between limb insertions, one on shoulders, one across thorax, one at mid-trunk and the last just anterior to the hindlimb insertions; a more diffuse marking lies across the sacrum and there is a nape band separated from the shoulder band by a bilobed pale russet blotch at the level of the forelimb insertions. Three buff blotches forming a rough triangle anterior to the nape band,

with the margins surrounding each contiguous with the nape band and extending onto the postero-medial portion of the parietal table. Head buff to pale pinkish brown with numerous medium brown markings: a circle in interorbital position, an arc roughly coincident with each of the lateral margins of the frontal bone, a wide longitudinal streak in the midline of the snout and two irregular antorbital cross-markings. There is also a medium brown streak from the nostril, through and beneath the eye to the cheek and lower temporal region, whence it is joined to the lateral margin of the dark dorsal markings. The labial scales are primarily whitish, with extensive lighter and darker brown pigmentation on the anterior supralabials and on portion of other scales. medium to dark brown with whitish spots within some individual scales. Limbs mottled various shades of brown and buff forming irregular reticulations and spots; no obvious pale spotting or banding on the feet. The pygal portion of the tail bears a short, medium brown transverse marking straddling the tail constriction. Post-pygal portion of tail with three irregular whitish to cream-colored blotches each with some of its borders outlined in brown; interspaces tan, much lighter than the trunk. Regenerate beige to tan with scattered individual scales a faint orangey brown. Body venter beige with scattered slightly darker areas near the lateral margins of the body.

**Color in life:** (based on life photo of holotype, MNHN-RA-2022.0035, see Fig. 52D). Ground color purplish brown with a series of four bold dark transverse markings and several anastomosing connections between them between limb insertions each containing small white spots or with such spots bordering their anterior margins. Paler blotches pale purplish brown; pale markings on dorsum of head somewhat lighter, especially before and behind the orbit, where they are an ashy lavender. Pale markings on labial scales whitish as are parts of the orbital rim. Flanks grayish near ventrolateral margins. Pale markings on tail whitish with dark brown margins and interior markings and interspaces a mottled medium brown. Ventral coloration pale yellow.

**Variation:** Mensural features of paratypes are presented in Table 24. The paratypes have 1–3 (usually 1) internasals. The first infralabials of all members of the type series are in contact behind the mental, usually broadly so; collectively, first infralabials bordered posteriorly by 3–4 enlarged chin shields, with both infralabials touching the largest median postmental chin shield (except in CAS 265876). Male paratypes with 12–19 precloacal pores in one or two rows, first row with 12–14 pores, usually continuous, but with a single poreless scale between two continuous series of 6 each in CAS 265870; second row, if present, with 4–5 pores; no pores or dimples in females. Longest original tail among paratypes 105% SVL (CAS 265869). Color pattern variable. Dark dorsal transverse markings may be very faint (CAS 265870) or the pattern elements may be less reg-

TABLE 24. Mensural data from the type series of *Bavayia whitakeri* sp. nov.; \*tail regenerated, \*\* broken.

	Holotype	Paratypes								
	MNHN-RA 2022.0035	AMS R.188662	CAS 265868	CAS 265866	CAS 265871	CAS 265867	CAS 265870	CAS 265869	CAS 265877	CAS 265876
Sex	M	M	F	M	F	M	M	F	F	F
SVL	52.0	48.6	53.3	49.4	47.5	49.5	49.4	47.3	49.1	49.3
ForeaL	5.6	5.2	5.8	5.1	4.7	5.6	5.5	5.4	5.5	5.2
CrusL	7.0	6.4	7.8	7.6	6.0	7.2	7.0	6.3	6.6	6.5
TailL	47.0*	35.5*	36.5*	37.0*	9.5**	44.5*	43.5*	49.9	37.3*	40.7*
HeadL	14.3	12.9	14.6	15.4	13.2	15.3	13.5	15.0	14.0	14.6
HeadW	10.4	9.3	10.1	10.0	9.2	10.3	9.4	10.0	9.7	9.1
HeadH	4.2	4.2	4.7	5.1	5.5	5.5	5.5	4.7	5.6	5.8
OrbD	3.1	3.0	3.0	3.4	3.1	2.7	3.0	3.1	2.9	2.4
EyeEar	4.7	3.8	4.3	4.1	3.9	4.2	4.0	4.0	3.9	3.7
SnEye	5.8	5.6	5.1	5.2	4.9	5.2	5.1	5.1	5.0	4.8
NarEye	4.6	4.1	4.5	3.4	3.5	3.5	3.6	3.4	3.4	3.3
InterOrb	4.7	4.4	6.0	5.5	5.5	5.5	4.8	6.0	6.6	6.0
EarL	1.4	1.3	1.2	0.9	1.3	1.2	1.2	1.7	1.3	1.3
InterNar	1.6	1.6	1.9	1.9	1.8	1.9	1.6	1.7	1.7	1.7



ularly arranged than in the holotype (e.g., CAS 265866). In some individuals the number of dark transverse markings appears to be five between the limb insertions. Eight pale dorsal markings on the mostly complete original tail of CAS 265869. CAS 265877 is a gravid adult female carrying two eggs. In CAS 265866 the right foot is missing digit V.

**Etymology:** The specific epithet is a patronym honoring our friend and colleague Anthony (Tony) Hume Whitaker (1944–2014), indefatigable British-born Kiwi herpetologist and wildlife biologist who left us too soon. Tony and his wife Viv contributed greatly to New Caledonian herpetology, particularly that of the far north, where their tireless efforts turned up many novel lizards, including this species. Tony was a co-author of 27 New Caledonian lizard species, including three in the genus *Bavayia*.

**Distribution:** *Bavayia whitakeri* sp. nov. is known from several sites in the immediate vicinity of the Dôme de Tiébaghi in the far northwest of the Province Nord (Fig. 54). These sites, Paagoumène, the general vicinity of the old Tiébaghi mine village, and Sommet Yago are all around the periphery of the Tiébaghi Massif, and the species has not been recorded from the summit plateau region.

**Natural History:** *Bavayia whitakeri* sp. nov. has been recorded from low elevation (~40 m) maquis at Paagoumène (Fig. 49E) and Sommet Yago, and low elevation maquis (100–140 m) and riparian forest on the northwest slopes of the massif.

**Conservation Status:** *Bavayia whitakeri* sp. nov. meets the criteria (B1ab(ii, iii) + 2ab(ii, iii)) to be categorized as Endangered on the IUCN Red List. It is restricted in distribution to the Tiébaghi Massif in northwest Grande Terre, with an estimated extent of occurrence of ~80 km<sup>2</sup>. It occurs primarily in maquis but has also been recorded from riparian forest habitat. It has likely suffered a reduction in population size and extent resulting from past habitat loss and degradation from wildfires. It is considered to be at a high level of threat from loss and degradation of habitat from wildfires (Ibanez et al. 2019), and from clearance for mining activities associated with rapidly expanding extraction of ore from the summit of Tiébaghi (Pascal et al. 2008). The species is also considered to be at a moderate level of threat from habitat degradation by introduced deer which threaten forest habitat quality by altering the abundance and structure of understory shrubs used for foraging (de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-Wichatitsky 2006), and from the introduced Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from ground sheltering sites and arboreal foraging sites, and to affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001).

**Remarks:** Referred to as *Bavayia* aff. *montana* sp. 2 by Whitaker et al. (2004).

### *Bavayia crassicollis* Clade

**Content:** *Bavayia crassicollis* Roux, 1913; *B. tanleensis* sp. nov.; *B. rhizophora* sp. nov.; *B. occidentalis* sp. nov.; *B. insularis* sp. nov.

**Definition:** Members of the *B. crassicollis* Clade are distinguished from other *B. cyclura* group taxa by their large to very large body size (maximum 66.8–81.0 mm SVL); first infralabials in contact behind the mental or separated. Jaw adductors generally hypertrophied (vs. rarely so in other clades). Distal portions of digits II–V moderately to strongly dilated. Males with 2 (rarely 3) rows of precloacal pores (vs. sometimes 1 or 3 in the *B. borealis* Clade); maximum 33 pores in total. Dorsal pattern of 3–4 dark, transverse markings between limb insertions, each preceded by a pale symmetrical or asymmetrical blotch, dorsal pattern elements not extending on to flanks. A dark transverse nape marking present or not.

***Bavayia crassicollis* Roux, 1913**

Figures 60, 61A–B.

1913 *Bavayia cyclura crassicollis* Roux, Nova Caledonia, Zool. 1(2):89.

**Lectotype:** NMBA 6931, Netché, Maré, Loyalty Islands, Province des Îles Loyauté, New Caledonia, 21°29'S, 167°51'E, coll. F. Sarasin and J. Roux, November–December 1911. Lectotype designated by Kramer (1979:159) who gave only the locality “Maré, Loyalty Insel.”

**Paralectotypes:** (all localities in Province des Îles Loyauté) NMBA 6940, Nathalo, Lifou Island, Loyalty Islands, 20°47'S, 167°16'E, coll. F. Sarasin and J. Roux 1 May 1911; NMBA 6938–39, Quépénéé [Chepenhe], Lifou Island, Loyalty Islands, 20°47'S, 167°09'E, coll. F. Sarasin and J. Roux April–May 1912; MCZ R27935, Netché, Maré Island, Loyalty Islands, 21°29'S, 167°51'E, coll. F. Sarasin and J. Roux, November–December 1911; MCZ R19633, NMBA 6933–34, Padaoua [= Padawa], Maré Island, Loyalty Islands, 21°28'S, 167°51'E, coll. F. Sarasin and J. Roux November–December 1911; NMBA 6935, Rô, Maré Island, Loyalty Islands, 21°23'31"S, 167°51'40"E, coll. F. Sarasin and J. Roux, November–December, 1911; NMBA 6936–37, Pénélo, Maré Island, Loyalty Islands, 21°34'S, 168°06'E, coll. F. Sarasin and J. Roux, November–December 1911; NMBA 6941, Fayaoué, Ouvéa Island, Loyalty Islands, 20°39'S, 166°32'E, coll. F. Sarasin and J. Roux, 15 May 1912.

**Referred Material:** (all localities in Province des Îles Loyauté unless otherwise noted) AMS R.125501–23, R.125597–600, NMBA 6930, Fayaoué, Ouvéa Island, Loyalty Islands, 20°39'S, 166°33'E; AMS R.125643–65, R.125688, AMNH 61683–86, 61689, Ouvéa Island [no precise locality]; Hunete village (1.3 km E of village), Lifou Island, Loyalty Islands, 20°46'S, 167°10'E; AMS R.125687, Hunete village (2.5 km E of village), Lifou Island, Loyalty Islands, 20°46'S, 167°05'E; AMNH 24681–83, FMNH 105710, MCZ R9293–94, R19632, NMBA 6923, 6925–26, 6929, RMNH 6789, UMMZ 127507 (cleared-and-stained), Quépénéé [Chepenhe], Lifou Island, Loyalty Islands, 20°47'S, 167°09'E; MCZ R19631, NMBA 6912, 6915, 6917–21, Nathalo Lifou Island, Loyalty Islands, 20°47'S, 167°16'E; AMS 125691\*, Luceilla, Lifou Island, Loyalty Islands, 20°54'S, 167°16'E; AMS R.163370\*, We, Lifou Island, Loyalty Islands, 20°53'44"S, 167°15'29"E; AMS R.163371–72\*, R.163373, R.163374\*, Luceilla, Lifou Island, forest track at Lycée Polyvalent, Loyalty Islands, 20°53'38"S, 167°15'03"E; AMS R.163392–93\*, R.163394, R.163395–96\*, Luceilla, Lifou Island, Loyalty Islands, 20°54'09"S, 167°15'22"E; AMS R.125711, lighthouse on Cap des Pins, Lifou Island, Loyalty Islands, 21°04'S, 167°28'E; AMNH 61687, 61690–91, FMNH

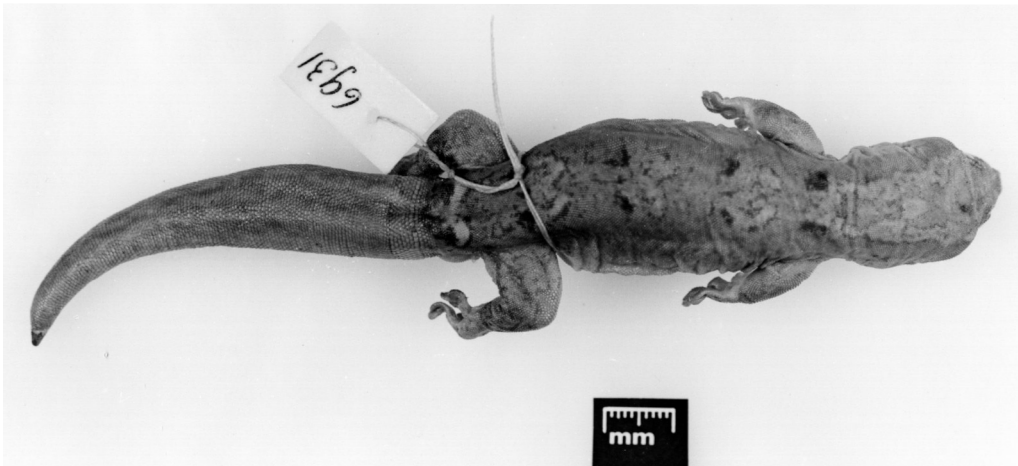


FIGURE 60. Lectotype of *Bavayia crassicollis* (NMBA 6931) from Netché, Maré, Loyalty Islands. Photo by R.A. Sadlier.

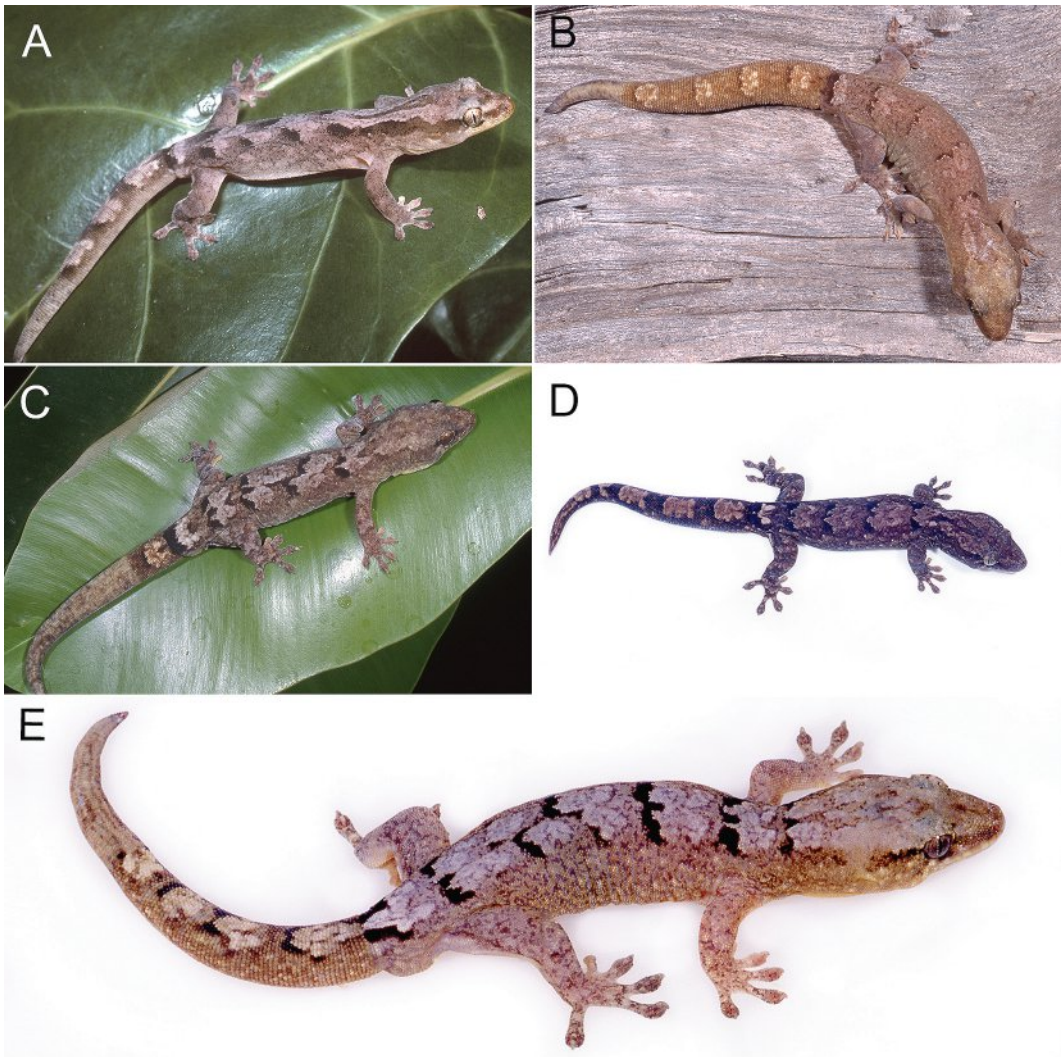


FIGURE 61. Life photographs of representatives of the *Bavayia crassicollis* clade. A) *B. crassicollis* (AMS R.125501), Fayaoué, Ouvéa, Loyalty Islands. B) *B. crassicollis* (AMS R.163392), Luceilla, Lifou, Loyalty Islands. C) *B. rhizophora* (holotype, MNHN-RA-2022.0056), Oundjo. D) *B. occidentalis*, Pindaï. E) *B. insularis* (AMS R.153619), Point Naharian, Boat Pass. All photos R.A. Sadlier.

105666–67, UMMZ 64306, Lifou Island [no precise locality]; NMBA 6909–10, Netché, Maré Island, Loyalty Islands, Province des Îles Loyauté, New Caledonia, 21°29'S, 167°51'E; NMBA 6911, Pénélo, Maré Island, Loyalty Islands, 21°34'S, 168°06'E; AMNH 60472, 81758, Maré Island, Loyalty Islands [no precise locality]; NMBA 2901–03, NMW 19363:1–2, SMF 9029, Loyalty Islands [no precise locality]; AMS R.163249\*, Île des Pins, Île Aventure, Province Sud, 22°40'23"S, 167°27'30"E.

**Diagnosis:** A very large species of the *Bavayia crassicollis* Clade (maximum SVL 81 mm [Roux] 1913) body and tail robust, TailL ~100% SVL. It can be distinguished from its congeners by the following combination of characteristics: Head wide, with hypertrophied adductor muscles, distinct from neck; claw of digit I positioned in a groove within the apical lamella, which is divid-



ed into a larger medial and smaller lateral portion; two rows of precloacal pores in males, 18–30 pores in total, 10–18 in anterior row and 8–14 in posterior row; first pair of infralabials usually separated from one another by the mental; 13–16 mostly paired lamellae under digit IV of pes. Dorsum and flanks light to medium brown, sometimes with pinkish undertones, with a pattern of four dark brown, transverse bands between the limb insertions, with an additional bold band on the tail base; dark, transverse nape band usually lacking. Dark bands preceded by a transverse row of tiny white spots or flecks and an often ill-defined pale blotch; dorsal patterning not extending on to flanks, which are grayish brown. Dorsal pattern often very faint and one or more dark bands may be lacking. Rarely the dark markings may be reduced to pairs of dark blotches, which may be bold, especially in smaller individuals (Fig. 60). Paired pale upper temporal streaks extend posteriorly to the nape or shoulder and enclose a darker area in the midline behind the occiput. Limbs unspotted, tail often with a pinkish or orangish cast; venter with a pale to bright yellow flush. Pale blotches on tail limited to dorsum, with brown borders posteriorly but ill-defined anterior margins.

Among other members of the *B. crassicollis* Clade, *B. crassicollis* is distinguished from all other species by its large size (maximum SVL 81.0 mm vs. 73.3 in *B. occidentalis* sp. nov., the next largest species). Paired upper temporal markings may or may not extend beyond the neck to the shoulder region (vs. usually interrupted at the nape by dark transverse band in *B. insularis* sp. nov.). Dark transverse markings typically less bold and/or more fragmented than in other clade members (except *B. tanleensis*).

**Distribution:** Occurs on all main islands in the Loyalty Islands (Province des Îles Loyauté): Lifou, Maré and Ouvéa (Fig. 62). Its occurrence on Tiga is attested to by subfossil material (Daza et al. 2015) and there are anecdotal records from the neighboring islet of Dudune. At least one individual of this species has been genetically confirmed from the area surrounding the Île des Pins, which is naturally occupied by the similarly-sized, *B. robusta*. The site of collection, Île Aventure, is frequented by private pleasure craft and we have interpreted its occurrence there as a accidental translocation (Geneva 2007; Geneva et al. 2013).

**Natural History:** *Bavayia crassicollis* has been recorded from coastal scrub, the edge of disturbed forest bordering local agricultural plots, and closed-forest habitat (Fig. 49F). It is primarily arboreal. Roux (1913) recorded it inhabiting the fronds on coconut trees on Maré; we have found it sheltering beneath the bark of trees in coastal habitat on Lifou. As is typical for *Bavayia* spp., this species is an arthropod feeder and is oviparous, producing two eggs per clutch.

**Conservation Status:** *Bavayia crassicollis* meets the criteria (B1ab(ii, iii, v) + 2ab(ii, iii, v)) to be categorized as Vulnerable on the IUCN Red List (Sadlier et al. 2021). The species is endemic to Province des Îles Loyauté and has an estimated extent of occurrence of 4,233 km<sup>2</sup> and area of occupancy of 60 km<sup>2</sup>. It is presumed to have suffered past declines in population size and extent of occurrence through habitat loss resulting from clearance for occupation and agriculture, and from predation by introduced species. The main threats to *B. crassicollis* are from ongoing loss and degradation of habitat from forest clearance for agriculture, and serious impacts from the introduced Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from ground sheltering sites and arboreal foraging sites, and to affect the abundance and composition of invertebrate prey, especially in humid forest habitat (Jourdan et al. 2000, 2001).

**Remarks:** Roux (1913) assigned some specimens from Maré (Netché, Pénélo) and Lifou (Quépénée, Nathalo) to *B. cyclura*. Sadlier and Bauer (1997) initially considered Ouvéa populations to be *B. cyclura*, as then construed. Bauer and Vindum (1990) and Bauer and Sadlier (2000) applied the name *B. crassicollis* to a variety of large-bodied, robust *B. cyclura* group geckos that are now recognized as *B. robusta* and to an individual (CAS 157695) now assigned to *B. borealis*, from the Îlot de Hienghène on the northeast coast of the Grande Terre. Bauer and Sadlier (2000)

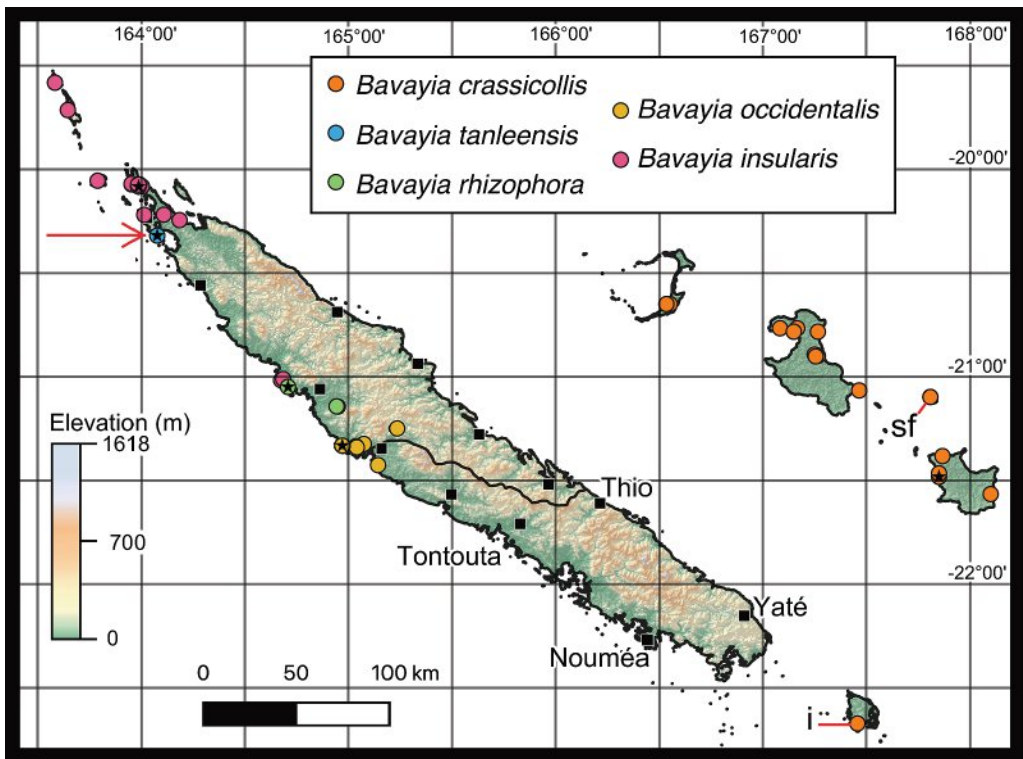


FIGURE 62. Map showing the distribution of members of the *Bavayia crassicollis* Clade. *Bavayia crassicollis* (orange), *B. tanleensis* (blue, see arrow), *B. rhizophora* (green), *B. occidentalis* (mustard), *B. insularis* (pink). Stars indicate type localities. i = introduced population, sf = subfossil remains. Cartography by J. DeBoer.

incorrectly cited AMS R.78349 as a *B. crassicollis* measuring 86.6 mm SVL; the intended number was AMS R.78340 and the specimen is a *B. robusta*. Bauer and Jackman (2006) used genetic information to confirm that the species is likely a Loyalty Islands endemic. Subfossil osteological material attributable to *B. crassicollis* has been identified and figured from a site dated to ~2500 ybp at Dréné on Tiga (Daza et al. 2015).

***Bavayia tanleensis* sp. nov.**

Figure 63.

**Holotype:** MNHN-RA-2022.0051\* (ex. AMS R.167249), adult male, Île Tanlé, Province Nord, New Caledonia, 20°19'10.49"S, 164°04'29.59"E, coll. A.H. Whitaker and V.A. Whitaker, 22 June 2006.

**Diagnosis:** A small species of the *Bavayia crassicollis* Clade (only known specimen, MNHN-RA-2022.0051, with SVL 66.8 mm), body and regenerated tail robust, TailL ~100% SVL. It can be distinguished from its congeners by the following combination of characteristics: Head wide, with hypertrophied adductor muscles, distinct from neck; claw of digit I positioned in a groove within the apical lamella, which is divided into a larger medial and smaller lateral portion; ~126 midbody scale rows; two rows of precloacal pores in males, 28 pores in total, 17 in anterior row and 11 in posterior row; first pair of infralabials separated from one another by contact of the mental and median postmental; 13 mostly paired lamellae under digit IV of pes. Dorsum mottled beige to light brown with thin medium brown lines forming a reticulation. More distinct dark trans-

verse bands on the anterior sacral region and on tail base. Nape and shoulder bands very diffuse and ill defined. Pattern likely derived from that typical for the clade (four dark transverse bands between limb insertions). Transverse series of white spots associated with dark transverse lines present but vague. Flanks and limbs mottled with pale, diffuse spots and blotches. Dorsal surface of head mostly patternless, paired pale streaks extending from posterior upper temporal region towards the shoulder are barely discernable.

Among other members of the *B. crassicollis* Clade, *B. tanleensis* is distinguished from all other species by its very weakly developed dorsal pattern.

**Description:** Based on holotype MNHN-RA-2022.0051 (ex. AMS R.167249), an adult male, formerly AMS R.167249). Snout-vent length (SVL) 66.8 mm; trunk relatively short and robust, depressed. Head oblong, moderately long (HeadL 25% SVL), wide (HeadW 76% HeadL), not depressed (HeadD 40% HeadL), distinct from neck; interorbital/frontal depression present, canthus weakly developed; snout of moderate length (EyeSn 42% HeadL), twice eye diameter (OrbD 21% HeadL). Granular scales on snout approximately two to three times the diameter of those on occipital region. Pupil vertically oriented with crenelated margins; superciliary scales of posterior quadrant of orbit slender, elongate, pointed. Ear opening approximately twice as high as wide, canted posterodorsally to anteroventrally; eye to ear distance much greater than the diameter of eye (EyeEar 164% OrbD). Rostral rectangular, much broader than high, divided by a partial asymmetrical rostral crease running downward for a distance of < 20% of the rostral height, contacted posteriorly by three internasal scales, the median smaller than the lateral pair, and two enlarged supranasals, contacted posteroventrally by first supralabial. Nostrils rounded and anterolaterally oriented, surrounded by a single enlarged postnasal, one supranasal, and the rostral, in broad contact with first supralabial. Mental subtriangular, approximately as wide as deep; first infralabials separated posteriorly by the mental and an enlarged, pentagonal, median postmental chin shield; left first infralabial in contact with median shield and two smaller chin shields, right in contact with median shield and three smaller chin shields. First three to six rows of chin shields larger than remaining throat scales. Ten enlarged supralabial scales, of which the posteriormost three are beneath the eye; 9 L, 10 R infralabial scales; 38 interorbital scale rows between superciliaries at midpoint of orbit, 16 interorbitals between the orbital margins of the frontal bone.

Dorsal scales small, homogeneous, very slightly conical, granular; ventral scales slightly larger than dorsals, subimbricate, enlarged posteriorly on the body. Posterior abdominal scales rounded, mid-abdominal scales elongate, diamond-shaped. Approximately 126 scale rows around midbody. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Precloacal pores small but easily distinguishable, 28 in two rows; anterior row of 17 pores (8 left and 9 right with a single poreless scale between them, second continuous row of 11 pores. Forearm and crus short (12% and 15% of SVL, respectively), axillary pockets shallow. Digits short and wide distally, all bearing claws, those on digit I of both manus and pes greatly reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital lamellae paired distally, undivided basally. Distalmost lamella of digits II–V, manus and pes, undivided. Apical plates of digit I of manus and pes asymmetrical, with claw positioned in a notch between a larger medial and smaller lateral scansors. Lamellar counts from right side of holotype 6-10-11-13-12 manus and 6-10-11-13-10 pes.

TailL 48.0 mm (distal 40.8 mm regenerated), approximately 72% of snout-vent length, thickened at junction between original and regenerated portions, tapered, stout, oval in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, rectangular, arranged in regular rows. Scales on pygal portion of tail about half the size of post-pygal scales. Cloacal spurs consisting of



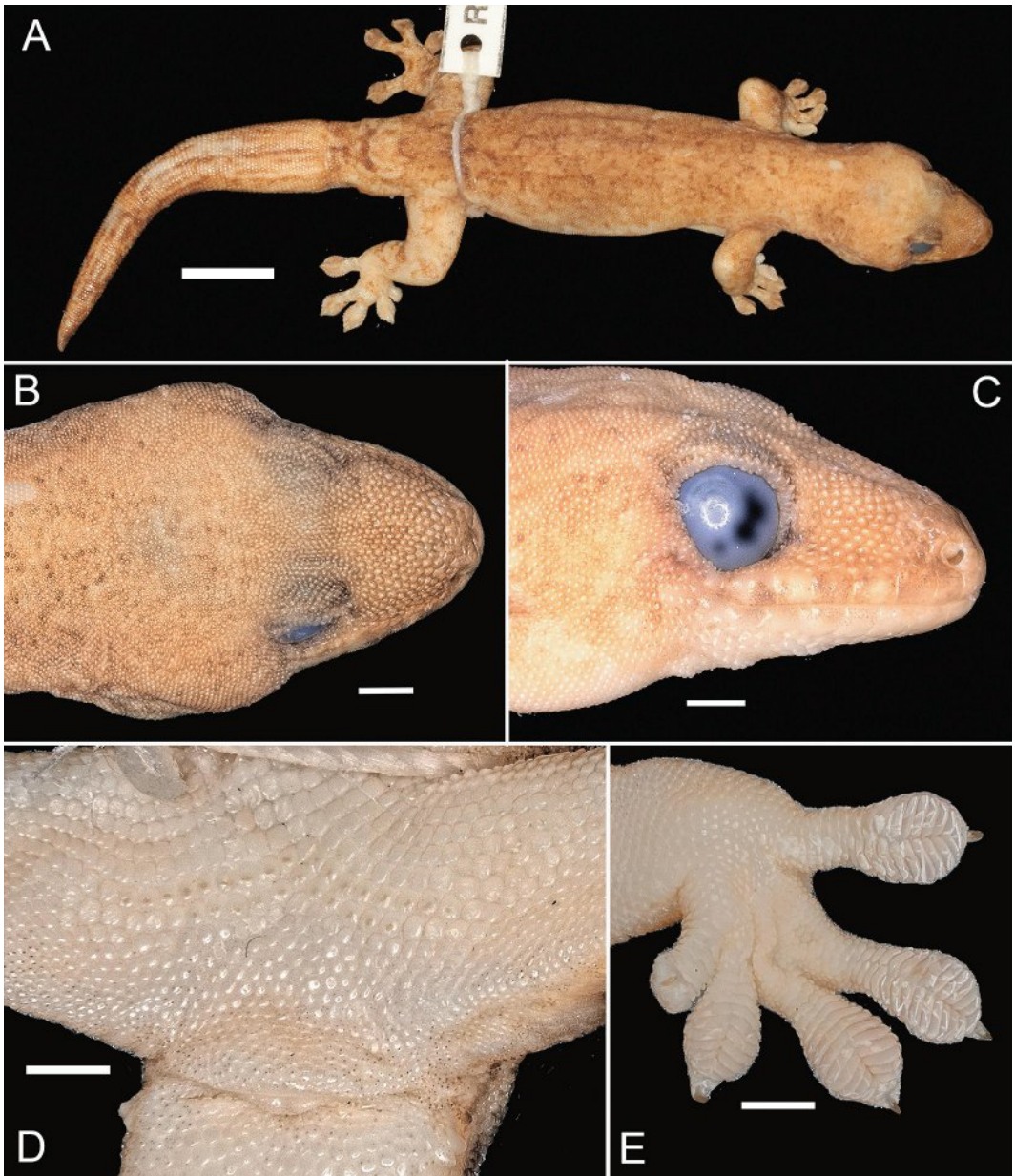


FIGURE 63. *Bavayia tanleensis* sp. nov. A–E) Holotype MNHN-RA-2022.0051 (ex. AMS R.167249); A) whole body dorsal view; B) dorsal view of head; C) right lateral view of head; D) cloacal region; E) ventral view of right pes. Scale bars: A = 10 mm, B–E = 2 mm.

pair of smooth, conical, blunt-tipped, slightly compressed, posterodorsally directed raised scales just posterior to each side of the cloaca.

Measurements (in mm) SVL 66.8, ForeaL 7.2, CrusL 9.3, TailL 48.0, HeadL 16.5, Head W 12.6, HeadH 6.6, OrbD 3.4, EyeEar 5.6, SnEye 7.0, NarEye 5.0, InterOrb 5.5, EarL 1.9, InterNar 2.0.

**Color in preservative:** Dorsum and flanks mottled beige to light brown with thin medium

brown lines forming an irregular reticulation. Vague suggestion of at least two more-or-less transverse medium brown markings between the limb insertions, on the shoulder region and on the nape; a more distinct such band, but darker brown across the anterior sacrum. Four somewhat paler blotches or saddles between the shoulders and sacrum barely discernable. Irregular whitish spots, partly fused together on flanks; several similar spots on sides of neck and just behind the left side of the occiput. Dorsal surface of posterior portion of head patternless except for a few small scattered brown flecks or blotches. Snout, supraorbital region and temporal area more darkly pigmented; labial scales mostly cream-colored, with relatively extensive brown pigmentation on most supralabial scales and near the labial borders of the infralabials. Limbs colored as trunk, but with extensive cream-colored areas lacking most darker pigment especially on elbows and inner digits of manus and much of right hindleg, including the pes. Pygal portion of tail dorsum with a distinct cream-colored marking with a medium brown border, two scale rows anteriorly and laterally and twice this thickness posteriorly. Diffuse light brown markings present within the cream field, lateral surfaces of tail base with diffuse white spots. Anterior portion of first post-pygal marking present, but remainder of tail regenerated, beige with incomplete longitudinal white and medium brown stripes of varying thickness. Venter pearly white to off white.

**Color in life:** (based on life photograph from Whitaker and Whitaker (2007)): Ground color a rusty brown, dorsal pale blotches grayish, pattern weakly delineated. Pale markings on labials and around eye white, pale blotch on tail base ashy gray, brighter than dorsal markings. Iris coppery.

**Etymology:** Named for Île Tanlé, the only known place of occurrence of the species.

**Distribution:** Known only from Île Tanlé at the entrance to the Baie de Tanlé (Fig. 62), although it seems likely that it should be present on neighboring Île Boh, only 320 m distant, and perhaps on other nearby islands inside the barrier reef, as well as parts of the adjacent mainland, from which Tanlé is separated by a minimum distance of 1.4 km.

**Natural History:** The single known specimen was collected from beneath the bark of a supralittoral tree (Whitaker and Whitaker 2007).

**Conservation Status:** *Bavayia tanleensis* sp. nov. meets the criteria (B1ab(iii, v) + B2ab(iii, v)) to be categorized as Critically Endangered on the IUCN Red List. It is known only from a single individual collected opportunistically from Île Tanlé, a small island (>1 km<sup>2</sup>) off the far northwest coast of the Province Nord. The single record on which the species is based was recorded from supralittoral habitat over three nights of survey work in 2006 (Whitaker & Whitaker, 2007). On the basis of its rarity for the survey effort invested the population would appear to be extremely small, but with the caveat that only the eastern half of the island was surveyed. The larger (~2.5 km<sup>2</sup>) Île Boh, which lies only 0.5 of a kilometer across a shallow channel, was not surveyed. Regardless the species distribution appears to be very restricted and under the critical threshold for area of occupancy to be considered Critically Endangered. It has not been recorded from the adjacent mainland despite extensive field studies for lizards in the vicinity of Sommet Poum (7.5 km NW) and Sommet Yago (11 km SE) near the Dôme de Tiébaghi. The island appears to have undergone a significant reduction in extent and diversity of vegetation. The species would be at a high risk of threat from wildfire if it did break out on the island. Deer occur on the island or make incursions from neighboring islands (Whitaker & Whitaker, 2007), and could present a threat to the quality of habitat (de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-Wichatitsky 2006). The species is also threatened by competition for resources and displacement from arboreal sheltering sites by the introduced gecko *Hemidactylus frenatus*, which was recorded during the 2006 survey in high densities, and from predation by rats (Whitaker 1978) which were abundant at that time (Whitaker and Whitaker 2007). The introduced Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from ground sheltering sites and arbore-

al foraging sites, and to affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001) could also present a serious threat to the species if introduced to the island.

***Bavayia rhizophora* sp. nov.**

Figures 61C, 64.

**Holotype:** MNHN-RA-2022.0056 (ex. AMB 7689), Oundjo, 17.3 km N Koné on Rte 1 to Voh, Province Nord, New Caledonia, 21°02'59"S, 164°42'29"E, coll. A.M. Bauer, T.R. Jackman, and R.A. Sadlier, 18 January 2003.

**Paratypes:** (all localities in Province Nord) AMS R.188664–66 (ex. AMB 7684, 7686, 7687), CAS 265822\* (ex. AMB 7683), 265823–24 (ex. AMB 7685, 7688), same data as holotype; CAS 216953 (ex. AMH 46837), Tia (5 km SE Pouembout), 21°08'36"S, 164°56'36"E, coll. R.A. Sadlier, 15 February 2001.

**Referred Material:** (all localities in Province Nord) AMS R.157811–18, R.157881–83, R.157929, Tia (5 km SE Pouembout), 21°08'40"S, 164°56'58"E; AMS R.157820–34, R.157877–79, R.157887, R.158798–99, R.158800\*, CAS 216954, Tia (5 km SE Pouembout), 21°08'36"S, 164°56'36"E.

**Diagnosis:** A large species of the *Bavayia crassicollis* Clade (maximum SVL 72.8 mm, MNHN-RA-2022.0056), body and tail robust, maximum TailL (regenerated) ~91% SVL. It can be distinguished from its congeners by the following combination of characteristics: Head wide, with hypertrophied adductor muscles, distinct from neck; claw of digit I positioned in a groove within the apical lamella, which is divided into a larger medial and smaller lateral portion; two rows of precloacal pores in males, 25–30 pores in total, 15–19 in anterior row and 9–11 in posterior row; first pair of infralabials usually separated from one another by the contact of the mental and post-mental; 12–14 mostly paired lamellae under digit IV of pes. Dorsum and flanks light to medium grayish brown, with a pattern of four dark brown, transverse bands between the limb insertions, with an additional bold band on the tail base; dark, transverse nape band absent. Dark bands preceded by a transverse row of tiny white spots or flecks and an often ill-defined pale blotch; dorsal patterning not extending on to flanks, which are grayish brown and bear tiny white dots. Dorsal pattern symmetrical or asymmetrical. Paired pale upper temporal streaks prominent, extending posteriorly to shoulder and enclosing a darker area in the midline on the occiput and nape. Limbs mottled, tail with pale dorsal blotches limited to dorsal surface, with well-defined brown borders posteriorly but ill-defined anterior margins; venter with a pale to bright yellow flush.

Among other members of the *B. crassicollis* Clade, *B. rhizophora* sp. nov. is distinguished from *B. crassicollis* by its smaller size (maximum SVL 72.8 mm vs. 81.0 mm), from *B. crassicollis* and *B. tanleensis* sp. nov., by its bolder, more complete dark transverse bands, from *B. insularis* sp. nov. by the absence of a dark, transverse nape band, and from *B. occidentalis* sp. nov. by having larger, more heterogeneous antorbital scalation.

**Description:** Based on holotype MNHN-RA-2022.0056 (ex. AMB 7689), an adult male. Snout-vent length (SVL) 72.8 mm; trunk relatively short, robust, depressed. Head oblong, moderately long (HeadL 26% SVL), wide (HeadW 76% HeadL), not depressed (HeadD 42% HeadL); neck relatively indistinct; interorbital/frontal depression present, canthus weakly developed; snout relatively short (EyeSn 39% HeadL), less than twice eye diameter (OrbD 22% HeadL). Granular scales on snout approximately two to three times diameter of those on occipital region, somewhat heterogeneous. Pupil vertically oriented with crenelated margins; posteriormost superciliary scales slender, elongate, pointed. Ear opening approximately 1.5 times higher than wide, slightly canted posterodorsally to anteroventrally; eye to ear distance much greater than the diameter of eye (Eye-Ear 135% OrbD). Rostral rectangular, much broader than high, no rostral crease, contacted poste-



riorly by a single internasal scale and by two enlarged supranasals, contacted posteroventrally by first supralabial. Nostrils rounded and anterolaterally oriented, surrounded by three postnasals, one supranasal, and the rostral, in broad contact with first supralabial. Mental triangular, as wide as deep; first infralabials in narrow contact behind the mental, each in contact posteriorly with a median, pentagonal, enlarged postmental chin shield and one additional chin shield. First three to five rows of chin shields larger than remaining throat scales. 10 L, 11 R enlarged supralabial scales, of which the posteriormost 3–4 are beneath the eye; 10 L, 10 R infralabial scales; 34 interorbital scale rows between superciliaries at midpoint of orbit, 14 interorbitals between the orbital margins of the frontal bone.

Dorsal scales small, homogeneous, very slightly conical, granular; ventral scales slightly larger than dorsals, subimbricate, enlarged posteriorly on the body. Posterior abdominal scales rounded, mid-abdominal scales elongate, diamond-shaped. Approximately 132 scale rows around midbody. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Precloacal pores very large and easily distinguishable, 24 in two rows; anterior row of 15 pores with a single poreless scale separating 7L and 8R pores, second row of 9 pores, with a single poreless scale separating 4L and 5R pores. Forearm and crus very short (11% and 14% of SVL, respectively), axillary pockets shallow. Digits long and relatively wide distally, all bearing claws, those on digit I of both manus and pes greatly reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital lamellae paired distally, undivided basally. Distalmost lamella of digits II–V, manus and pes, undivided. Apical plates of digit I of manus and pes asymmetrical, with claw positioned in a notch between a larger medial and smaller lateral scissor. Lamellar counts from right side of holotype 6-11-11-12-11 manus and 5-10-12-12-8 pes.

TailL 62.4 mm (distal 44.7 mm regenerated), approximately 86% of snout-vent length, tapered, stout, roughly oval in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, rectangular, arranged in regular rows. Surface of tail weakly segmented, caudal scale rows forming whorls, each whorl ~7 dorsal scale rows and 6 ventral scale rows long; midventral caudal scales not enlarged. Scales on pygal portion of tail approximately one half size those of post pygal scales. Cloacal spurs consisting of one large and one smaller smooth, conical, blunt-tipped, slightly compressed, posterodorsally directed raised scales just posterior to each side of the cloaca.

**Color in preservative:** Dorsum and flanks mottled beige to light brown with a bold series of four thick, dark brown, irregular, broken, transverse markings between shoulder and sacrum, most tripartite, but anterior trunk marking with a posteriorly-directed element just left of the vertebral midline. Each dark marking preceded by a large cream-colored blotch or saddle, more diffuse anteriorly, but well-demarcated in front of the sacrum. Each blotch with diffuse, smudgy light brown markings within it. Flanks with an indistinct series of ~10 white ventrolateral spots; dorsal pattern fading to off white on ventral portion of flanks. Anterior to the dark shoulder marking there is a bilobed cream-colored marking, with a small, diffuse brown nape marking between the lobes. The bilobed patch more-or-less confluent with cream-colored anterior neck and crown; trunk coloration continuing laterally on the neck and temporal regions. Neck, parietal table and head up to level of posterior extent of orbits with very faint, irregular off white and beige mottling; interorbital region and snout darker brown with a diffuse thick, dark brown stripe from the nostril to the anterior margin of the orbit; another from the posteroventral margin of the orbit extending ventrally behind the angle of the jaws, where it fades rapidly. A broken thin dark brown line curved across the snout in front of the orbits and several small scattered dark flecks on the snout. Limbs mottled like trunk but with hindlimbs and pedes mostly cream-colored with scattered darker markings. Inner digits of

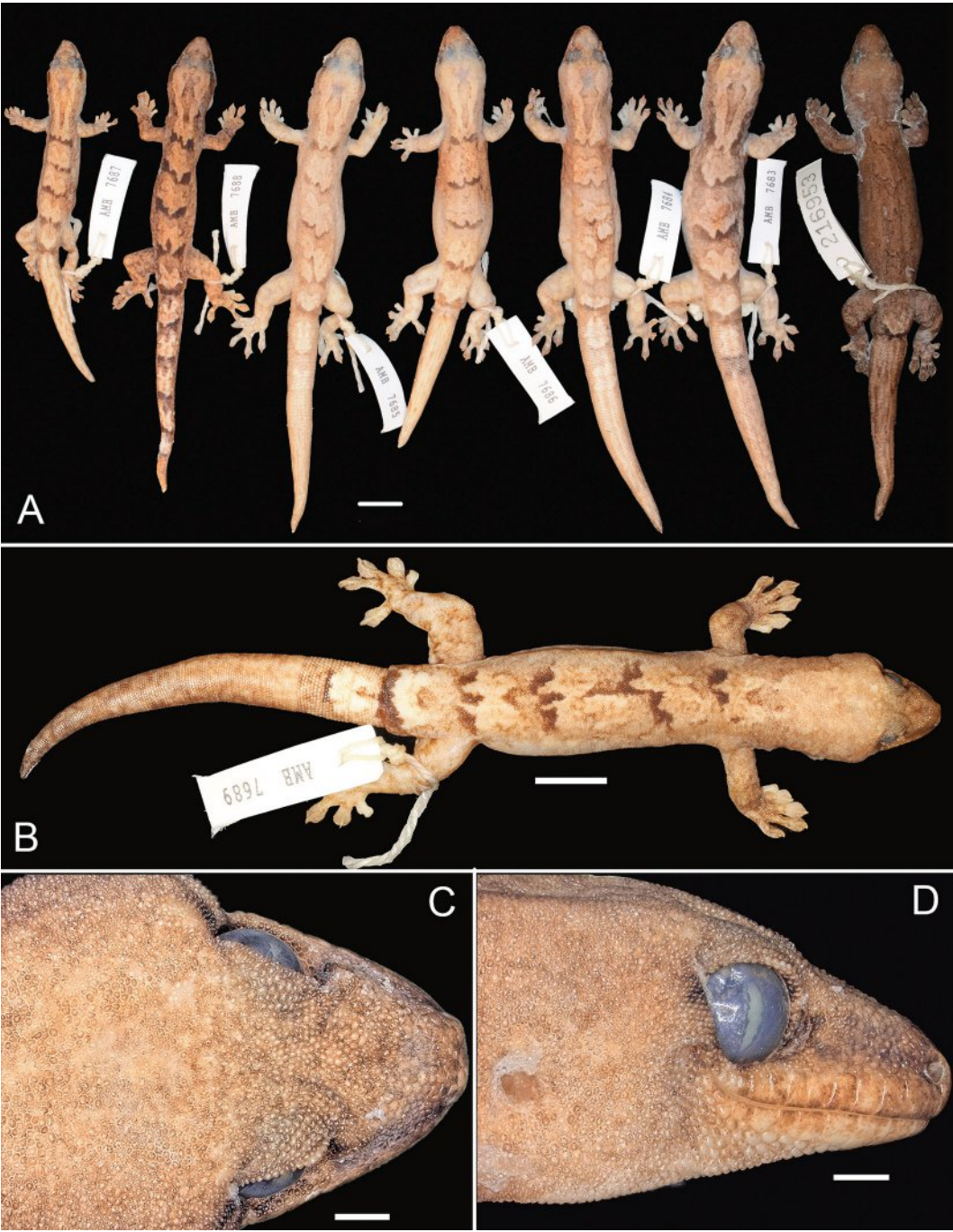


FIGURE 64. *Bavayia rhizophora* sp. nov. A) Paratype series. B–D) Holotype MNHN-RA-2022.0056 (ex. AMB 7689): B) whole body dorsal view; C) dorsal view of head; D) right lateral view of head. E) ventral view of left pes; F) cloacal region. Scale bars: A–B = 10 mm, C–D = 2 mm.

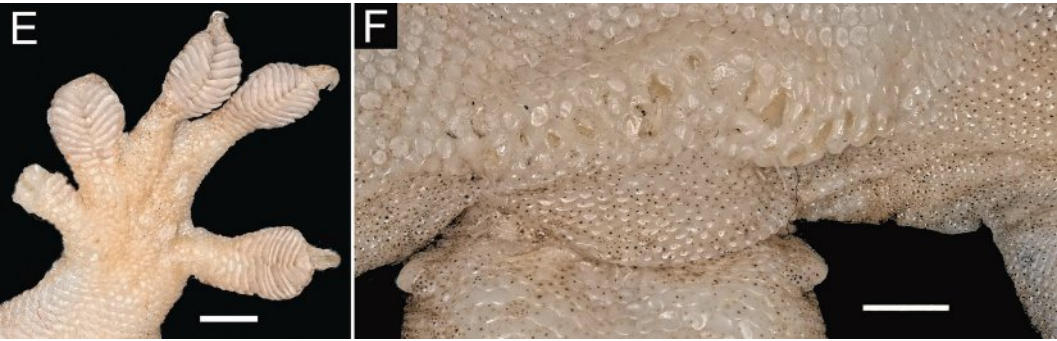


FIGURE 64 (continued). *Bavayia rhizophora* sp. nov. E–F) Holotype MNHN-RA-2022.0056 (ex. AMB 7689): E) ventral view of left pes; F) cloacal region. Scale bars = 2 mm.

manūs also largely cream-colored and devoid of obvious dark pigmentation. Pygal portion of tail with a bright, whitish to cream, bilobed marking, with a diffuse brown spot between the lobes and bold, thick, complete dark brown posterior border. Post-pygal portion of tail with a marking similar to that of tail base and followed by a short section of original tail similar in color to the trunk. Regenerated tail with irregular beige and brown mottling, becoming darker more distally. Venter beige to off white with faint brownish wash caused by relatively uniformly distributed tiny pigment dots across the ventral scales. Denser brown pigmentation around the lateral margins and the cloaca.

**Color in life:** (based on life photo of holotype, MNHN-RA-2022.0056, see Fig. 61C [note: image is reversed to maintain format with other panels in plate]). Ground color grayish brown with bold dark transverse markings very deep brown, pale dorsal markings grayish to grayish brown. Tiny white dots sporadically present at anterior of dark transverse markings and on limbs, and forming a longitudinal series along flanks. Iris coppery. Pale marking over pygal portion of tail ashy, post-pygal marking cream-colored with light brown internal markings. Regenerated tail grayish brown. Ventral coloration pale to bright yellow.

**Variation:** Mensural features of paratypes are presented in Table 25. The paratypes have from one to two internasals. The first infralabials are bordered posteriorly by 3–6 enlarged chin shields. Infralabials typically separated posteriorly by either mental or pentagonal to hexagonal median chin shield, but with point contact in AMS R.188666 and narrow contact in CAS 265824. Male

TABLE 25. Mensural data from the type series of *Bavayia rhizophora* sp. nov.; \*tail regenerated.

	Holotype	Paratypes						
	MNHN-RA 2022.0056	CAS 265822	AMS R.188664	AMS R.188665	CAS 265824	CAS 265823	AMS R.188666	CAS 216953
Sex	M	M	M	F	F	F	F	M
SVL	72.8	70.2	65.9	64.6	59.7	65.0	50.0	72.5
ForeaL	8.1	8.2	8.0	7.4	6.9	7.6	5.6	7.8
CrusL	10.5	10.0	9.8	9.4	8.6	9.1	7.2	10.5
TailL	62.4*	59.1*	59.9*	40.9*	52.0*	58.4*	37.5*	52.4*
HeadL	18.7	20.3	18.1	16.7	15.6	16.9	12.8	20.3
HeadW	14.3	13.0	12.2	11.2	10.6	11.6	8.8	13.9
HeadH	8.0	6.9	6.4	6.0	5.3	6.4	4.7	6.6
OrbD	4.2	3.7	3.2	3.6	3.4	3.5	2.8	3.5
EyeEar	5.7	5.8	5.7	5.6	4.5	4.9	4.1	5.9
SnEye	7.3	7.4	6.6	6.7	6.4	6.9	5.6	7.6
NarEye	5.3	5.5	5.0	5.2	4.8	5.2	3.9	5.7
InterOrb	6.0	5.9	5.3	5.0	4.8	5.3	4.4	6.2
EarL	1.9	1.9	1.6	1.8	1.7	1.7	1.5	2.0
InterNar	2.2	2.0	2.0	1.9	1.9	2.0	1.8	2.2



paratypes with 25–30 precloacal pores in two rows, first row with 15–19 pores, second row with 10–11; no pores or dimples in females. Longest regenerated tail 91% SVL (AMS R.188664). Color pattern fairly uniform, with four well-defined, wavy, dark brown transverse markings between shoulders and sacrum, each preceded by a pale blotch or saddle. Dark transverse markings symmetrical or with one of the two trunk bands asymmetrical. Dark shoulder band divided in CAS 265822. Pale paired markings extending forward from the dark shoulder markings always prominent, reaching at least to upper temporal region and always enclosing a median area of typical body coloration that is narrowest posteriorly, widens on the occipital margin and narrows again on the parietal table. Limbs always weakly patterned. Five post-pygial dorsal markings on the most extensive original tail (CAS 265824), each considerably longer than the intervening darker regions.

**Etymology:** The epithet, a noun in apposition, is the generic name of a clade of mangrove trees, several species of which occur in New Caledonia, particularly in near coastal areas. The type series was collected, with much mosquito-induced blood loss to the authors, on branches within the mangroves just south of Oundjo on the west coast of the Province Nord.

**Distribution:** This species has been found at low elevations in the Province Nord of north-western New Caledonia, at Tia in the Pouembout Valley and at Oundjo (Fig. 62).

**Natural History:** *Bavayia rhizophora* sp. nov. has been recorded from sclerophyll forest at Tia in the Poumbout Valley and from coastal mangroves at Oundjo (Fig. 49G). Data are lacking but it is presumed to be an arthropod feeder and to produce clutches of two eggs.

**Conservation Status:** *Bavayia rhizophora* sp. nov. meets the criteria to be (B1ab(ii, iii) + 2ab(ii, iii)) to be categorized as Endangered on the IUCN Red List. It is restricted in distribution to a small area of the northwest coast, It is known from only two sites, one in sclerophyll forest in the Pouembout valley, the other in coastal mangroves at Oundjo. The two locations are ~25 apart, the actual area of occupancy is likely to be small given mangrove habitat is extremely small and sclerophyll forest habitat has been reduced to a few small, scattered remnants. The population trend is assumed to have decreased significantly as it is presumed to have suffered a significant reduction in extent due to loss of sclerophyll forest in the region from clearing and burning, and through loss and degradation of mangrove habitats in the region. There is an ongoing high level of threat to the remaining sclerophyll forest in the region from loss through clearing on private property and loss or degradation of forest edge habitat from wildfires in adjacent savannah woodland (Ibanez et al. 2019), and through degradation of sclerophyll forest by introduced deer which alter the abundance and structure of understory shrubs used for foraging (de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-Wichatitsky 2006). In sclerophyll forest there is also a high level of threat to the species from predation by introduced cats (Palmas et al. 2017), and from the introduced Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from ground sheltering sites and arboreal foraging sites, and to affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001).

***Bavayia occidentalis* sp. nov.**

Figures 61D, 65.

**Holotype:** MNHN-RA-2022.0062 (ex. CAS 202781), Pindaï, Province Nord, New Caledonia, 21°19'57"S, 164°58'14"E, coll. A.M. Bauer and R.A. Sadlier, 10 February 1997.

**Paratypes:** AMS R.163210–12, Forêts de Nékoro, 4.5 km E Nepoui, Province Nord, New Caledonia, 21°20'08"S, 165°02'12"E, coll. A.H. Whitaker and V.A. Whitaker, 22 October 2002; AMS R.163216–17, Forêts de Nékoro, 4.5 km E Nepoui, Province Nord, New Caledonia, 21°20'28"S, 165°02'27"E, coll. A.H. Whitaker and V.A. Whitaker, 22 October 2002; CAS 202748–49, Pindaï, Province Nord, New Caledonia, 21°19'57"S, 164°58'14"E, coll. A.M. Bauer and R.A.

Sadlier, 8 February 1997; CAS 202756, Pindaï, Province Nord, New Caledonia, 21°19'57"S, 164°58'14"E, coll. A.M. Bauer and R.A. Sadlier, 17 February 1997.

**Referred Material:** (all localities in Province Nord) AMS R.146477\*, Adio Caves, NE of Poya, Province Nord, New Caledonia, 21°15'41"S, 165°14'42"E; AMS R.146453–54, R.146455–56\*, AMS R.149357\*, R.149358–61, CAS 198784–85, Pindaï, 21°20'02"S, 164°58'21"E; AMS R.161198\*, R.161199, Rivière Nékoro, Creek Hervouet, 7 km W Basse Poya, 21°19'09"S, 165°04'29"E; AMS R.163208–09, Forêts de Nékoro, 4.5 km E Nepoui, 21°20'08"S, 165°02'12"E; AMS R.158801–802, Nékoro forest, vicinity of Col de Nékoro, 21°20'20"S, 165°02'30"E; AMS R.166201\*, Népouiri, 8 km W Moindah, 21°25'36.2"S, 165°08'37.9"E; CAS 201055, 201057, 201059, USNM 515879, Pindaï, 21°19'57"S, 164°58'14"E; CAS 202748–54, 205547–54, Pindaï, 21°19'57"S, 164°58'14"E; CAS 202755, 202757–58, 202780–85, Pindaï, 21°19'57"S, 164°58'14"E.

**Diagnosis:** A large species of the *Bavayia crassicollis* Clade (maximum SVL 73.7 mm, AMS R.163212), body and tail robust, maximum TailL (regenerated) ~92% SVL. It can be distinguished from its congeners by the following combination of characteristics: Head wide, with hypertrophied adductor muscles, distinct from neck; claw of digit I positioned in a groove within the apical lamella, which is divided into a larger medial and smaller lateral portion; ~135 midbody scale rows; two (rarely three) rows of precloacal pores in males, 25–33 pores in total, 15–21 in anterior row and 10–13 in posterior row (third row, if present, with a single pore); first pair of infralabials usually separated from one another by the contact of the mental and postmental or in point contact behind the mental; 12–14 mostly paired lamellae under digit IV of pes. Dorsum and flanks medium grayish or reddish brown, with a pattern of four dark brown, transverse bands between the limb insertions, with an additional bold band on the tail base; dark, transverse nape band absent or fragmented. Dark bands preceded by a transverse row of tiny white spots or flecks and an often ill-defined pale blotch; dorsal patterning not extending on to flanks, which are mottled and bear tiny white dots. Dorsal pattern symmetrical or rarely asymmetrical. Paired pale upper temporal streaks prominent, extending posteriorly to shoulder and enclosing a darker area in the midline on the occiput and nape. Limbs mottled, tail with pale dorsal blotches limited to dorsal surface, with brown borders both posteriorly and anteriorly; venter with a pale to bright yellow flush.

Among other members of the *B. crassicollis* Clade, *B. occidentalis* sp. nov. is distinguished from *B. crassicollis* by its smaller size (maximum SVL 73.7 mm vs. 81.0 mm), from *B. crassicollis* and *B. tanleensis* sp. nov., by its bolder, more complete dark transverse bands, from *B. insularis* sp. nov. by the usual absence of a dark, transverse nape band and from *B. rhizophora* sp. nov. by having smaller, more homogeneous antorbital scalation.

**Description:** Based on holotype MNHN-RA-2022.0062 (ex. CAS 202781), an adult male. Snout-vent length (SVL) 69.0 mm; trunk relatively elongate, robust, depressed. Head oblong, moderately long (HeadL 25% SVL), moderately wide (HeadW 73% HeadL), not depressed (HeadD 37% HeadL); neck relatively indistinct; slight interorbital/frontal depression present, canthus moderately developed; snout relatively short (EyeSn 42% HeadL), twice eye diameter (OrbD 21% HeadL). Granular scales on snout approximately twice diameter of those on occipital region. Pupil vertically oriented with crenelated margins; posteriormost superciliary scales slender, elongate, pointed. Ear opening slightly higher than wide, slightly canted posterodorsally to anteroventrally; eye to ear distance much greater than the diameter of eye (EyeEar 153% OrbD). Rostral rectangular, much broader than high, no rostral crease, contacted posteriorly by three rectangular internasal scales and by two enlarged supranasals, contacted posteroventrally by first supralabial. Nostrils rounded and anterolaterally oriented, surrounded by three postnasals, one supranasal, and the rostral, in broad contact with first supralabial. Mental triangular, deeper than wide, first infralabials in

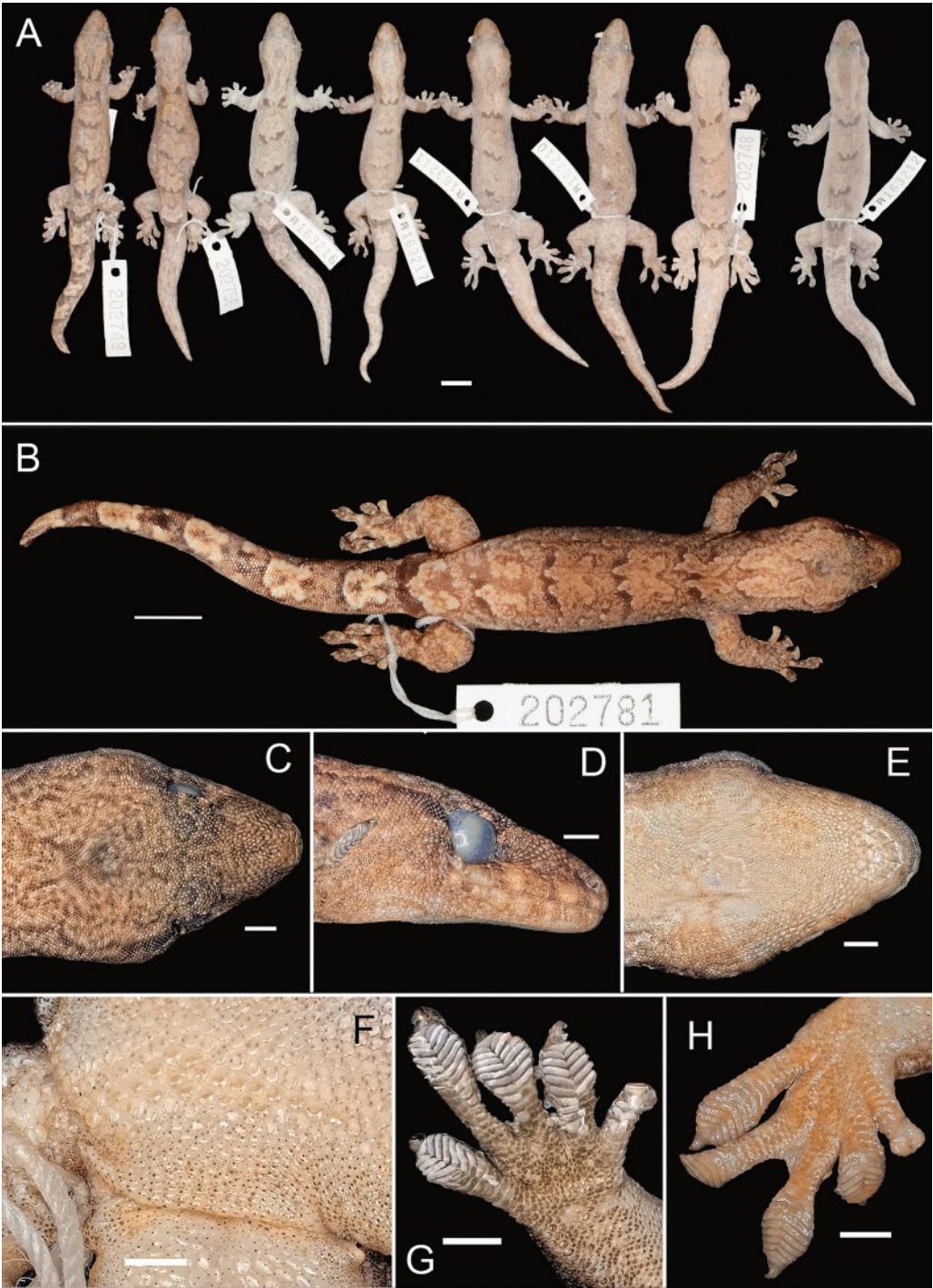


FIGURE 65. *Bavayia occidentalis* sp. nov. A) Paratype series. B–E) Holotype MNHN-RA-2022.0062 (ex. CAS 202781): B) whole body dorsal view; C) dorsal view of head; D) right lateral view of head; E) ventral view of head; F) cloacal region; G) ventral view of right manus; H) ventral view of right pes. Scale bars: A–B = 10 mm, C–H = 2 mm.



narrow contact behind the mental, each in contact posteriorly with a median, hexagonal, enlarged postmental chin shield and one additional chin shield. First three to five rows of chin shields larger than remaining throat scales. 9 L, 9 R enlarged supralabial scales, of which the posteriormost three are beneath the eye; 8 L, 9 R infralabial scales; 36 interorbital scale rows between superciliaries at midpoint of orbit, 10 interorbitals between the orbital margins of the frontal bone.

Dorsal scales small, homogeneous, very slightly conical, granular; ventral scales slightly larger than dorsals, subimbricate, enlarged posteriorly on the body. Posterior abdominal scales rounded, mid-abdominal scales elongate, diamond-shaped. Approximately 135 scale rows around midbody. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Precloacal pores large and easily distinguishable, 29 in two rows; anterior continuous row of 19 pores, second continuous row of 10 pores. Forearm and crus very short (12% and 13% of SVL, respectively), axillary pockets shallow. Digits long and relatively wide distally, all bearing claws, those on digit I of both manus and pes greatly reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital lamellae paired distally, undivided basally. Distalmost lamella of digits II~V, manus and pes, undivided. Apical plates of digit I of manus and pes asymmetrical, with claw positioned in a notch between a larger medial and smaller lateral scansor. Lamellar counts from right side of holotype 7-9-11-13-11 manus and 7-10-12-14-12 pes.

TailL 61.2 mm (tip regenerated), approximately 87% of snout-vent length, tapered, stout, roughly oval in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, rectangular, arranged in regular rows. Surface of tail weakly segmented, caudal scale rows forming whorls, each whorl ~7 dorsal scale rows and 6 ventral scale rows long; midventral caudal scales not enlarged. Scales on pygal portion of tail approximately one-half size those of post pygal scales. Cloacal spurs consisting of one large conical, blunt-tipped, slightly compressed, posterodorsally directed raised scale just posterior to each side of the cloaca.

**Color in preservative:** Dorsum and flanks mottled light to medium brown with a bold series of four dark brown, irregular, wavy, transverse markings between shoulder and sacrum, mostly three to four granular scale rows in thickness but narrowing to one or interrupted in some places. Each dark marking preceded by a large cream to light brown blotch or saddle; that preceding sacrum paler and more diffuse, more anterior blotches complexly and relatively symmetrically lobed. Border between dark transverse bars and pale blotches marked by a series of white granules forming an incomplete dotted line. Each blotch with diffuse, smudgy light brown markings within it. Both dorsal pattern elements dissipating on the flanks, which are mottled with a ventrolateral series of ~14 small, ill-defined off-white spots. Anterior to the dark shoulder marking the light brown pale blotch is divided along the vertebral midline. A narrow gap separates this blotch from a much more extensive beige marking occupying most of the neck and the dorsal surface of the head as far anterior as the level of the posterior margin of the orbits. Posteriorly it is bilobed, leaving a arrowhead-shaped patch of ground color mottling between it and the following pale blotch. The lobes are bordered by a narrow (one to two granules wide) medium brown border which continues, broken in places) anteriorly along the edge of the upper temporal region where it thickens as it approaches the posterodorsal margin of the orbit. Passing the eye, the line continues, although more diffusely to the nostril. There is an irregular medium brown marking on the posteromedial part of the parietal table and small, scattered irregular brown markings elsewhere on the neck and head dorsum. The interorbital region and snout are a darker than the crown; there is a thin, broken, dark brown line curved across the snout in front of the orbits and several small scattered dark flecks on the snout. Most of the labial scales have pale centers and denser pigment around

their peripheries; darker vertical markings are present on some of the labials, particularly the supralabials. Limbs mottled like trunk, with very thin, dark brown markings evident on the forelimbs and cream to beige elements dominating on the hindlimbs; white spots on digits III, IV and V of the pedes. Pygal portion of tail with a bright, cream-colored, bilobed marking, with a medium brown posteriorly directed triangle between the lobes and a bold, thick, complete dark brown chevron as its posterior border. Post-pygal portion of tail with a series of four off white to cream-colored markings, each comprising a central oval with a pair of forward projecting lobes, bearing a central diffuse brown marking and surrounded by a dark brown border. In the intervening spaces, which are approximately as long as the pale markings themselves, there are irregular dark brown midline markings and, laterally, pairs of cream-colored spots. The terminal segment of the tail is uniformly cream with several longitudinal light and dark brown markings. Venter beige to off white with faint brownish wash caused by relatively uniformly distributed tiny pigment dots across the ventral scales. Denser brown pigmentation around the lateral margins, throat, chin and cloaca.

**Color in life:** (based on life photo of non-type, see 61D). Ground color purplish brown with bold dark transverse markings very deep brown, pale dorsal markings grayish to pale purplish brown. Tiny white dots sporadically present at anterior of dark transverse markings and on limbs and forming a longitudinal series along flanks. Snout, temporal regions and marking on head and neck enclosed by pale area a deeper purplish-brown than the trunk. Iris silvery. Pale marking over pygal portion of tail ashy, post-pygal markings russet to light brown with darker internal markings. Intervening regions of tail very dark brown, as is terminal regenerate, which bears a series of ashy longitudinal markings. Ventral coloration pale yellow.

**Variation:** Mensural features of paratypes are presented in Table 26. The paratypes have one or two internasals. The first infralabials are typically bordered posteriorly by 3–4 enlarged chin shields, with both infralabials usually touching the largest midventral chin shield. In AMS R.163212, however, both infralabials touch only this single scale. Infralabials typically separated posteriorly by either mental or pentagonal to hexagonal median chin shield, but with narrow contact behind the mental in paratypes AMS R.163216 and CAS 202749. Adult male specimens with 25–33 precloacal pores in two or, rarely, three rows, first row with 15–21 pores, second row with 10–13, third row, if present, with a single median pore; no pores or dimples in females. Digit V of the left pes is mostly missing in AMS R.163212. Longest (regenerated) tail among paratypes 92% SVL (AMS R.163217). Color pattern fairly uniform, with four well-defined, wavy, dark brown transverse markings between shoulders and sacrum, each preceded by a pale blotch or

TABLE 26. Mensural data from the type series of *Bavayia occidentalis* sp. nov.; \*tail regenerated.

	Holotype	Paratypes							
	MNHN-RA 2022.0062	AMS R.163211	CAS 202748	AMS R.163212	AMS R.163216	CAS 202749	CAS 202756	AMS R.163210	AMS R.163217
Sex	M	M	M	M	F	M	F	M	F
SVL	69.0	69.8	70.4	73.7	64.6	64.8	65.3	69.9	59.7
ForeaL	8.3	7.6	7.5	8.3	7.2	7.0	7.0	8.2	7
CrusL	9.0	9.6	9.6	9.7	9.0	8.6	8.3	9.2	8.5
TailL	61.2*	49.6*	52.0*	58.6*	49.7*	57.9*	47.5*	58.9*	54.9
HeadL	17.0	18.6	17.2	21.0	17.4	16.2	15.6	17.8	15.6
HeadW	12.4	12.4	12.9	12.4	12.3	11.4	11.7	12.5	11
HeadH	6.3	6.1	6.4	6.3	5.9	5.2	5.8	5.8	5.1
OrbD	3.6	3.6	3.6	3.6	3.7	3.4	3.2	3.7	3.4
EyeEar	5.5	5.3	5.5	5.6	5.1	5.0	5.0	5.2	5.2
SnEye	7.2	7.0	7.3	7.6	7.2	6.9	7.0	7.5	6.7
NarEye	5.2	5.2	5.2	6.1	5.0	4.8	5.2	5.3	4.9
InterOrb	5.9	5.6	5.8	6.0	5.6	5.6	5.7	5.7	4.9
EarL	1.8	1.9	1.8	1.9	2.0	1.8	1.8	2.1	1.5
InterNar	2.0	2.0	2.1	2.1	2.0	2.0	1.9	2.0	1.6

saddle. Dark transverse markings largely symmetrical (divided into two bands on the left side only in CAS 202749). Dark shoulder band most often wholly or partly divided. Pale paired markings extending forward from the dark shoulder markings always prominent, reaching at least to upper temporal region and always enclosing a median area of typical body coloration that is narrowest posteriorly, widens on the occipital margin and narrows again on the parietal table. Limbs always weakly patterned. Five post-pygial dorsal markings on the most extensive original tails (including tip), each considerably as long or longer than the intervening darker regions.

**Etymology:** The epithet is the Latin adjective for western and is used here in the feminine singular nominative form. It refers to the species distribution on the west coast of the Province Nord.

**Distribution:** Central-west coast of Grande Terre in the region of Pindaï, Nékoro and Adio Caves (Fig. 62).

**Natural History:** *Bavayia occidentalis* sp. nov. has been recorded from sclerophyll forest habitat at Pindaï and the Forêts de Nékoro, closed forest at Rivière Nékoro, Creek Hervouet, and the margin of closed forest adjacent to limestone karst habitat at Adio Caves.

**Conservation Status:** *Bavayia occidentalis* sp. nov. meets the criteria to be (B1ab(iii, iv) + 2ab(iii, iv)) to be categorized as Endangered on the IUCN Red List. It is restricted in distribution to a small area of the central-west coast, and is known from only four sites, two in sclerophyll forest (Pindaï and Forêts de Nékoro), and two in closed forest habitat (Adio Caves and Népouiri), with an estimated extent of 350 km<sup>2</sup> covering these habitat types, although the occupancy is likely to be considerably less given sclerophyll forest is reduced to small remnants on the coast. The population trend is assumed to have decreased significantly in extent due to loss of sclerophyll forest and closed forest in the region from clearing and burning. There is an ongoing high level of threat to the remaining sclerophyll and closed forest habitat in the region through clearing and loss or degradation of forest edge habitat from wildfires in adjacent savannah woodland (Ibanez et al. 2019). The species is at a high level of threat through degradation of sclerophyll and closed forest habitat by introduced deer which alter the abundance and structure of understory shrubs used for foraging (de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-Wichatitsky 2006), from predation by introduced cats (Palmas et al. 2017) and from the introduced Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from ground sheltering sites and arboreal foraging sites, and to affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001).

**Remarks:** This species was previously mentioned as *B. cyclura* (Bauer et al. 1998) and as *B. aff. cyclura* sp. 4 (Whitaker et al. 2004, 2005). Subfossil *Bavayia* material from owl pellets in the Pindaï Caves spanning the arrival of humans in the region (Kennedy 2011) is likely attributable to *B. occidentalis*.

### ***Bavayia insularis* sp. nov.**

Figures 61E, 66.

**Holotype:** MNHN-RA-2022.0036 (ex. AMH 52753), Maa Bwén, Île Baaba, 18 km N Poum, Province Nord, 20°04'58.2"S, 163°59'05.2"E, coll. A.H. Whitaker and V.A. Whitaker, 5 October 2001.

**Paratypes:** AMS R.188640–41 (ex. AMH 52761–62), R.188647\* (ex. AMH 52769), 2 km NW Yéya, Île Baaba, 18 km N Poum, Province Nord, 20°04'22.5"S, 163°59'17.5"E, coll. A.H. Whitaker and V.A. Whitaker, 5 October 2001; AMS R.188642–43 (ex. AMH 52763–64), R.188649\* (ex. AMH 52771), 3 km NW Yéya, Île Baaba, 18 km N Poum, Province Nord, 20°04'26.1"S, 163°59'06.7"E, coll. A.H. Whitaker and V.A. Whitaker, 5 October 2001; AMS R.167250, R.167251\*, Pucet Manaat, Île Baaba, Province Nord, 20°04'21.82"S, 163°57'13.63"E, coll. A.H. Whitaker and V.A. Whitaker, 25 June 2006.



**Referred Material:** (all localities in Province Nord) AMS R.161059–60\*, R.161061–63, Îles Belep, Île Pott, Panan 19°34'56"S, 163°34'59"E; AMS R.161064–65\*, Îles Belep, Île Art, Waala, 19°42'51"S, 163°38'43"E; AMS R.188638–39\*, Vallée Phaaye, Nomac River, 8 km E Poum, Province Nord, 20°13'07.6"S, 164°06'24.4"E; AMS R.188644–46, R.188648, R.188650, 3 km NW Yéya, Île Baaba, 18 km N Poum, Province Nord, New Caledonia, 20°04'26.1"S, 163°59'06.7"E; AMS R.188651\*, R.188652, R.188653\* Wama, Île Yandé, 32 km NW Poum, 20°03'18.2"S, 163°47'22.4"E; AMS R.153619–21\*, R.153622–30, Pointe Naharian, Boat Pass, 20°04'57"S, 164°00'03"E; AMS R.153636–37\*, R.153638, Arama, ~2 km north Arama, 20°14'43"S, 164°10'59"E; AMS R.168081–82\*, Pointe de Vavouto, Ouan, 21°01'19.54"S, 164°41'02.75"E; AMS R.168083\*, R.168084, Pointe de Vavouto, Taavao, 21°01'01.68"S, 164°41'00"E; AMS R.168085, Pointe de Vavouto, Poavétalapa, 21°00'42.05"S, 164°41'04.39"E.

**Diagnosis:** A mid-sized species of the *Bavayia crassicollis* Clade (maximum SVL 69.6 mm, AMS R.188652), body and tail robust, maximum TailL (regenerated) ~91% SVL. It can be distinguished from its congeners by the following combination of characteristics: Head wide, with hypertrophied adductor muscles, distinct from neck; claw of digit I positioned in a groove within the apical lamella, which is divided into a larger medial and smaller lateral portion; ~135 midbody scale rows; two rows of precloacal pores in males, 18–25 pores in total, 11–15 in anterior row and 6–10 in posterior row; first pair of infralabials in contact behind the mental; 11–14 mostly paired lamellae under digit IV of pes. Dorsum and flanks light grayish or reddish brown, with a pattern of four (less commonly five) dark brown, transverse bands between the limb insertions, with additional bold bands on the tail base and nape. Dark bands preceded by a transverse row of tiny white spots or flecks and an often ill-defined pale blotch; dorsal patterning not extending on to flanks, which are mottled and bear purplish brown reticulations and small white spots. Dorsal pattern symmetrical or rarely asymmetrical. Paired pale upper temporal streaks, if present, extending posteriorly only to nape, where they are effectively separated by the dark nape band from reaching the shoulder. Head dorsum pale with scattered, mostly thin, dark markings; canthal stripe relatively prominent as is its continuation posterior to the eye. Limbs mottled, tail with pale dorsal blotches limited to dorsal surface, with brown borders both posteriorly and anteriorly; venter with a pale to bright yellow flush.

Among other members of the *B. crassicollis* Clade, *B. insularis* sp. nov. is distinguished from *B. crassicollis* by its smaller size (maximum SVL 69.6 mm vs. 81.0 mm), from *B. crassicollis* and *B. tanleensis* sp. nov., by its bolder, more complete dark transverse bands, and from *B. rhizophora* sp. nov. and *B. occidentalis* sp. nov. by the usual presence of a complete or partial dark, transverse nape band and disruption of the paired pale upper temporal streaks, separating them from the pale shoulder blotch.

**Description:** Based on holotype MNHN-RA-2022.0036 (ex. AMH 52753), an adult male. Snout-vent length (SVL) 66.9 mm; trunk relatively elongate, robust, depressed. Head oblong, moderately long (HeadL 26% SVL), relatively narrow (HeadW 70% HeadL), somewhat depressed (HeadD 33% HeadL); neck relatively indistinct; interorbital/frontal depression present, canthus moderately developed; snout relatively short (EyeSn 39% HeadL), less than twice eye diameter (OrbD 20% HeadL). Granular scales on snout approximately two to four times diameter of those on occipital region. Pupil vertically oriented with crenelated margins; posterior superciliary scales slender, elongate, pointed. Ear opening slightly higher than wide, slightly canted posterodorsally to anteroventrally; eye to ear distance much greater than the diameter of eye (EyeEar 142% OrbD). Rostral rectangular, much broader than high, no rostral crease, contacted posteriorly by four internasal scales, lateral pair large and rectangular, medial scales rounded, that on left small and granular, and by two quite small supranasals, contacted posteroventrally by first supralabial. Nostrils

rounded and anterolaterally oriented, surrounded by three postnasals, one supranasal, and the rostral, in broad contact with first supralabial. Mental triangular, deeper than wide, first infralabials in narrow contact behind the mental, each in contact posteriorly with a median, hexagonal, enlarged postmental chin shield and one additional chin shield. First three to five rows of chin shields larger than remaining throat scales. 9 L, 10 R enlarged supralabial scales, of which the posteriormost three are beneath the eye; 9 L, 9 R infralabial scales; 29 interorbital scale rows between superciliaries at midpoint of orbit, 13 interorbitals between the orbital margins of the frontal bone.

Dorsal scales small, homogeneous, very slightly conical, granular; ventral scales slightly larger than dorsals, subimbricate, enlarged posteriorly on the body. Posterior abdominal scales rounded, mid-abdominal scales elongate, diamond-shaped. Approximately 135 scale rows around midbody. Scales of the limbs not differing from dorsals. Scales on palms and soles smooth, flattened. Precloacal pores large and easily distinguishable, 18 in two rows; anterior row of 9L and 3R pores separated by a single poreless scale, second continuous row of 5L and 1R pores separated by three poreless scales. Forearm and crus very short (11% and 14% of SVL, respectively), axillary pockets shallow. Digits short and relatively wide distally, all bearing claws, those on digit I of both manus and pes greatly reduced and partially sheathed; relative length of digits of manus: IV~III>II~V>I, and of pes: IV~V>III>II>I; digits weakly webbed; digits III and IV of pes tightly bound along length of elongate metatarsals. Subdigital lamellae paired distally, undivided basally. Distalmost lamella of digits II~V, manus and pes, undivided. Apical plates of digit I of manus and pes asymmetrical, with claw positioned in a notch between a larger medial and smaller lateral scansor. Lamellar counts from right side of holotype 6-10-10-11-10 manus and 6-11-12-13-11 pes.

TailL 53.9 mm (distal 48.2 regenerated), approximately 84% of snout-vent length, tapered, very stout, roughly oval in cross-section; tail base at cloacal spurs swollen. Caudal scales small, flat, rectangular, arranged in regular rows. Scales on pygal portion of tail approximately one-half size those of post-pygal scales. Cloacal spurs consisting of a pair of conical, blunt-tipped, slightly compressed, posterodorsally-directed raised scale just posterior to each side of the cloaca.

**Color in preservative:** Dorsum and flanks largely uniform light brown with a bold series of four bold, dark brown, irregular, wavy, transverse markings between shoulder and sacrum, each with a few small whitish spots along its anterior margin or within the dark marking itself. Flanks lacking bold dark markings but with a series of very diffuse, irregular white bars and, at the ventrolateral border, a series of small whitish spots. Anterior to the dark shoulder marking there is a faint, bilobed marking and anterior to this a diffuse darker brown transverse nape marking. Anterior to the nape marking a beige marking extends forward on each side of the neck and over the upper temporal region, fusing at the back of the parietal table and continuing forward to the posterior border of the orbits. The posterior portion of this large pale area enclosed a medium brown midline marking extending from the cleft between the lobes of the pale blotch on the nape to posteromedial part of the skull. Posteriorly, this marking forms an arrowhead shape pointing caudally and behind the occiput in is constricted. There is a thick, diffuse, darker brown markings along the temporal region which continues both above and below the orbit and extends anteriorly to the nostril. There is also a diffuse, darker brown, longitudinal marking to the left of the midline in interorbital position and smaller, scattered markings elsewhere on the head. Limbs not strongly patterned, with diffuse whitish markings forming irregular bands or networks on a mottled light brown background. Pygal portion of with symmetrical dark brown chevron just anterior to the tail constriction; an asymmetrical, cream-colored pale blotch with ill-defined edges between this chevron and the sacral dark transverse marking. Post-pygal tail, nearly entirely regenerated, beige with faint darker markings, beginning as stripes at the tail constriction but becoming fainter and

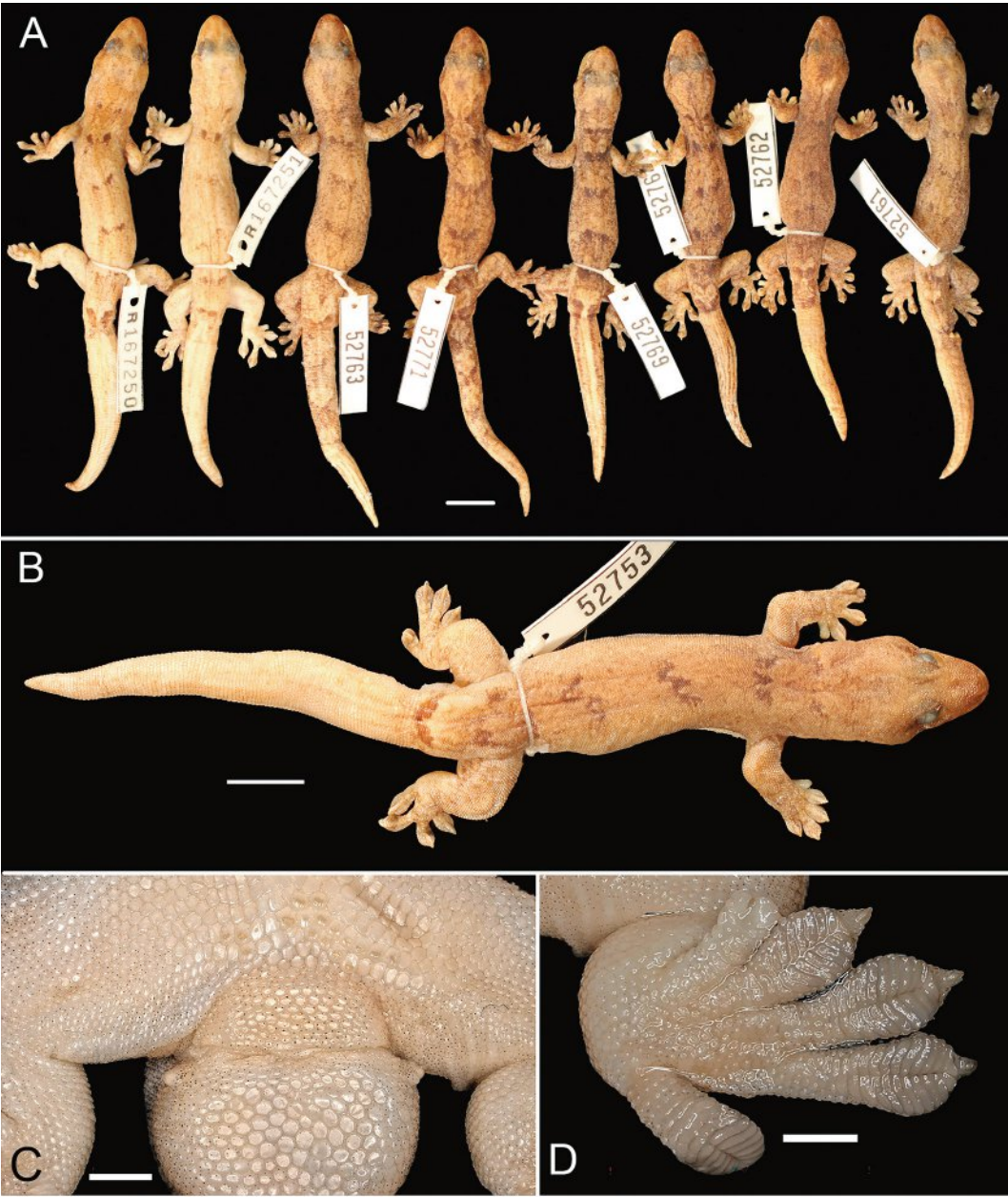


FIGURE 66. *Bavayia insularis* sp. nov. A) Paratype series. B–E) Holotype MNHN-RA-2022.0036 (ex. AMH 52753): B) whole body dorsal view; C) cloacal region; D) ventral view of right pes. Scale bars: A–B = 10 mm, C–D = 2 mm.



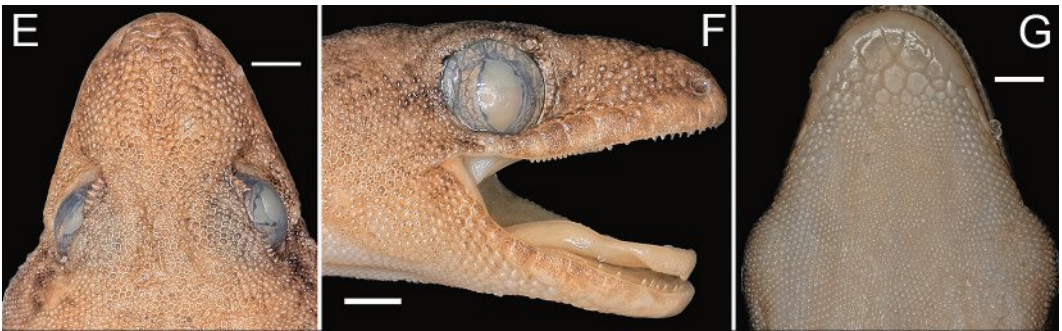


FIGURE 66 (continued). *Bavayia insularis* sp. nov. Holotype MNHN-RA-2022.0036 (ex. AMH 52753). E) dorsal view of head; F) right lateral view of head; G) ventral view of head. Scale bars = 2 mm.

more irregular distally. Venter beige to off white with scattered sparse pigmentation around the lateral margins of the trunk and limbs.

**Color in life:** (based on life photo of non-type AMS R.153619, see Fig. 61E). Ground color mottled pale purplish brown with four bold very dark brown transverse markings between shoulder and sacrum (third marking bifid on right side only) and one on nape. Pale dorsal markings anterior to each dark bar grayish to ashy (not evident in holotype) with bilobed anterior and posterior margins and enclosing scattered irregular thin dark markings. Tiny white dots sporadically present at anterior of dark transverse markings forming transverse dotted lines. Flanks mottled with numerous small irregular russet markings and small, white spots in several rows between the limb insertions. Flank pattern continues dorsally to form narrow transverse bands just posterior to each dorsal dark transverse marking. Most of head, except for snout, pale purplish brown with two narrowly separated posterior lobes on the nape enclosing a narrow central area of ground color. A broad dark brown streak from the nostril passing through the eye and on to the temporal region, where it is especially bold and dark; broken above the ear but continuing posteriorly to meet the dark nape band on the dorsolateral margin of the neck. Patterning on limbs similar to that on flanks although white granules forming diffuse bands or networks rather than spots. Pygal portion of tail bearing a thick, dark brown chevron at the tail constriction, anterior to which there is an ashy multi-lobed blotch. Original part of post-pygal tail with four cream-colored dorsal markings, each bordered posteriorly by a bold dark margin and with scattered darker markings within the pale blotches themselves; tail background similar to flanks; interstices between cream markings much shorter than the markings themselves. Regenerated portion of tail grayish brown with irregular, mostly longitudinal medium brown markings.

**Variation:** Mensural features of paratypes are presented in Table 27. The paratypes have 1–3 internasals. The first infralabials are typically bordered posteriorly by 3 (2 in AMS R.188640) enlarged chin shields, with both infralabials usually touching the largest midventral chin shield. Infralabials in broad contact behind the mental in all paratypes. Adult male specimens with 18–25 precloacal pores in two rows, first row with 11–15 pores, second row with 6–10; no pores or dimples in females. Longest (regenerated) tail among paratypes 91% SVL (AMS R.188649). Color pattern fairly uniform, with four, more-or-less well-defined, wavy, dark brown transverse markings, chevrons or paired markings (incomplete medially in some specimens) between shoulders and sacrum, each preceded by a pale blotch or saddle or with these pale blotches absent or very weakly discernable on the trunk. Flanks and sometimes ground color of dorsum highly speckled. Stereotypic pale markings on neck and head, as well as darker streak from nostril to temporal region always present, though variable in exact shape and definition. Limbs mostly without strong

TABLE 27. Mensural data from the type series of *Bavayia insularis* sp. nov.; \*tail regenerated.

	Holotype	Paratypes							
	MNHN-RA 2022.0036	AMS R.188642	AMS R.188647	AMS R.188640	AMS R.188641	AMS R.188649	AMS R.188643	AMS R.167251	AMS R.167250
Sex	M	M	F	M	F	F	F	F	M
SVL	66.9	60.7	52.2	55.7	52.0	56.0	54.1	59.8	59.7
ForeaL	7.4	6.5	5.6	6.2	5.7	6.0	5.6	6.4	6.7
CrusL	9.4	7.7	7.2	7.2	6.8	7.6	7.2	7.6	7.8
TailL	55.9*	49.7*	38.3*	40.6*	38.0*	51.1*	34.3*	40.3*	42.8*
HeadL	17.4	17.6	13.0	14.0	13.7	15.5	14.3	16.4	16.1
HeadW	12.2	10.7	9.0	9.6	8.9	9.5	9.6	10.1	10.6
HeadH	5.7	5.2	3.9	4.2	4.3	4.3	4.3	4.7	5.0
OrbD	3.5	3.3	3.0	3.3	2.6	3.3	3.3	3.1	3.0
EyeEar	5.0	4.3	4.0	3.8	4.2	4.2	4.0	4.3	4.5
SnEye	6.7	6.3	5.8	5.9	5.8	5.8	5.7	6.2	6.5
NarEye	4.5	4.4	4.0	4.2	4.2	4.6	4.2	4.4	4.9
InterOrb	5.2	4.9	4.5	4.4	4.5	4.4	4.4	4.7	4.5
EarL	1.7	1.7	1.5	1.6	1.7	1.7	1.7	1.7	1.8
InterNar	1.8	2.0	1.6	1.6	1.7	1.9	1.6	1.7	1.7

patterning, although a dark line extends along the posterodorsal border of the thigh in some individuals. Tail patterning very similar to holotype.

**Etymology:** The epithet *insularis*, meaning insular in Latin, is an adjective formed in the feminine singular nominative and refers to the distribution of this species on the northern islands of New Caledonia.

**Distribution:** Inhabits the Îles Belep, Île Baaba and Île Yandé off the north coast of New Caledonia as well as the adjacent far northern mainland (Pointe Naharian and Arama, Vallée Phaaye (Fig. 62). Specimens from Pointe de Vavouto, on the west coast, approximately 100 km south of Arama have also been confirmed to belong to this species. Collection effort in the intervening lowlands has been limited, so it is possible that the species’ range is more extensive than it appears.

**Natural History:** *Bavayia insularis* sp. nov. has been recorded from a range of coastal habitats on the islands north of Grande Terre. It was found in modified shrubland on Île Pott (Fig. 49H) and Île Art, in secondary forest, shrubland and gardens on Île Yandé, and in closed forest, coastal forest, sclerophyll forest, and mangroves on Île Baaba (Whitaker et al. 2004; Whitaker and Whitaker 2007). On the mainland it has been recorded from gallery forest at Vallée Phaaye and sclerophyll formation and mangroves at Pointe de Vavouto (Fig. 49G). The population at Pointe de Vavouto which inhabits mangroves (Whitaker and Sadlier 2007) is 3.2 km straight line distance from the population of *Bavayia rhizophora* sp. nov. found in mangroves at Oundjo. Clutch size is two, as in all congeners and the diets is presumed to be largely or exclusively arthropods.

**Conservation Status:** *Bavayia insularis* sp. nov. meets the criteria to be (B1ab(iii, iv) + 2ab(iii, iv)) to be categorized as Endangered on the IUCN Red List. It is restricted in distribution to a few coastal sites in the far north of Grande Terre extending south down the west coast to the Vavouto Peninsula with an estimated extent of occurrence of ~750 km<sup>2</sup>, and on the Îles Belep, Île Yandé and Île Baaba with an estimated extent of occurrence of 115 km<sup>2</sup>. The population trend is assumed to have decreased as it is presumed to have suffered a reduction in extent due to loss and degradation of coastal habitat from clearing and burning for agriculture and settlement. There is an ongoing high level of threat to the remaining coastal habitat in the region from loss or degradation as a result of wildfires in adjacent savannah woodland (Ibanez et al. 2019), and a high level of threat from habitat degradation by introduced deer and pigs which threaten forest habitat quality (damaging ground daytime sheltering sites and the abundance and structure of understory shrubs

used for foraging) (de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-Wichatitsky 2006), from predation by introduced cats (Palmas et al. 2017), and from the introduced Fire Ant *Wasmania auropunctata*, which has the potential to displace geckos from ground sheltering sites and arboreal foraging sites, and to affect the abundance and composition of invertebrate prey (Jourdan et al. 2000, 2001).

**Remarks:** *Bavayia insularis* sp. nov. was referred to by Whitaker and Whitaker (2007) as *Bavayia* aff. *cyclura* sp. 1 and by Whitaker and Sadlier (2007), who provided a life photo of the species from Vavouto, as *Bavayia* aff. *cyclura* sp. 3.

## DISCUSSION

Our data support the recognition of three major lineages of *Bavayia*, the *B. sauvagii* Group, the *B. cyclura* Group and the *B. ornata* Group (Table 28). The first two of these have long been recognized, but the third, long known only from *B. ornata* Roux, 1913, was considered, on the basis of the morphology of digit I, to be referable to the *B. sauvagii* group and was, until 1988, treated as a subspecies of *B. sauvagii*. Although all members of the *B. cyclura* group appear to share a similar claw and apical scansor morphology (see Fig. 1, Table 28), both the *B. sauvagii* and *B. ornata* Groups exhibit two different ungual configurations. Individual Clades and species within these Groups may be differentiated by a combination of size, precloacal pore number and arrangement, and color pattern (Table 28), although subtleties of habitus and especially dorsal pattern are generally required to diagnose species from their most phenotypically similar congeners.

The molecular data presented here is sample rich, but represents a gene tree derived from a single, albeit usually highly informative, marker, the mitochondrial ND2 gene. However, the pattern of relationship we recover among the major clades are consistent with those based on a multilocus analysis of 5235 bp (Skipwith et al. 2016). A more recent phylogenomic study (Skipwith et al. 2019) using > 4000 ultra-conserved elements (UCEs) recovered a different three-taxon statement among the species Groups of *Bavayia* — (*B. cyclura* (*B. sauvagii*, *B. ornata*)) — but recovered (to the extent their sampling was adequate) the same Clades as we recognize herein. Likewise, both of these studies identified paraphyletic and polyphyletic “species” supporting the existence of cryptic taxa corresponding to some of the species described in this revision.

Our recognition of 41 species of *Bavayia* is also consistent with a recent CO1 barcoding of the New Caledonian herpetofauna (Bernstein et al. 2021) which found a “barcode gap” that supported the specific status of all 12 described species as well as 27 putative taxa corresponding to the bulk of the species recognized herein. These results were slightly more conservative than two species delimitation methods, mPTP (Ezard et al. 2009) and GMYC (Kapli et al. 2017), which recovered 44 and 56 species, respectively (see Bernstein et al. 2021). The GMYC method supported all of the taxa we recognize here, whereas the mPTP method lumped a single species pair, corresponding to *B. pulchella* and *B. stephenparki*. However, Skipwith et al. (2016), who sampled five nuclear genes for five of the 15 species in the *B. sauvagii* Group, found no shared alleles between species, including *B. pulchella* and *B. stephenparki*, the two most recently diverged species of *Bavayia*, suggesting that the mitochondrial divergences observed here and by Bernstein et al. (2021) are also supported by differences in nuclear genes.

The discovery that the genus *Bavayia* is represented by a large number of mostly microendemic species comes as no surprise. New Caledonia is known for its high biodiversity and particularly for its extremely high levels of endemism, seen across many groups of plants and animals (Chazeau 1993; Mittermeier et al. 1996; Lowry et al. 2004).

High levels of endemism are well-known among New Caledonian plants, with 93.4% of the



TABLE 28. Summary of selected attributes of species of the genus *Bavayia*. Solid lines separate the more inclusive *Bavayia* Groups from one another and Clades within each Group are distinguished by alternating highlighting. Claw type refers to the placement of the claw of digit I relative to the apical scensor(s) (see Figure 1 for illustration of the three basic morphologies). Pores refers to preloacal pores in adult males. a = a single individual with two rows of preloacal pores recorded. White-Brown ventral color ranges from off-white, through cream to gray or brown. Dorsal patterns characterized as having chiefly transverse (trans.) elements (bands, blotches, chevrons, saddles) or longitudinal (long.) elements (complete or partial stripes). \* = occasional individuals exhibit longitudinal patterns, \*\* = some individuals exhibit transverse patterns. Distribution lists primary area(s) of occurrence of each species and parenthetically the province(s) in which they occur. I = Province des Îles Loyauté, N = Province Nord, S = Province Sud. Conservation status is that determined using the IUCN criteria. NT = Near Threatened, VU = Vulnerable, EN = Endangered, CR = Critically Endangered.

Species	Group	Clade	Max. SVL (mm)	Claw type	Pore rows	Pore number	Ventral color	Dorsal pattern	Distribution (Provinces)	Conservation status
<i>B. sauvagii</i>	<i>sauvagii</i>	<i>sauvagii</i>	60	A	1	7–23	white-brown	trans.	Southwest Coast (S)	EN
<i>B. campestris</i>	<i>sauvagii</i>	<i>sauvagii</i>	50.3	A	1	20–27	white-brown	trans.	Plaine des Lacs (S)	EN
<i>B. kunyie</i>	<i>sauvagii</i>	<i>sauvagii</i>	51.5	A	1	15–23	white-brown	trans.*	Southeast Coast, Île des Pins (S)	VU
<i>B. loyaltiensis</i>	<i>sauvagii</i>	<i>sauvagii</i>	45	A	1 <sup>a</sup>	16–24	white-brown	trans.	Loyalty Islands, Maré (I)	VU
<i>B. centralis</i>	<i>sauvagii</i>	<i>centralis</i>	60.1	A	1	20–27	white-brown	trans.	Mé Maoya, Chaîne Centrale (S, N)	EN
<i>B. caillou</i>	<i>sauvagii</i>	<i>centralis</i>	59.5	A	1	24–30	white-brown	trans.	Southern Chaîne Centrale (S)	EN
<i>B. ashleyi</i>	<i>sauvagii</i>	<i>centralis</i>	66	A	1	21–28	white-brown	trans.	Aoupinié, Massif du Boulinda (N)	EN
<i>B. pulchella</i>	<i>sauvagii</i>	<i>pulchella</i>	49.3	B	1	18–23	white-brown	long.**	Mé Maoya, Chaîne Centrale (S)	EN
<i>B. stephenparki</i>	<i>sauvagii</i>	<i>pulchella</i>	54.5	B	1	20–24	white-brown	trans.	Mt. Do, S. Chaîne Centrale (S)	VU
<i>B. lepredourensis</i>	<i>sauvagii</i>	<i>pulchella</i>	41.3	B	1	18–21	white-brown	trans.	Île Leprédour, West Coast (S)	CR
<i>B. exsuccida</i>	<i>sauvagii</i>	<i>exsuccida</i>	47.2	B	1	16–23	white-brown	trans.	Presqu'île de Pindaf, W Coast (N)	CR
<i>B. nehoueensis</i>	<i>sauvagii</i>	<i>exsuccida</i>	46.4	B	1	18–20	white-brown	trans.	Rivière Néhoué, Kaala Massif (N)	EN
<i>B. astrongatti</i>	<i>sauvagii</i>	<i>exsuccida</i>	47.4	B	1	8–26	white-brown	trans.*	Massif d'Ouazangou-Taom (N)	CR
<i>B. endemia</i>	<i>sauvagii</i>	<i>exsuccida</i>	59.5	B	1	19–27	white-brown	trans.	Chaîne Centrale, Panié Massif (N)	NT
<i>B. menazi</i>	<i>sauvagii</i>	<i>exsuccida</i>	50.8	B	1	12–16	white-brown	long.**	Ménazi Massif to Haut Nakéty (N)	CR
<i>B. geitaina</i>	<i>sauvagii</i>	<i>geitaina</i>	72	B	1	18–24	white-brown	trans.*	Southern ultramafic block (S)	NT
<i>B. ornata</i>	<i>ornata</i>	<i>ornata</i>	69	A	1	21–26	white-brown	trans.	Mt. Panié (N)	CR
<i>B. tchingou</i>	<i>ornata</i>	<i>ornata</i>	53.2	A	1	~16	white-brown	trans.	Tchingou Massif (N)	VU
<i>B. septuiclavis</i>	<i>ornata</i>	<i>septuiclavis</i>	52.6	C	1	8–14	white-brown	long.	Southern ultramafic block (S)	NT
<i>B. cyclura</i>	<i>cyclura</i>	<i>cyclura</i>	73	C	2–3	15–32	yellow	trans.	Mid-west Coast (S)	EN
<i>B. robusta</i>	<i>cyclura</i>	<i>cyclura</i>	91	C	2–3	17–36	yellow	trans.	S Grande Terre, Île des Pins (S)	NT
<i>B. goroensis</i>	<i>cyclura</i>	<i>goroensis</i>	48.6	C	2	16–17	yellow	trans.	Plaine des Lacs (S)	EN
<i>B. nubila</i>	<i>cyclura</i>	<i>goroensis</i>	67.3	C	2	18	yellow	trans.	Mts. Vulcain, Ouin, Dzumac (S)	EN
<i>B. montana</i>	<i>cyclura</i>	<i>montana</i>	76	C	3–4	23–28	yellow	trans.	Panié, Ouazangou-Taom (N)	EN
<i>B. kanaky</i>	<i>cyclura</i>	<i>montana</i>	67.2	C	2–3	22–29	yellow	trans.	Chaîne Centrale (S, N)	VU
<i>B. mandjeliensis</i>	<i>cyclura</i>	<i>montana</i>	66.8	C	3	26–37	yellow	trans.	Mt. Mandjelia (N)	VU
<i>B. kopeto</i>	<i>cyclura</i>	<i>montana</i>	59	C	2–3	17–29	yellow	trans.	Massif de Kopéto (N)	CR
<i>B. koniambo</i>	<i>cyclura</i>	<i>montana</i>	62.9	C	3	26–28	yellow	trans.	Massif de Koniambo (N)	CR
<i>B. jourdani</i>	<i>cyclura</i>	<i>montana</i>	64	C	2–3	23–32	yellow	trans.	Mé Maoya, Pic Névaá (S)	EN
<i>B. renevierorum</i>	<i>cyclura</i>	<i>montana</i>	68.5	C	2–4	27–44	yellow	trans.	Aoupinié, Massif de Tchingou (N)	EN
<i>B. borealis</i>	<i>cyclura</i>	<i>borealis</i>	62.9	C	2	20–33	yellow	trans.	N Grande Terre, Île Balabio (N)	NT
<i>B. cocoensis</i>	<i>cyclura</i>	<i>borealis</i>	53.9	C	1–2	16–17	yellow	trans.	Creek Coco, Koniambo Massif (N)	CR
<i>B. boulinda</i>	<i>cyclura</i>	<i>borealis</i>	58.5	C	3	28–31	yellow	trans.	Paéoua and Boulinda Massifs (N)	EN
<i>B. ultramaficola</i>	<i>cyclura</i>	<i>borealis</i>	52.8	C	1–2	19–23	yellow	trans.	Kopéto and Boulinda Massifs (N)	EN
<i>B. periclitata</i>	<i>cyclura</i>	<i>borealis</i>	66	C	2	35–46	yellow	trans.	Kaala Massif, Koumac Caves (N)	EN
<i>B. whitakeri</i>	<i>cyclura</i>	<i>borealis</i>	53.3	C	1–2	12–19	yellow	trans.	Dôme de Tiébaghi (N)	EN
<i>B. crassicolis</i>	<i>cyclura</i>	<i>crassicolis</i>	81	C	2	18–30	yellow	trans.	Loyalty Islands (I)	VU
<i>B. tanleensis</i>	<i>cyclura</i>	<i>crassicolis</i>	66.8	C	2	28	yellow	trans.	Île Tanlé, NW Grande Terre (N)	CR
<i>B. rhizophora</i>	<i>cyclura</i>	<i>crassicolis</i>	72.8	C	2	25–30	yellow	trans.	Tia, Oundjo (N)	EN
<i>B. occidentalis</i>	<i>cyclura</i>	<i>crassicolis</i>	73.7	C	2–3	25–33	yellow	trans.	Central West Coast (N)	EN
<i>B. insularis</i>	<i>cyclura</i>	<i>crassicolis</i>	69.6	C	2	18–25	yellow	trans.	N Grande Terre, N Islands (N)	EN

maquis flora and 92.3% of the dense evergreen rainforest being endemic (Jaffré et al. 2001). The high level of endemicity and the large absolute number of vascular plant taxa (3454) is exceptional. The characteristics of the flora are largely the result of the underlying geology (Morat et al. 1994). Although the tight correlation between substrate type and areas of endemism is well estab-

lished for plants, it has been examined to a lesser extent in animals. Espeland and Johansen (2008) and Espeland et al. (2008) considered there to be an influence of substrate (particularly ultrabasic rocks) on the evolutionary history in Trichoptera, but we assume that for lizards any such connection is mediated through vegetation type rather than on edaphic conditions per se.

Previous work (Skipwith et al. 2016, 2019) has estimated the age of divergences in the New Caledonian diplodactylid radiation, supporting a Miocene separation from other sympatric genera, with the most recent divergences occurring as recently as the Pliocene. The entire New Caledonian gecko radiation appears to have begun diversification in the Early Miocene, although its divergence from its sister taxon, the Australian *Pseudotothecadactylus*, dates to the Early Eocene. Existing data thus corroborate other biological data (Muriénne et al. 2005; Grandcolas et al. 2008; Grandcolas 2017; Nattier et al. 2017) that are consistent with clear geological evidence that New Caledonia, after a long and complex history, only reemerged following marine inundation about 37 million years ago (Cluzel et al. 2012; Maurizot and Campbell 2020). Although enigmatic paleoendemic taxa that would seem to support at least some emergent land in the region do exist (Heads 2010; Giribet and Baker 2019), *Bavayia* and its relatives are strongly supported as neoendemics that have undergone their in situ radiation post-emergence, during a period when many other groups of plants and animals were also radiating within New Caledonia (Nattier et al. 2017; Maurizot and Campbell 2020).

Despite decades of collecting effort only in a few cases is sampling within *Bavayia* adequate to verify the actual boundaries of a species' distribution and its proximity to other clade members. Nonetheless, the pattern that emerges from existing data is one in which members of the two larger species Groups, the *B. sauvagii* and *B. cyclura* Groups, often occur in sympatry (the *B. ornata* Group, with only three species also cooccurs with other congeners). Representatives of different Clades within these Groups, also may occur in sympatry, but members of a single Clade are typically allopatrically distributed, as in the *Bavayia centralis* Clade, in which constituent species replace one another along the Chaîne Centrale (Fig. 14), or the *B. montana* Clade, in which species occupy disjunct massifs (Fig. 44). Exceptions occur in the *Bavayia sauvagii* Clade, in which *B. campestris* and *B. kunyie* occur in sympatry on the Goro Plateau (Fig. 7) and in the *B. crassicollis* Clade, in which *B. rhizophora* occurs only a few km from *B. insularis*, even occupying identical habitats, and *B. tanleensis* is known from a single specimen from the small island of Tanlé, essentially within the distribution of *B. insularis* (Fig. 62).

Areas of endemism occupied by one or more species of *Bavayia* are present on each of the main substrate categories represented in New Caledonia, ultramafic substrates, volcano-sedimentary substrates, and coral-limestone substrates. In the far south of the Grand Terre all members of the *B. geitaina*, *B. septuiclavis*, and *B. goroensis* Clades and three of four members of the *B. sauvagii* Clade are either entirely or nearly completely restricted to the ultramafic Southern Massif of the Grande Terre. Numerous species occur on more northern isolated ultramafic massifs like Kopéto, Koniambo, Boulinda, Taom, Kaala, Mé Adéo, Mé Maoya, Tchingou and Menazi. Two species, *B. loyaltiensis* and *B. crassicollis*, are restricted to coral-limestone substrates in the Loyalty Islands. Mt. Panié, Mt. Mandjelia and Mt. Aoupinié, as well as various sections of the Chaîne Centrale represent areas of endemism on volcano-sedimentary substrates. However, many species do cross substrate boundaries into immediately adjacent areas, although only one, *B. montana*, has disjunct populations on ultramafic (Mt. Taom) and volcano-sedimentary substrates (Panié Massif).

Similar areas of microendemism are shared by many other taxa (e.g., Haase and Bouchet 1998; Jaffré et al. 2010; Wulff et al. 2013; Barrabé et al. 2014; Gâteblé et al. 2018). Among other lizards many species share congruent areas of endemism with *Bavayia* spp. (Sadlier 1986; Bauer and Sadlier 1993, 2000; Bauer 1999), notably among the skinks *Nannoscincus* (Sadlier et al. 2002,

2014a), *Marmorosphax* (Sadlier et al. 2009, 2020), *Sigaloseps* (Sadlier et al. 2014b), and *Caledoniscincus* (Sadlier et al. 1999, 2013, 2014c). Among other New Caledonian diplodactylids, a pattern of microendemism is seen most clearly in *Dierogecko*, which, though limited to the north of New Caledonia, from the Koniambo Massif through the Belep Islands, exhibits strong overlap in areas of endemism with several clades of *Bavayia*. For example, the Panié Massif, Koniambo, Néhoué and adjacent areas, and the northern offshore islands (Bauer et al. 2006). And, as in *Bavayia*, sympatry is rare within a single clade, occurring only in the relatively distantly related *D. poumensis* and *D. inexpectatus* (Skipwith et al. 2014). However, it should be noted that patterns of microendemism are not fully congruent between genera. For example, *Dierogecko baaba* is endemic to Île Baaba north of Poum, whereas most of the other northern islands are occupied by *D. insularis* (Bauer et al. 2006; Skipwith et al. 2014). In contrast Baaba shares its species of *Bavayia* (*B. insularis*) with all of the other northern islands, as well as parts of the Grande Terre.

Nearly all *Bavayia* have compact areas of occurrence, with only *B. endemia* and *B. borealis*, two of the Near Threatened species, having relatively broad distributions. The vast majority of endemic New Caledonian taxa for which data are available, have small distributions. For example, Caesar et al. (2017) found that 12% of animal endemics had ranges of  $\leq 5.2$  km<sup>2</sup>. Their sample was predominantly insect species, many of which, with small body size and limited vagility, would likely have smaller ranges than vertebrates, nonetheless, the majority of *Bavayia* species for which we have estimated area of occupancy have ranges of less than 100 km<sup>2</sup>.

One outcome of the recognition of widespread microendemism of *Bavayia* and other taxa in New Caledonia is its influence of conservation status. In taxa, like most reptiles, for which demographic and other biological data are effectively lacking, the IUCN criteria for establishing threat status are almost exclusively based on aspects of distribution. Consequently, the recognition that a species once considered to be widespread, in fact, comprises multiple independent lineages with highly restricted ranges will, all other variables being equal, raise the average threat status of the biota. With the highly restricted ranges of most *Bavayia* spp., many taxa qualify for one of the Threatened categories on the basis of small areas of occupancy alone. To this are added a large number of exogenous threats that impact these geckos.

Of the 41 species of *Bavayia*, five are evaluated here as Near Threatened, the remaining 36 all fall into one of the Threatened categories: seven Vulnerable, 20 Endangered and nine Critically Endangered (Table 28). The vast majority of these are believed to have suffered habitat loss prior to their initial evaluation. Wildfires are one common threat, both past and current, to many New Caledonian habitats (Ibanez et al. 2019). At lower elevations, particularly along the west coast, land clearing for agriculture has degraded habitats as has urbanization, particularly in the vicinity of Nouméa. Both deforestation and afforestation are also regional threats to biodiversity. In the south and throughout the ultramafic massifs, current or planned mining activities are major threats. The direct influences of mining, particularly nickel mining, are well documented (Jaffré et al. 2010; Ibanez et al. 2019). The restriction of some *Bavayia* species to single ultramafic massifs make them vulnerable to the destruction of native vegetation that is invariably caused, on a greater or lesser scale, by mining through land clearing, mine waste dumping, habitat fragmentation and isolation, and increased fire risks (Pascal et al. 2008; Jaffré et al. 2010; Ibanez et al. 2019).

Another major category of threats come from introduced species, which are implicated as exacerbating factors for all species of *Bavayia* except *B. menazi* and *B. robusta*. Deer and pigs are major culprits in habitat degradation (de Garine-Wichatitsky et al. 2004; Spaggiari and de Garine-Wichatitsky 2006) and introduced fire ants, *Wasmania auropunctata*, have both direct and indirect effects on *Bavayia* across New Caledonia (Jourdan et al. 2000, 2001). Cats (Palmas et al. 2017) and rodents (Whitaker 1976) are also widely implicated as predators on these geckos, and in



the cases of the most range-restricted species, *B. lepredourensis* and *B. tanleensis*, rabbits and *Hemidactylus* geckos, respectively, have been identified as threats, the former contributing to habitat degradation and the latter as a possible competitor.

Unfortunately, New Caledonia's protected areas network is limited and comprises chiefly areas in the Southern Massif (Jaffré et al. 2010), which may provide some protection to the endemic species there but leaves most of the species in the Province Nord, including its many ultramafic massifs, and the Province des Îles Loyauté outside of conservation areas. On volcano-sedimentary surfaces only small areas of Mt. Aoupinié, the Panié Massif, and the Col d'Amieu (Parc des Grandes Fougères) are protected. Further, some nominal conservation areas in New Caledonia provide little or no protection as mining exploration or other uses may be allowed (Ibanez et al. 2019).

Interestingly, although *Bavayia* is, by far, the most species rich genus of lizards in New Caledonia, its constituent species exhibit little morphological diversity. This is especially so in comparison to the giant geckos of New Caledonia (*Rhacodactylus*, *Mniarogekko*, *Correlophus*) in which morphological disparity is high despite low rates of lineage diversification. Although there are size and subtle morphological and color pattern differences across *Bavayia*, most species share a similar appearance and live a very similar lifestyle. *Bavayia cyclura* Group taxa are mostly more robust and more arboreal, where members of the other two groups are more gracile and spend a portion of their time on the ground, although foraging may take place arboreally. We believe that *Bavayia* represents a non-adaptive radiation within New Caledonia.

Non-adaptive radiations have been defined as those in which there is high lineage diversification rates but low or background rates of morphological or ecological change (Givnish and Sytsma 1997; Sanderson 1998) or those in which allopatric diversification is not accompanied by niche differentiation or morphological divergence (Gittinberger 1991; Rundell and Price 2009). We have not here undertaken a formal study of rate changes across the New Caledonian Diplodactylidae, but the high number of species level lineages and low morphological diversity is apparent from our work. The non-adaptive nature of the *Bavayia* radiation was tested by DeBoer (2017) who found that genetically divergent but morphologically conservative species shared similar ecological preferences (DeBoer 2017). For example, the three species of the *B. sauvagii* clade included in his analysis had very similar predicted spatial niches, despite being allopatric (DeBoer 2017). The members of the plant genus *Psychotria* (Rubiaceae), in which 78 species have diversified in New Caledonia since the late Miocene, has also been interpreted as constituting a non-adaptive radiation (Barrabé et al. 2014) and the most speciose plant genus that is strictly endemic to New Caledonia, *Pycnanandra* (Sapotaceae), likewise shows evidence that relatively distantly related taxa may share similar morphology and the same abiotic requirements (Swenson et al. 2015).

We suggest that *Bavayia* has undergone cladogenesis since the Miocene (Skipwith et al. 2014), chiefly due to isolation and cessation of gene flow as the result of the fragmentation of once more continuous blocks of forest vegetation types, presumably via climatic oscillations (Chevilotte et al. 2006) which, during drier, more fire-prone periods, would have favored maquis expansion at the expense of forest (Muriénne 2009). Although isolated from one another, descendants of a fragmented ancestral species would be living in very similar habitats and might retain the plesiomorphic morphology and ecology of their lineage. This would yield low morphological disparity across clades despite potentially high rates of diversification. For now we simply propose this as a hypothesis. However, with the establishment in this revision of formal new species for the previously undescribed *Bavayia* we have identified the units that will be used to test this hypothesis in a future study in which our existing extensive multi-locus nuclear DNA data will be used as the basis to explicitly test hypotheses regarding diversification rates across this genus and the broader New Caledonian herpetofauna.

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## APPENDIX 1.

Ingroup specimens sequenced for ND2 and included in the molecular phylogenetic analysis in this paper and their associated GenBank accession numbers (see Materials and Methods for information regarding outgroup samples). Localities are shortened because of space limitations, but exact localities, including coordinates, are provided in the main text of the paper. AMS = Australian Museum, Sydney; CAS = California Academy of Sciences, San Francisco; MNHN = Muséum National d'Histoire Naturelle, Paris; YPM = Yale Peabody Museum of Natural History; AMB, MCZA = Aaron M. Bauer field series; AMH = Australian Museum Herpetology field series; NR = Australian Museum frozen tissue.

Species	Museum Number	Locality	GenBank Number
<i>Bavayia ashleyi</i>	AMS R.149390	Mt. Aoupinié	DQ533740
<i>Bavayia ashleyi</i>	AMS R.149391	Mt. Aoupinié	ON375810
<i>Bavayia ashleyi</i> <b>Holotype</b>	MNHN-RA-2022.0043	Mt. Aoupinié	ON375807
<i>Bavayia ashleyi</i>	AMS R.149416	Mt. Aoupinié	ON375806
<i>Bavayia ashleyi</i>	AMS R.149428	Mt. Aoupinié	ON375809
<i>Bavayia ashleyi</i>	AMS R.163224	Pic Poya, Massif du Boulinda	ON375808
<i>Bavayia astrongatti</i>	AMS R.153718	Ouaco	ON662118
<i>Bavayia astrongatti</i>	AMS R.153719	Ouaco	ON662119
<i>Bavayia astrongatti</i>	AMS R.161155	Mt. Taom	ON662120
<i>Bavayia astrongatti</i>	AMS R.161274	Siba, Tinip	ON662121
<i>Bavayia astrongatti</i>	AMS R.161275	Siba, Tinip	ON662122
<i>Bavayia borealis</i>	AMS R.146352	Mt Mandjelia	ON662123
<i>Bavayia borealis</i>	AMS R.149330	Gite Galarino, Massi du Panié,	ON662124
<i>Bavayia borealis</i>	AMS R.163136	Île Balabio	ON662125
<i>Bavayia borealis</i>	AMS R.165027	Ouaïème	ON662126
<i>Bavayia borealis</i>	AMS R.165028	Ouaïème	ON662127
<i>Bavayia borealis</i>	AMS R.188635	Rivière Néhoué	ON662128
<i>Bavayia borealis</i>	AMS R.188636	Rivière Néhoué	KU158041
<i>Bavayia borealis</i>	AMS R.188637	Vallée Punu	ON662129
<i>Bavayia borealis</i>	CAS 265754	Île Balabio	ON662130
<i>Bavayia borealis</i>	CAS 265756	Île Balabio	ON662131
<i>Bavayia borealis</i>	CAS 265815	Old Airstrip, Houaïlou	ON662132
<i>Bavayia bouldina</i>	AMS R.168207	Paéoua, Ouamango	ON662133
<i>Bavayia bouldina</i>	AMS R.168208	Paéoua, Ouamango	ON662134
<i>Bavayia bouldina</i>	CAS 265747	Ou Népoa, Massif du Boulinda	ON662135
<i>Bavayia caillou</i>	AMS R.135055	vic. Col d'Amieu	KU158059
<i>Bavayia caillou</i> <b>Holotype</b>	MNHN-RA-2022.0040	8.7 km N Sarraméa	ON662136
<i>Bavayia caillou</i>	AMS R.147858	Plateau de Dogney	ON662137
<i>Bavayia caillou</i>	AMS R.174565	Parc des Grandes Fougères	ON662138
<i>Bavayia caillou</i>	CAS 264203	Parc des Grandes Fougères	ON662139
<i>Bavayia caillou</i>	CAS 264279	Parc des Grandes Fougères	ON662140
<i>Bavayia caillou</i>	CAS 265719	vic. Col d'Amieu	ON662141
<i>Bavayia campestris</i>	AMS R.148069	Forêt Nord	ON662142
<i>Bavayia campestris</i>	AMS R.148070	Forêt Nord	ON662143
<i>Bavayia campestris</i>	AMS R.148072	Forêt Nord	ON662144
<i>Bavayia campestris</i> <b>Holotype</b>	MNHN-RA-2022.0045	Forêt Nord	ON662145
<i>Bavayia campestris</i>	AMS R.150025	Forêt Nord	ON662146
<i>Bavayia campestris</i>	AMS R.150026	Forêt Nord	ON662147
<i>Bavayia campestris</i>	CAS 265762	Baie de Prony	ON662163
<i>Bavayia campestris</i>	CAS 265765	Baie de Prony	ON662165
<i>Bavayia campestris</i>	AMS R.164287	Port Boisé	ON662148
<i>Bavayia campestris</i>	AMS R.164288	Port Boisé	ON662149

<i>Bavayia campestris</i>	AMS R.164289	Port Boisé	ON662150
<i>Bavayia campestris</i>	AMS R.164306	Cap N'Doua	ON662151
<i>Bavayia campestris</i>	AMS R.164307	Cap N'Doua	ON662152
<i>Bavayia campestris</i>	AMS R.164310	Cap N'Doua	ON662153
<i>Bavayia campestris</i>	AMS R.164327	Cap N'Doua	ON662154
<i>Bavayia campestris</i>	AMS R.171344	Kwé Nord, Goro Plateau	ON662155
<i>Bavayia campestris</i>	AMS R.171345	Kwé Nord, Goro Plateau	ON662156
<i>Bavayia campestris</i>	AMS R.172589	Port Boisé	ON662157
<i>Bavayia campestris</i>	AMS R.172590	Port Boisé	ON662158
<i>Bavayia campestris</i>	AMS R.172591	Port Boisé	ON662159
<i>Bavayia campestris</i>	AMS R.172592	Port Boisé	ON662160
<i>Bavayia campestris</i>	AMS R.172914	Kwé Nord, Goro Plateau	ON662161
<i>Bavayia campestris</i>	CAS 265761	Prony Bay	ON662162
<i>Bavayia campestris</i>	CAS 265764	Prony Bay	ON662164
<i>Bavayia centralis</i>	AMS R.135076	vic. Perlou	ON375815
<i>Bavayia centralis</i>	AMS R.135077	vic. Perlou	ON375811
<i>Bavayia centralis</i>	AMS R.144186	4.6 km N Col de Rousettes	ON375816
<i>Bavayia centralis</i>	AMS R.149853	Néoua area, Mé Adéo	ON375818
<i>Bavayia centralis</i>	AMS R.149865	Néoua area, Mé Adéo	ON375821
<i>Bavayia centralis</i>	AMS R.149929	Néoua area, Mé Adéo	ON375819
<i>Bavayia centralis</i>	AMS R.149941	Ranges W of Mé Adéo	ON375817
<i>Bavayia centralis</i>	AMS R.172743	Mé Maoya	ON375812
<i>Bavayia centralis</i>	AMS R.172749	Mé Maoya	ON375814
<i>Bavayia centralis</i>	AMS R.172751	Mé Maoya	ON375813
<i>Bavayia centralis</i>	CAS 265728	Néoua area, Mé Adéo	ON375820
<i>Bavayia cocoensis</i>	AMS R.172045	Creek Coco	ON375798
<i>Bavayia cocoensis</i>	AMS R.172046	Creek Coco	ON375799
<i>Bavayia crassicolis</i>	AMS R.125961	Luceilla, Lifou	ON662166
<i>Bavayia crassicolis</i>	AMS R.163249	Île Aventure, Île des Pins	ON662167
<i>Bavayia crassicolis</i>	AMS R.163268	Île Kûmo, Île des Pins	ON662168
<i>Bavayia crassicolis</i>	AMS R.163370	We, Lifou	ON662169
<i>Bavayia crassicolis</i>	AMS R.163371	Luceilla, Lifou	KU158036
<i>Bavayia crassicolis</i>	AMS R.163372	Luceilla, Lifou	ON662170
<i>Bavayia crassicolis</i>	AMS R.163374	Luceilla, Lifou	ON662171
<i>Bavayia crassicolis</i>	AMS R.163392	Luceilla, Lifou	JX024366
<i>Bavayia crassicolis</i>	AMS R.163393	Luceilla, Lifou	ON662172
<i>Bavayia crassicolis</i>	AMS R.163395	Luceilla, Lifou	ON662173
<i>Bavayia crassicolis</i>	AMS R.163396	Luceilla, Lifou	ON662174
<i>Bavayia cyclura</i>	AMS R.146400	Plage de Ouano	ON662175
<i>Bavayia cyclura</i>	AMS R.146401	Plage de Ouano	KU158040
<i>Bavayia cyclura</i>	AMS R.166246	Île Leprédour	ON662176
<i>Bavayia cyclura</i>	AMS R.166263	Presque'île des Montaignes	ON662177
<i>Bavayia cyclura</i>	AMS R.166264	Presque'île des Montaignes	ON662178
<i>Bavayia cyclura</i>	AMS R.166273	Presque'île des Montaignes	KU158065
<i>Bavayia cyclura</i>	AMS R.166274	Presque'île des Montaignes	ON662179
<i>Bavayia cyclura</i>	AMS R.166275	Presque'île des Montaignes	ON662180
<i>Bavayia cyclura</i>	AMS R.166360	Presque'île de Ouano	ON662181
<i>Bavayia cyclura</i>	CAS 157697	Plage de Poé	JX024367
<i>Bavayia cyclura</i>	CAS 265901	Presque'île des Montaignes	ON662182
<i>Bavayia endemia</i>	AMS R.138506	Mt. Koyaboa	ON662183
<i>Bavayia endemia</i>	AMS R.138507	Mt. Koyaboa	ON662184
<i>Bavayia endemia</i>	AMS R.146363	Cascade de Tao	ON662185
<i>Bavayia endemia</i>	AMS R.146373	Mt. Panié	ON662186
<i>Bavayia endemia</i>	AMS R.146374	Mt. Panié	ON662187
<i>Bavayia endemia</i>	AMS R.149466	Forêt Plate	ON662188
<i>Bavayia endemia</i>	AMS R.149469	Forêt Plate	ON662189

<i>Bavayia endemia</i>	AMS R.153720	vic. Kaala-Gomen	ON662190
<i>Bavayia endemia</i>	AMS R.153721	vic. Kaala-Gomen	ON662191
<i>Bavayia endemia</i>	AMS R.174657	Roche de la Wayem	ON662192
<i>Bavayia endemia</i>	AMS R.174668	Wewec, Panié Massif	ON662193
<i>Bavayia endemia</i>	CAS 265880	Oue Injob, Mt. Kaala	KU158060
<i>Bavayia endemia</i>	CAS 265887	Roche de la Wayem	ON662194
<i>Bavayia endemia</i>	CAS 265888	Roche de la Wayem	ON662195
<i>Bavayia endemia</i>	CAS 265890	Roche de la Wayem	ON662196
<i>Bavayia endemia</i>	CAS 265893	Wewec, Panié Massif	ON662197
<i>Bavayia exsuccida</i>	AMS R.150658	Pindaï	KU158044
<i>Bavayia exsuccida</i>	AMS R.150667	Pindaï	ON662198
<i>Bavayia exsuccida</i>	AMS R.150668	Pindaï	JX024368
<i>Bavayia geitaina</i>	AMB 5439	Mt. Koghis	ON661998
<i>Bavayia geitaina</i>	AMS R.174952	Camp de Sapins	ON662047
<i>Bavayia geitaina</i>	AMS R.144313	Mt. Koghis	ON661999
<i>Bavayia geitaina</i>	AMS R.144314	Mt. Koghis	ON662000
<i>Bavayia geitaina</i>	AMS R.144315	Mt. Koghis	ON662001
<i>Bavayia geitaina</i>	AMS R.146528	Mt. Koghis	ON662002
<i>Bavayia geitaina</i>	AMS R.147946	Parc de la Rivière Bleue, vic. Pont Germain	ON662003
<i>Bavayia geitaina</i>	AMS R.147959	Parc de la Rivière Bleue, vic. Pont Germain	ON662004
<i>Bavayia geitaina</i>	AMS R.148034	Mine Galliéni, Mt. Vulcain	ON662005
<i>Bavayia geitaina</i>	AMS R.148084	Mt. Koghis	ON662006
<i>Bavayia geitaina</i>	AMS R.150009	Kwa Néie, Plaine des Lacs	ON662007
<i>Bavayia geitaina</i>	AMS R.150010	Kwa Néie, Plaine des Lacs	ON662008
<i>Bavayia geitaina</i>	AMS R.150011	Kwa Néie, Plaine des Lacs	ON662009
<i>Bavayia geitaina</i>	AMS R.150012	Kwa Néie, Plaine des Lacs	ON662010
<i>Bavayia geitaina</i>	AMS R.150014	Kwa Néie, Plaine des Lacs	ON662011
<i>Bavayia geitaina</i>	AMS R.150015	Kwa Néie, Plaine des Lacs	ON662012
<i>Bavayia geitaina</i>	AMS R.150016	Kwa Néie, Plaine des Lacs	ON662013
<i>Bavayia geitaina</i>	AMS R.150740	Mt. Dzumac	ON662014
<i>Bavayia geitaina</i>	AMS R.150752	Mt. Koghis	ON662015
<i>Bavayia geitaina</i>	AMS R.150753	Mt. Koghis	ON662016
<i>Bavayia geitaina</i>	AMS R.150754	Mt. Koghis	ON662017
<i>Bavayia geitaina</i>	AMS R.150755	Mt. Koghis	ON662018
<i>Bavayia geitaina</i>	AMS R.150756	Mt. Koghis	ON662019
<i>Bavayia geitaina</i>	AMS R.152661	Mt. Koghis	JX024369
<i>Bavayia geitaina</i>	AMS R.152662	Mt. Koghis	JX041316
<i>Bavayia geitaina</i>	AMS R.152663	Mt. Koghis	ON662020
<i>Bavayia geitaina</i>	AMS R.153715	Massif du Kouâkoué	ON662021
<i>Bavayia geitaina</i>	AMS R.161917	Bois de Sud	ON662022
<i>Bavayia geitaina</i>	AMS R.161918	Bois de Sud	ON662023
<i>Bavayia geitaina</i>	AMS R.161919	Bois de Sud	ON662024
<i>Bavayia geitaina</i>	AMS R.167440	Forêt Cachée, Plaine des Lacs	ON662025
<i>Bavayia geitaina</i>	AMS R.167442	Forêt Cachée, Plaine des Lacs	ON662026
<i>Bavayia geitaina</i>	AMS R.167459	Forêt Cachée, Plaine des Lacs	ON662027
<i>Bavayia geitaina</i>	AMS R.171219	Pic Ningua	ON662028
<i>Bavayia geitaina</i>	AMS R.171220	Pic Ningua	ON662029
<i>Bavayia geitaina</i>	AMS R.171221	Pic Ningua	ON662030
<i>Bavayia geitaina</i>	AMS R.171223	Pic Ningua	ON662031
<i>Bavayia geitaina</i>	AMS R.171224	Pic Ningua	ON662032
<i>Bavayia geitaina</i>	AMS R.171225	Pic Ningua	ON662033
<i>Bavayia geitaina</i>	AMS R.171226	Pic Ningua	ON662034
<i>Bavayia geitaina</i>	AMS R.171227	Pic Ningua	ON662035
<i>Bavayia geitaina</i>	AMS R.171228	Pic Ningua	ON662036
<i>Bavayia geitaina</i>	AMS R.171229	Pic Ningua	ON662037
<i>Bavayia geitaina</i>	AMS R.171230	Pic Ningua	ON662038



<i>Bavayia geitaina</i>	AMS R.171231	Pic Ningua	ON662039
<i>Bavayia geitaina</i>	AMS R.172561	Mine Galliéni, Mt Vulcain	ON662040
<i>Bavayia geitaina</i>	AMS R.172562	Mine Galliéni, Mt Vulcain	ON662041
<i>Bavayia geitaina</i>	AMS R.172563	Mine Galliéni, Mt Vulcain	ON662042
<i>Bavayia geitaina</i>	AMS R.172564	Mine Galliéni, Mt Vulcain	ON662043
<i>Bavayia geitaina</i>	AMS R.172568	Mine Galliéni, Mt Vulcain	ON662044
<i>Bavayia geitaina</i>	AMS R.172569	Mine Galliéni, Mt Vulcain	ON662045
<i>Bavayia geitaina</i>	AMS R.172578	Mine Galliéni, Mt Vulcain	ON662046
<i>Bavayia geitaina</i>	CAS 157715	Gite Wadiana, Goro	ON662048
<i>Bavayia geitaina</i> <b>Holotype</b>	CAS 202733	Mt. Koghis	ON662049
<i>Bavayia geitaina</i>	CAS 202734	Mt. Koghis	ON662050
<i>Bavayia geitaina</i>	CAS 202735	Mt. Koghis	ON662051
<i>Bavayia geitaina</i>	CAS 202736	Mt. Koghis	ON662052
<i>Bavayia geitaina</i>	CAS 202830	Mt. Dzumac	KU158045
<i>Bavayia geitaina</i>	CAS 202831	Mt. Dzumac	ON662053
<i>Bavayia geitaina</i>	CAS 202832	Mt. Dzumac	ON662054
<i>Bavayia geitaina</i>	CAS 202833	Mt. Dzumac	ON662055
<i>Bavayia geitaina</i>	CAS 202834	Mt. Dzumac	ON662056
<i>Bavayia geitaina</i>	CAS 205849	Mt. Koghis	ON662057
<i>Bavayia geitaina</i>	CAS 205850	Mt. Koghis	ON662058
<i>Bavayia geitaina</i>	CAS 214447	Mt. Koghis	ON662059
<i>Bavayia geitaina</i>	CAS 214448	Mt. Koghis	ON662060
<i>Bavayia geitaina</i>	CAS 265912	Mt. Ouin	ON662061
<i>Bavayia geitaina</i>	CAS 265913	Mt. Ouin	ON662062
<i>Bavayia geitaina</i>	CAS 265915	Mt. Ouin	ON662063
<i>Bavayia geitaina</i>	CAS 265916	Mt. Ouin	ON662064
<i>Bavayia geitaina</i>	CAS 265917	Mt. Ouin	ON662065
<i>Bavayia geitaina</i>	CAS 265918	Mt. Ouin	ON662066
<i>Bavayia geitaina</i>	CAS 265919	Mt. Ouin	ON662067
<i>Bavayia geitaina</i>	CAS 265920	Mt. Ouin	ON662068
<i>Bavayia geitaina</i>	CAS 265921	Mt. Ouin	ON662069
<i>Bavayia geitaina</i>	CAS 265923	Mt. Ouin	ON662070
<i>Bavayia geitaina</i>	CAS 265924	Mt. Ouin	ON662071
<i>Bavayia geitaina</i>	CAS 265926	Mt. Ouin	ON662072
<i>Bavayia geitaina</i>	CAS 265928	Mt. Dzumac	ON662073
<i>Bavayia geitaina</i>	CAS 265929	Mt. Dzumac	ON662074
<i>Bavayia geitaina</i>	CAS 265931	Pic Ningua	ON662075
<i>Bavayia geitaina</i>	CAS 265932	Pic Ningua	ON662076
<i>Bavayia geitaina</i>	CAS 265933	Pic Ningua	ON662077
<i>Bavayia geitaina</i>	CAS 265934	Pic Ningua	ON662078
<i>Bavayia geitaina</i>	CAS 265935	Pic Ningua	ON662079
<i>Bavayia geitaina</i>	CAS 265936	Pic Ningua	ON662080
<i>Bavayia geitaina</i>	CAS 265937	Pic Ningua	ON662081
<i>Bavayia geitaina</i>	CAS 265938	Pic Ningua	ON662082
<i>Bavayia geitaina</i>	CAS 265939	Pic Ningua	ON662083
<i>Bavayia geitaina</i>	CAS 265941	Pic Ningua	ON662084
<i>Bavayia geitaina</i>	CAS 265942	Pic Ningua	ON662085
<i>Bavayia geitaina</i>	CAS 265943	Pic Ningua	ON662086
<i>Bavayia geitaina</i>	CAS 265944	Pic Ningua	ON662087
<i>Bavayia geitaina</i>	CAS 265945	Pic Ningua	ON662088
<i>Bavayia geitaina</i>	CAS 265946	Pic Ningua	ON662089
<i>Bavayia geitaina</i>	CAS 265947	Pic Ningua	ON662090
<i>Bavayia geitaina</i>	CAS 265948	Pic Ningua	ON662091
<i>Bavayia geitaina</i>	CAS 265949	Pic Ningua	ON662092
<i>Bavayia geitaina</i>	CAS 265950	Pic Ningua	ON662093
<i>Bavayia geitaina</i>	CAS 265951	Montagne des Sources	ON662094

<i>Bavayia geitaina</i>	CAS 265957	Pic Ningua	ON662095
<i>Bavayia geitaina</i>	CAS 265996	Mt Ouin	ON662096
<i>Bavayia goroensis</i>	AMS R.163433	Ka Yé Wagwé, Plaine des Lacs	KU158046
<i>Bavayia goroensis</i> <b>Holotype</b>	MNHN 2004.0027	Wajana, Plaine des Lacs	EU054304
<i>Bavayia goroensis</i>	AMS R.166030	Wajana, Plaine des Lacs	EU054303
<i>Bavayia goroensis</i>	AMS R.167443	Forêt Cachée, Plaine des Lacs	KU158047
<i>Bavayia goroensis</i>	AMS R.172095	Kwé Nord, Goro Plateau	ON662199
<i>Bavayia goroensis</i>	AMS R.172907	Kwé Nord, Goro Plateau	ON662200
<i>Bavayia goroensis</i>	AMS R.172908	Kwé Nord, Goro Plateau	ON662201
<i>Bavayia goroensis</i>	AMS R.175549	Goro Plateau, Plaine des Lacs	ON662202
<i>Bavayia goroensis</i>	CAS 235383	Ka Yé Wagwé, Plaine des Lacs	ON662203
<i>Bavayia insularis</i>	AMS R.153619	Pointe Naharian	ON662098
<i>Bavayia insularis</i>	AMS R.153620	Pointe Naharian	ON662099
<i>Bavayia insularis</i>	AMS R.153621	Pointe Naharian	ON662100
<i>Bavayia insularis</i>	AMS R.153636	Arama	ON662101
<i>Bavayia insularis</i>	AMS R.153637	Arama	ON662102
<i>Bavayia insularis</i>	AMS R.161059	Île Pott, Îles Belep	ON662103
<i>Bavayia insularis</i>	AMS R.161060	Île Pott, Îles Belep	ON662104
<i>Bavayia insularis</i>	AMS R.161064	Île Art, Îles Belep	ON662105
<i>Bavayia insularis</i>	AMS R.161065	Île Art, Îles Belep	ON662106
<i>Bavayia insularis</i>	AMS R.167251	Île Baaba	ON662107
<i>Bavayia insularis</i>	AMS R.168081	Pointe de Vavouto	ON662108
<i>Bavayia insularis</i>	AMS R.168082	Pointe de Vavouto	ON662109
<i>Bavayia insularis</i>	AMS R.168083	Pointe de Vavouto	ON662110
<i>Bavayia insularis</i>	AMS R.188638	Vallée Phaaye	ON662111
<i>Bavayia insularis</i>	AMS R.188639	Vallée Phaaye	ON662112
<i>Bavayia insularis</i>	AMS R.188647	Île Baaba	ON662113
<i>Bavayia insularis</i>	AMS R.188649	Île Baaba	ON662114
<i>Bavayia insularis</i>	AMS R.188651	Île Yandé	ON662115
<i>Bavayia insularis</i>	AMS R.188652	Île Yandé	ON662116
<i>Bavayia insularis</i>	AMS R.188653	Île Yandé	ON662117
<i>Bavayia insularis</i> <b>Holotype</b>	MNHN-RA-2022.0036	Maa Bwen, Île Baaba	ON662097
<i>Bavayia jourdani</i> <b>Holotype</b>	MNHN-RA-2022.0044	Ranges W of Mé Adéo	KU158034
<i>Bavayia jourdani</i>	AMS R.172740	Ranges W of Mé Adéo	ON662204
<i>Bavayia jourdani</i>	AMS R.172741	Mé Maoya	ON662205
<i>Bavayia jourdani</i>	AMS R.172755	Mé Maoya	ON662206
<i>Bavayia jourdani</i>	AMS R.172789	Mé Maoya	ON662207
<i>Bavayia jourdani</i>	CAS 265740	Mé Maoya	ON662208
<i>Bavayia kanaky</i> <b>Holotype</b>	MNHN-RA-2022.0039	Sarraméa	KU158042
<i>Bavayia kanaky</i>	AMS R.144111	Sarraméa	ON662209
<i>Bavayia kanaky</i>	AMS R.149870	Néoua area, Mé Adéo	ON662210
<i>Bavayia kanaky</i>	AMS R.149871	Néoua area, Mé Adéo	ON662211
<i>Bavayia kanaky</i>	AMS R.149872	Néoua area, Mé Adéo	ON662212
<i>Bavayia kanaky</i>	AMS R.167145	Mt. Ménazi	ON662213
<i>Bavayia kanaky</i>	CAS 265737	Néoua area, Mé Adéo	ON662217
<i>Bavayia kanaky</i>	AMS R.167966	Mé Mwa	ON662214
<i>Bavayia kanaky</i>	AMS R.167967	Mé Mwa	ON662215
<i>Bavayia kanaky</i>	CAS 259999	Parc des Grandes Fougères	ON662216
<i>Bavayia koniambo</i> <b>Holotype</b>	MNHN-RA-2022.0047	Rivière Pandanus, Mt. Koniambo	KU158037
<i>Bavayia koniambo</i>	CAS 265739	Rivière Pandanus, Mt. Koniambo	ON662218
<i>Bavayia kopeto</i>	AMS R.188658	Masif de Kopéto	ON662219
<i>Bavayia kopeto</i>	CAS 265789	Masif de Kopéto	KU158049
<i>Bavayia kunyie</i> <b>Holotype</b>	MNHN-RA-2022.0055	Mt. Gouemba	ON677466
<i>Bavayia kunyie</i>	AMB 7304	30.9 km S Thio	ON677467
<i>Bavayia kunyie</i>	AMS R.138581	Gite Kodjeue, Île des Pins	ON677468
<i>Bavayia kunyie</i>	AMS R.138582	Gite Kodjeue, Île des Pins	ON677469

<i>Bavayia kunyie</i>	AMS R.138583	Gite Kodjeue, Île des Pins	ON677470
<i>Bavayia kunyie</i>	AMS R.163247	Île Aventure, Île des Pins	ON677471
<i>Bavayia kunyie</i>	AMS R.171404	Ni River Valley	ON677472
<i>Bavayia kunyie</i>	AMS R.171405	Ni River Valley	ON677473
<i>Bavayia kunyie</i>	AMS R.171406	Ni River Valley	ON677474
<i>Bavayia kunyie</i>	AMS R.171410	Ni River Valley	ON677475
<i>Bavayia kunyie</i>	AMS R.171411	Ni River Valley	ON677476
<i>Bavayia kunyie</i>	AMS R.171412	Ni River Valley	ON677477
<i>Bavayia kunyie</i>	AMS R.171431	Pourina River Valley	ON677478
<i>Bavayia kunyie</i>	AMS R.171439	Pourina River Valley	ON677479
<i>Bavayia kunyie</i>	AMS R.171444	Pourina River Valley	ON677480
<i>Bavayia kunyie</i>	AMS R.172902	Kwé Nord, Goro Plateau	ON677481
<i>Bavayia kunyie</i>	AMS R.173928	Wadjana River, Goro Plateau	ON677482
<i>Bavayia kunyie</i>	AMS R.173929	Wadjana River, Goro Plateau	ON677483
<i>Bavayia kunyie</i>	AMS R.174771	Wadjana River, Goro Plateau	ON677484
<i>Bavayia kunyie</i>	AMS R.174778	Wadjana River, Goro Plateau	ON677485
<i>Bavayia kunyie</i>	AMS R.174787	Wadjana River, Goro Plateau	ON677486
<i>Bavayia kunyie</i>	AMS R.174788	Wadjana River, Goro Plateau	ON677487
<i>Bavayia kunyie</i>	AMS R.174789	Wadjana River, Goro Plateau	ON677488
<i>Bavayia kunyie</i>	AMS R.174790	Wadjana River, Goro Plateau	ON677489
<i>Bavayia kunyie</i>	CAS 203057	Plateau, Île des Pins	ON677490
<i>Bavayia kunyie</i>	CAS 203058	Plateau, Île des Pins	ON677491
<i>Bavayia kunyie</i>	CAS 203059	Plateau, Île des Pins	ON677492
<i>Bavayia kunyie</i>	CAS 203060	Plateau, Île des Pins	ON677493
<i>Bavayia kunyie</i>	CAS 203061	Plateau, Île des Pins	ON677494
<i>Bavayia kunyie</i>	CAS 203062	Plateau, Île des Pins	ON677495
<i>Bavayia kunyie</i>	CAS 203063	Plateau, Île des Pins	ON677496
<i>Bavayia kunyie</i>	CAS 265987	Île Nā Nā, Île des Pins	ON677497
<i>Bavayia kunyie</i>	CAS 265988	Île Nā Nā, Île des Pins	ON677498
<i>Bavayia kunyie</i>	CAS 265989	Île Mwārēya, Île des Pins	ON677499
<i>Bavayia lepredourensis</i>	AMS R.166251	Île Leprédour	ON662220
<i>Bavayia lepredourensis</i>	CAS 265759	Île Leprédour	ON662221
<i>Bavayia mandjeliensis</i>	AMS R.146355	Mt. Mandjelia	ON662222
<i>Bavayia mandjeliensis</i>	AMS R.146359	Mt. Mandjelia	KU158051
<i>Bavayia menazi</i>	AMS R.167143	Mt. Ménazi	ON662223
<i>Bavayia menazi</i>	AMS R.167170	Mt. Ménazi	ON662224
<i>Bavayia menazi</i>	AMS R.167816	Mé Mwa	ON662226
<i>Bavayia menazi</i>	AMS R.167817	Mé Mwa	ON662225
<i>Bavayia menazi</i>	AMS R.167819	Mé Mwa	ON662227
<i>Bavayia menazi</i> <b>Holotype</b>	MNHN-RA-2022.0052	Mé Mwa	ON662228
<i>Bavayia menazi</i>	AMS R.167822	Néwayéré	ON662230
<i>Bavayia menazi</i>	AMS R.167823	Néwayéré	ON662229
<i>Bavayia montana</i>	AMS R.144235	Mt. Panié	JX024370
<i>Bavayia montana</i>	AMS R.149341	Mt. Panié	KU158052
<i>Bavayia montana</i>	AMS R.149376	Mt. Panié	ON662231
<i>Bavayia montana</i>	AMS R.149377	Mt. Panié	ON662232
<i>Bavayia montana</i>	AMS R.149978	Mt. Panié	ON662233
<i>Bavayia montana</i>	AMS R.161173	Mt. Taom	ON662234
<i>Bavayia montana</i>	AMS R.164178	Mt. Taom	ON662235
<i>Bavayia montana</i>	AMS R.174678	Wewec, Panié Massif	ON662236
<i>Bavayia montana</i>	AMS R.174733	La Guen, Panié Massif	ON662237
<i>Bavayia montana</i>	AMS R.174741	La Guen, Panié Massif	ON662238
<i>Bavayia montana</i>	CAS 265900	La Guen, Panié Massif	ON662239
<i>Bavayia montana</i>	CAS 266175	Wewec, Panié Massif	ON662240
<i>Bavayia montana</i>	CAS 266232	Wewec, Panié Massif	ON662241
<i>Bavayia montana</i>	CAS 266233	Darwenia, Panié Massif	ON662242



<i>Bavayia montana</i>	CAS 266234	La Guen, Panié Massif	ON662243
<i>Bavayia nehoueensis</i>	CAS 265879	Oue Injob, Mt. Kaala	KU158043
<i>Bavayia nehoueensis</i>	AMS R.188634	Riviere Néhoué, 20 km NW Koumac	ON662244
<i>Bavayia nubila</i>	AMS R.165780	Mt. Ouin	JN117917
<i>Bavayia nubila</i>	AMS R.165816	Mt. Dzumac	JN117918
<i>Bavayia nubila</i>	AMS R.172571	Mine Galliéni, Mt. Vulcain	JN117919
<i>Bavayia nubila</i> <b>Holotype</b>	MNHN 2004.0028	Mt. Ouin	KU158038
<i>Bavayia occidentalis</i>	AMS R.146455	Pindaï	KU158039
<i>Bavayia occidentalis</i>	AMS R.146456	Pindaï	ON662245
<i>Bavayia occidentalis</i>	AMS R.146477	Adio Caves	ON662246
<i>Bavayia occidentalis</i>	AMS R.149357	Pindaï	ON662247
<i>Bavayia occidentalis</i>	AMS R.161198	Creek Hervouet, 7 km W Basse Poya	ON662248
<i>Bavayia occidentalis</i>	AMS R.166201	Népouiri	ON662249
<i>Bavayia occidentalis</i>	NR 9826	Nékoro Forest	ON662250
<i>Bavayia ornata</i>	AMS R.144233	Mt. Panié	KU158054
<i>Bavayia ornata</i>	AMS R.149306	Mt. Panié	DQ533737
<i>Bavayia periclitata</i>	AMS R.153557	Koumac Caves	KU158035
<i>Bavayia periclitata</i>	AMS R.161103	Piton de Pandop, Mt. Kaala	ON662251
<i>Bavayia periclitata</i>	AMS R.161109	Vallée Frère, Piton de Pandop, Mt. Kaala	ON375797
<i>Bavayia pulchella</i>	AMS R.149878	Néoua area, Mé Adéo	KU158055
<i>Bavayia pulchella</i>	AMS R.149933	Ranges W of Mé Adéo	ON375805
<i>Bavayia pulchella</i>	AMS R.149934	Ranges W of Mé Adéo	ON375804
<i>Bavayia pulchella</i>	AMS R.149935	Ranges W of Mé Adéo	JX024371
<i>Bavayia pulchella</i>	AMS R.166219	Mouéara, Gouaro-Déva	ON375800
<i>Bavayia pulchella</i>	AMS R.172758	Mé Maoya	ON375802
<i>Bavayia pulchella</i>	AMS R.172759	Mé Maoya	ON375803
<i>Bavayia pulchella</i>	AMS R.172787	Mé Maoya	ON375801
<i>Bavayia renevierorum</i>	CAS 265990	Pic d'Amoa	ON662257
<i>Bavayia renevierorum</i>	AMS R.149431	M. Aoupinié	ON662252
<i>Bavayia renevierorum</i>	AMS R.149482	Forêt Plate	ON662253
<i>Bavayia renevierorum</i>	AMS R.167260	Massif du Tchingou	ON662254
<i>Bavayia renevierorum</i>	AMS R.167261	Massif du Tchingou	ON662255
<i>Bavayia renevierorum</i>	AMS R.167292	Massif du Tchingou	ON662256
<i>Bavayia renevierorum</i>	CAS 198722	Mt Aoupinié	KU158050
<i>Bavayia renevierorum</i>	CAS 265744	Forêt Plate	KU158048
<i>Bavayia rhizophora</i>	AMS R.158800	Tia, 5 km SE Pouembout	ON662258
<i>Bavayia rhizophora</i>	CAS 265822	Oundjo	JX041315
<i>Bavayia robusta</i>	AMB 8089	Île Ami, Île des Pins	ON532514
<i>Bavayia robusta</i>	AMS R.135091	Yahoué Valley	ON532515
<i>Bavayia robusta</i>	AMS R.138590	3 km N Kuto, Île des Pins	ON532516
<i>Bavayia robusta</i>	AMS R.138591	3 km N Kuto, Île des Pins	JF972431
<i>Bavayia robusta</i>	AMS R.138592	3 km N Kuto, Île des Pins	ON532517
<i>Bavayia robusta</i>	AMS R.144357	Mt. Dore	ON532518
<i>Bavayia robusta</i>	AMS R.144358	Mt. Dore	ON532519
<i>Bavayia robusta</i>	AMS R.144359	Mt. Dore	ON532520
<i>Bavayia robusta</i>	AMS R.146495	Mt. Dore	ON532521
<i>Bavayia robusta</i>	AMS R.146597	vic. Pont Germain, Rivière Bleue	ON532522
<i>Bavayia robusta</i>	AMS R.147846	Forêt Thy	ON532523
<i>Bavayia robusta</i>	AMS R.147847	Forêt Thy	ON532524
<i>Bavayia robusta</i>	AMS R.147960	vic. Pont Germain, Rivière Bleue	ON532525
<i>Bavayia robusta</i>	AMS R.148019	Mt. Koghis	KU158058
<i>Bavayia robusta</i>	AMS R.150750	Mt. Koghis	ON532526
<i>Bavayia robusta</i>	AMS R.150751	Mt. Koghis	ON532527
<i>Bavayia robusta</i>	AMS R.152660	Mt. Koghis	ON532528
<i>Bavayia robusta</i>	AMS R.163230	Île Moro, Île des Pins	ON532529
<i>Bavayia robusta</i>	AMS R.163238	Île Moro, Île des Pins	ON532530



<i>Bavayia robusta</i>	AMS R.163239	Île Aventure, Île des Pins	ON532531
<i>Bavayia robusta</i>	AMS R.163243	Forêt Nord	ON532532
<i>Bavayia robusta</i>	AMS R.163248	Île Aventure, Île des Pins	ON532533
<i>Bavayia robusta</i>	AMS R.163250	Île Aventure, Île des Pins	ON532534
<i>Bavayia robusta</i>	AMS R.163253	Île Aventure, Île des Pins	ON532535
<i>Bavayia robusta</i>	AMS R.163256	Île Kûûmo, Île des Pins	ON532536
<i>Bavayia robusta</i>	AMS R.163257	Île Kûûmo, Île des Pins	ON532537
<i>Bavayia robusta</i>	AMS R.163258	Île Kûûmo, Île des Pins	ON532538
<i>Bavayia robusta</i>	AMS R.163259	Île Kûûmo, Île des Pins	ON532539
<i>Bavayia robusta</i>	AMS R.163260	Île Kûûmo, Île des Pins	ON532540
<i>Bavayia robusta</i>	AMS R.163267	Île Kûûmo, Île des Pins	ON532541
<i>Bavayia robusta</i>	AMS R.166087	Forêt Nord	ON532542
<i>Bavayia robusta</i>	AMS R.166283	Baie Tina, Nouméa	ON532543
<i>Bavayia robusta</i>	AMS R.166284	Baie Tina, Nouméa	ON532544
<i>Bavayia robusta</i>	AMS R.166285	Baie Tina, Nouméa	ON532545
<i>Bavayia robusta</i>	AMS R.168120	Rivière des Pirogues	ON532546
<i>Bavayia robusta</i>	AMS R.172596	Port Boisé	ON532547
<i>Bavayia robusta</i>	AMS R.172597	Port Boisé	ON532548
<i>Bavayia robusta</i>	AMS R.172598	Port Boisé	ON532549
<i>Bavayia robusta</i>	AMS R.172599	Port Boisé	ON532550
<i>Bavayia robusta</i>	AMS R.172600	Port Boisé	ON532551
<i>Bavayia robusta</i>	CAS 198660	Mt. Dore	ON532552
<i>Bavayia robusta</i>	CAS 202741	Mt. Koghis	ON532553
<i>Bavayia robusta</i>	CAS 202742	Mt. Koghis	JX024372
<i>Bavayia robusta</i>	CAS 202743	Mt. Koghis	ON532554
<i>Bavayia robusta</i>	CAS 203000	Île Moro, Île des Pins	ON532555
<i>Bavayia robusta</i>	CAS 203001	Île Moro, Île des Pins	ON532556
<i>Bavayia robusta</i>	CAS 203002	Île Moro, Île des Pins	ON532557
<i>Bavayia robusta</i>	CAS 203003	Île Moro, Île des Pins	ON532558
<i>Bavayia robusta</i>	CAS 203004	Île Moro, Île des Pins	ON532559
<i>Bavayia robusta</i>	CAS 203005	Île Moro, Île des Pins	ON532560
<i>Bavayia robusta</i>	CAS 203006	Île Moro, Île des Pins	ON532561
<i>Bavayia robusta</i>	CAS 203007	Île Moro, Île des Pins	ON532562
<i>Bavayia robusta</i>	CAS 203008	Île Nuû Ami, Île des Pins	ON532563
<i>Bavayia robusta</i>	CAS 203009	Île Nuû Ami, Île des Pins	ON532564
<i>Bavayia robusta</i>	CAS 203010	Île Nuû Ami, Île des Pins	ON532565
<i>Bavayia robusta</i>	CAS 203011	Île Nuû Ami, Île des Pins	ON532566
<i>Bavayia robusta</i>	CAS 203013	Île Nuû Ami, Île des Pins	ON532567
<i>Bavayia robusta</i>	CAS 203014	Île Nuû Ami, Île des Pins	ON532568
<i>Bavayia robusta</i>	CAS 203015	Île Nuû Ami, Île des Pins	KU158031
<i>Bavayia robusta</i>	CAS 203016	Île Du Ana, Île des Pins	KU158033
<i>Bavayia robusta</i>	CAS 203017	Île Du Ana, Île des Pins	ON532569
<i>Bavayia robusta</i>	CAS 203018	Île Du Ana, Île des Pins	ON532570
<i>Bavayia robusta</i>	CAS 203019	Île Du Ana, Île des Pins	ON532571
<i>Bavayia robusta</i>	CAS 203020	Île Du Ana, Île des Pins	ON532572
<i>Bavayia robusta</i>	CAS 203021	Île Du Ana, Île des Pins	ON532573
<i>Bavayia robusta</i>	CAS 203022	Île Du Ana, Île des Pins	ON532574
<i>Bavayia robusta</i>	CAS 203024	Île Maitre	ON532575
<i>Bavayia robusta</i>	CAS 203026	Île Maitre	ON532576
<i>Bavayia robusta</i>	CAS 203028	Île Maitre	ON532577
<i>Bavayia robusta</i>	CAS 203030	Île Caanawa, Île des Pins	ON532578
<i>Bavayia robusta</i>	CAS 203031	Île Caanawa, Île des Pins	ON532579
<i>Bavayia robusta</i>	CAS 203032	Île Caanawa, Île des Pins	KU158032
<i>Bavayia robusta</i>	CAS 203033	Île Caanawa, Île des Pins	ON532580
<i>Bavayia robusta</i>	CAS 203034	Île Caanawa, Île des Pins	ON532581
<i>Bavayia robusta</i>	CAS 203035	Île Caanawa, Île des Pins	ON532582

<i>Bavayia robusta</i>	CAS 203039	Île aux Canards	KU158057
<i>Bavayia robusta</i>	CAS 203040	Île aux Canards	ON532583
<i>Bavayia robusta</i>	CAS 203041	Île aux Canards	ON532584
<i>Bavayia robusta</i>	CAS 265825	Kuto, Île des Pins	ON532585
<i>Bavayia robusta</i>	CAS 265826	Kuto, Île des Pins	ON532586
<i>Bavayia robusta</i>	CAS 265827	Kuto, Île des Pins	ON532587
<i>Bavayia robusta</i>	CAS 265828	Kuto, Île des Pins	ON532588
<i>Bavayia robusta</i>	CAS 265829	Kuto, Île des Pins	ON532589
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New Zealand 2



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