RAFFLES BULLETIN OF ZOOLOGY **74**: 197–219
Date of publication: 14 April 2026
DOI: 10.26107/RBZ-2026-0015
https://zoobank.org/urn:lsid:zoobank.org:pub:5E78C19D-4205-4A68-99FE-7D52441BD2A4

A new miniaturised *Platymantis* (Amphibia: Anura: Ceratobatrachidae) from Sibuyan and Tablas islands, Romblon Island Group, Philippines

Camila G. **Meneses**[1*], Kier Mitchel E. **Pitogo**[1], Syrus Cesar P. **Decena**[1,2], Christian E. **Supsup**[1] & Rafe M. **Brown**[1]

Abstract. We describe a new species of miniaturised *Platymantis* (subgenus *Lahatnanguri*) from the Romblon Island Group (RIG), Philippines. Previously, the RIG population was treated as *Platymantis pygmaeus*, a forest-dwelling species endemic to Luzon Island due to morphological, ecological, and acoustic similarities. We conducted phylogenetic analyses using 16S mitochondrial DNA sequences and quantified morphological variation across a statistically robust sample size to assess the distinctiveness of the RIG population. Our results recovered the RIG lineage as monophyletic with moderate support (75% bootstrap; 0.83 BPP). Phylogenetic analyses further demonstrate that *Platymantis guiting*, new species, is not closely related to *P. pygmaeus* and it is morphologically distinguished by shorter limb proportions and a stereotyped advertisement call characterised by a single-pulsed, repetitive clicking. Named after Mount Guiting-Guiting, the highest peak on Sibuyan Island, this species stands as a powerful reminder of the biogeographic subregion's fragile and irreplaceable biodiversity. This taxonomic revision highlights the unique herpetological diversity of the RIG and reinforces the need for targeted conservation efforts in this biogeographically significant subregion.

Key words. Sibuyan Island, elevational relief, *Lahatnanguri*, Philippine biodiversity, conservation, *Platymantis guiting*

INTRODUCTION

Amphibian diversity in the Philippines is expected to rise as collections-based fieldwork expands into underexplored regions of the archipelago (Brown et al., 2001, 2013a; Brown & Diesmos, 2002; Meneses et al., 2024). Although discovering new species may seem straightforward, the taxonomic description process is far more complex (Barley et al., 2013; Hillis, 2019; Chan et al., 2023). Many amphibian groups are difficult to differentiate based on appearance alone, as minimal phenotypic variation can obscure species boundaries, even for experienced taxonomists (Bickford et al., 2007; Sanguila et al., 2011; Abraham et al., 2021; Chan et al., 2021a, b). This difficulty is further compounded by highly variable traits that complicate identification. However, advances in molecular genetics, alongside attention to other equally important data—morphology, behaviour, biogeography, and ecology—now provide multiple independent lines of evidence needed for robust species delimitation under widely accepted species concepts (Mallet, 1995; de Queiroz, 2005a, b, 2007; Hillis, 2019; Khalighifar et al., 2021; Vences et al., 2024). This integrative taxonomic approach has gradually accelerated the rate of amphibian species descriptions in the Philippines over the last two decades (Meneses et al., 2024).

The genus *Platymantis*, found exclusively in the Philippine archipelago, has benefited from integrative taxonomic approaches, resulting in a gradual increase in recognised species in recent years (Brown & Gonzalez, 2007; Siler et al., 2010; Brown et al., 2015a, Diesmos et al., 2020) and revealing hidden diversity within this group (Brown et al., 2015b). *Platymantis* is widespread across the archipelago and among the most common components of amphibian communities, with around 32 species occupying diverse ecological niches, including dry leaf litter (away from water), riparian zones, multiple distinct arboreal habitats (herb- and shrub-layer vegetation, forest understories, and canopies), caves, and karst formations (Brown et al., 2012a, b, 2013b; Diesmos et al., 2015; Sanguila et al., 2016). This genus exemplifies spectacular evolutionary radiation and has diversified extensively throughout the archipelago's major island groups (Brown, 2009; Brown et al., 2015b). However, herpetologists suspect that a significant portion of its species diversity remains undescribed due to minimal phenotypic variation differentiating evolutionary lineages, coupled with the widespread possession of highly variable phenotypes, which together complicate species identification and description. Multiple cryptic lineages likely exist under

---

Accepted by: Alex Figueroa

[1]Department of Ecology and Evolutionary Biology and Biodiversity Institute, University of Kansas, Lawrence, Kansas 66045, USA; Email: camilagmeneses23@gmail.com (*corresponding author)

[2]Department of Environmental and Agricultural Sciences, Visayas State University-Alangalang, Alangalang, Leyte 6517, Philippines

ISSN 2345-7600 (electronic) | ISSN 0217-2445 (print)

currently recognised names, as in the case of *P. pygmaeus* Alcala, Brown & Diesmos, 1998—a diminutive forest frog with a seemingly disjunct distribution that challenges conventional biogeographic characterisation of species distributions in the Philippines (Alcala et al., 1998; Siler et al., 2011, 2012; Brown et al., 2012b, 2013b; Meneses et al., 2020).

Platymantis pygmaeus was first described in 1998 from the Northern Sierra Madre National Park on the northern Philippine island of Luzon, primarily based on its distinctive advertisement call and exceptionally small size, earning it the name "pygmaeus"—the smallest known *Platymantis* species (Alcala et al., 1998). Initially grouped within the *P. dorsalis* complex (Alcala et al., 1998; Alcala & Brown, 1999) of highly variable, ground-dwelling forest frogs, a subsequent study using multilocus genetic data revealed that *P. pygmaeus* is only distantly related to *P. dorsalis* (Brown et al., 2015b). Instead, it belongs to a clade comprising *P. banahao* Brown, Alcala, Diesmos & Alcala, 1997, *P. biak* Siler, Diesmos, Linkem, Diesmos & Brown, 2010, *P. cornutus* (Taylor, 1922), *P. insulatus* Brown & Alcala, 1970, and *P. levigatus* Brown & Alcala, 1974, an unexpected outcome (i.e., a finding which could not have been predicted on the basis of phenotype), leading to the designation of the subgenus *Lahatnanguri*, a concatenation of the Filipino phrase for "all kinds" or "every type" (Brown et al., 2015b). Recognition of *Lahatnanguri* reflects the lack of phenotypic similarity among the species within this clade, as well as the complete absence of any identified morphological synapomorphies to date. This pattern highlights an interesting case of ecomorphological divergence among a closely related group of species within the genus *Platymantis*. Although *Platymantis pygmaeus* was originally known only from the Northern Sierra Madre, it has since been recorded across several localities throughout Luzon (Diesmos et al., 2004; Siler et al., 2011; McLeod et al., 2012; Brown et al., 2012b, 2013b; Diesmos et al., 2015).

In 2004, *P. pygmaeus* was reported on Sibuyan Island, approximately 24 km south of Luzon, extending its known range and hinting at a more complex distribution than initially thought (Brown, 2004; Diesmos et al., 2004). By 2012, populations on Sibuyan and nearby Tablas Island were identified as *P.* cf. *pygmaeus* (Siler et al., 2012). The Sibuyan population has been tentatively assigned to *P. pygmaeus* based on its small size and morphological similarities, including an advertisement call similar to those of *P. pygmaeus* populations from Luzon (Meneses et al., 2020). Sibuyan, along with Tablas and Romblon, forms the Romblon Island Group (RIG), one of the seven biogeographic subregions in the Philippines known as Pleistocene Aggregate Island Complexes (PAICs) (Fig. 1; Brown et al., 2013a). These island groups were connected and disconnected by shallow seas and drylands during Pleistocene glacial and interglacial periods, facilitating species dispersal among islands within PAICs (Brown & Alcala, 1970; Heaney, 1986; Brown & Diesmos, 2009). Given these dynamics, islands within PAICs are expected to share more biotic similarities than islands among seven PAICs in the Philippines, formed during Pleistocene sea-level fluctuations (Heaney et al., 2005; Brown et al., 2013a). Therefore, the occurrence of *P. pygmaeus* across two PAICs presents a curious, though not entirely unexpected, case of biogeographic disjunction in a Philippine vertebrate species. However, such disjunction is uncommon for *Platymantis* species and warrants taxonomic reassessment.

In this paper, we aim to resolve the long-standing ambiguity surrounding *P. pygmaeus* populations by testing the hypothesis that the Luzon Island population is not sister to, and differs morphologically and acoustically from, the RIG population. Using an integrative taxonomic approach, our robust statistical analyses of genetic, morphological, and acoustic data reveal that the RIG population constitutes a distinct lineage, warranting formal taxonomic recognition. We further quantify PAIC-structured variation between the Luzon and RIG populations, which has obscured our understanding of *P. pygmaeus* distribution for the past two decades. This taxonomic revision brings the total number of *Platymantis* species to 33 and marks only the third species described in the genus over the past decade. The discovery of this new species not only enriches the evolutionary narrative of *Platymantis*, highlighting the complex processes of diversification that have shaped its current diversity, but also emphasises the urgent need to preserve the unique ecosystems of Sibuyan Island and the greater RIG, where this species has—until now—remained unrecognised and unappreciated by conservation specialists, the Philippine government, and the global community of amphibian biologists.

MATERIAL AND METHODS

Specimen collection. Herpetological surveys were conducted across multiple municipalities in Romblon Province in 2005, 2008, and 2017 (Fig. 1). Specimens were initially preserved in 10% buffered formalin and later transferred to 70% ethanol for long-term storage and museum deposition. Males were identified in the field by observing vocalising individuals with visible vocal sacs. Females were distinguished by the absence of vocal sacs and some by their large eggs, visible through their semi-transparent lateral body wall near the groin. In cases where sex was uncertain (e.g., individuals that may have been adult males or immature females and were not observed calling), gonadal inspection was used for confirmation. Specimens (Appendix 1; Supplementary Material 1) were deposited in the herpetological collections of the University of Kansas Biodiversity Institute (KU), National Museum of the Philippines (PNM), Texas Natural History Collections (TNHC), and University of the Philippines Museum of Natural History (UPLB-MNH), following museum codes from Sabaj-Perez (2019). The newly described species was diagnosed by comparison with all congeneric species, including detailed phenotypic, acoustic, and ecological comparisons with closely related taxa within the subgenus *Lahatnanguri* (Brown et al., 2015b).

Morphological data and analyses. Standardised external measurements were taken from 108 fluid-preserved specimens of the new species from RIG. Additionally, 150 specimens

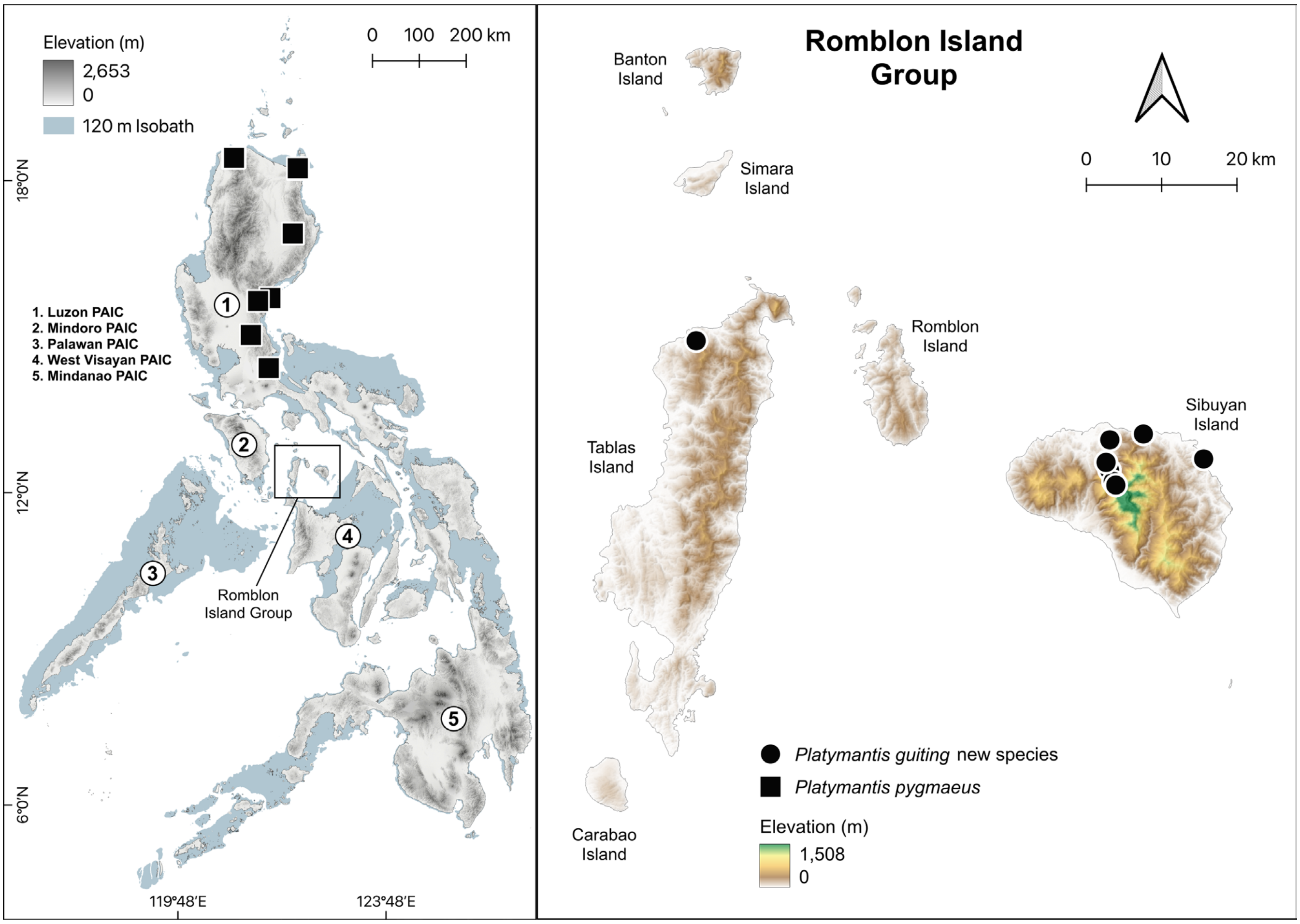

Fig. 1. Maps showing the collection sites for *Platymantis pygmaeus* in Luzon Island (left panel) and *Platymantis guiting*, new species, in the Romblon Island Group (RIG; see key: close-up, right panel) in the Philippines. The 120-m isobath shows island groups connected by above water landmasses during periods of low sea level, forming the Pleistocene Aggregate Island Complexes (PAICs).

of the species *P. levigatus* from RIG, 17 specimens of *P. biak*, 77 specimens of *P. cornutus*, 31 specimens of *P. pygmaeus* from Luzon, and 21 *P. insulatus* from Gigantes were measured for diagnostic comparison (Supplementary Material 1). A total of 25 morphological characters were defined and measured based on standardised external frog phenotypes (Watters et al., 2016, Diesmos et al., 2020): snout–vent length (SVL), head length (HL), snout length (SL), head width (HW), eye–nostril distance (END), interorbital distance (IOD), internarial distance (IND), horizontal diameter of the eye (ED), horizontal tympanum diameter (TD), forearm length (FLL), tibia length (TL), femur length (FL), tarsus length (TSL), pes length (PL), manus length, Finger I length (Fin1L), Finger III length (Fin3L), Toe IV length (Toe4L), Finger I disc width (Fin1DW), Finger III disc width (Fin3DW), Toe IV disc width (Toe4DW), and width of the penultimate phalanges of Finger III (Fin3PPW),Toe IV (Toe4PPW), the ratio of the penultimate phalanx width of Finger III (Fin3PPW) to Finger III disc width (Fin3DW), the ratio of the penultimate phalanx width of Toe IV (Toe4PPW) to Toe IV disc width (Toe4DW), and the ratio of Toe IV disc width (Toe4DW) to Finger III disc width (Fin3DW). Colour descriptions were based on digital photographs and field notes by CGM and RMB, described following the Colour Catalogue for Biologists (Köhler, 2012). To eliminate inter-individual measurement bias, all measurements were taken by CGM with digital callipers (± 0.01mm: Mitutoyo).

Principal Component Analysis (PCA) was employed to identify the primary axes of variation illustrating morphological differences between the newly discovered species and *P. pygmaeus,* to which the new species was previously assigned owing to their morphological resemblances (Siler et al., 2012; Meneses et al., 2020) using the built-in prcomp function in R (R Core Team, 2025). Before performing the PCA, we applied allometric body-size correction to all measured morphological traits, eliminating biases stemming from ontogenetic variation. This correction was executed using the Thorpe (1975) method implemented in the R package GroupStruct (Chan & Grismer, 2022). Subsequently, we assessed the significance of influential morphological variables between the new species and *P. pygmaeus* using t-tests. We then generated violin plots using the R package ggplot2 (Wickham, 2016) for significant variables to visually represent their respective summary statistics and data density distributions.

Molecular data and phylogenetic analyses. Ethanol-preserved liver tissue samples were obtained from individuals collected by CGM, complemented with previous collections by RMB, Arvin C. Diesmos, and Cameron D. Siler. Genetic DNA was extracted and purified by lysing tissues with Proteinase K, followed by DNA isolation using the Maxwell® Rapid Sample Concentrator Instrument and the Maxwell® 16 Tissue DNA Purification Kit (Promega Corporation). Polymerase chain reaction (PCR) was performed to amplify approximately 800–1,000 base pairs (bp) of the mitochondrial 16S ribosomal RNA gene. 16S gene amplification and sequencing were carried out using primers with oligonucleotide sequences, 16Sd: 5′–CTC-CGG- TCT-GAA-CTC-AGA-TCA-CGT-AG–3′ and 16SC: 5′–GTR-GGC-CTA-AAA-GCA-GCC-AC–3′, with PCR conditions consisting of 34 cycles and an annealing temperature of 56ºC (±1–3ºC). Amplified DNA fragments were visualised via gel electrophoresis on 1.5% agarose gels. PCR product purification, cycle sequencing, post-sequencing cleanups, and nucleotide sequence determination were performed following standard GeneWiz® protocols.

New DNA sequence data were generated for 45 individuals representing six species collected from 11 localities (Supplementary Table S1). Additional 16S gene sequences of *P. pygmaeus* (PNM 6456) and *P. levigatus* (KU 304548) were also obtained from GenBank. The genetic sequence of *Alcalus mariae* (KU 309518) and *A. baluensis* (MW 007343) were considered an outgroup for phylogenetic analyses, following Brown et al. (2015b). Sequence assembly and editing were performed de novo using Geneious® v.6.1, following previously described methods (Edgar, 2004; Kearse et al., 2012). Sequence alignment was conducted using the MUSCLE plugin in Geneious.

To assess the monophyly of *P. pygmaeus* and phylogenetic placement of the population from RIG, we constructed two phylogenetic trees: Maximum Likelihood (ML) and Bayesian Inference (BI). The ML tree was constructed using the standalone IQ-TREE v.2.3.6 (Nguyen et al., 2015). During tree inference, the optimal substitution model was simultaneously explored using the ModelFinder function (Chernomor et al., 2016). Nodal support was evaluated using 5,000 ultrafast bootstrap replicates, with values ≥95 considered strong support for monophyly (Minh et al., 2013). All other default settings were retained. The tree with the lowest Bayesian Information Criterion (BIC) value was considered our preferred tree topology. The Bayesian Inference tree was constructed using BEAST v.2.7.7 (Bouckaert et al., 2014), where nucleotide substitution models were concurrently explored during phylogenetic inference using the package bModelTest v.1.3.3 (Bouckaert & Drummond, 2017). BEAST was run with an optimised relaxed clock to estimate substitution rates across lineages, with a Yule Model as our prior with a uniform distribution. The posterior probability distribution of the tree topology was estimated by performing four independent runs of the model, each consisting of 10 million generations, resulting in a total of 40 million generations. Each run was set to store every 10,000 generations and log every 1,000. The model logs and tree outputs were then combined using BEAST's log combiner with a 10% burn-in. We used TRACER v.1.7.2 (Rambaut et al., 2018) to monitor and assess model convergence, ensuring the effective sample size was >200. The final tree topology was generated using Tree Annotator v.2.7.4 (Bouckaert et al., 2014) with a maximum clade credibility tree and a mean node height. Tree topologies with Bayesian posterior probability (BPP) value of >95 were considered well-supported. All tree visualisations were performed in R using the package ggtree (Yu et al., 2017).

Bioacoustic data and analyses. A total of 43 advertisement call recordings from vocalising males were obtained across two islands: 19 from *P. guiting*, new species, and 14 from *P. levigatus* recorded in Mount Guiting-Guiting Natural Park, Municipality of Magdiwang, Sibuyan Island, and 10 from *P. pygmaeus* recorded from Luzon Island. All call recordings are archived in the Macaulay Library (https://www.macaulaylibrary.org/), with accession numbers provided in Appendix 1. Call recordings were collected using a Marantz PMD 660 recorder with a 44.10 kHz sampling rate and Sennheiser ME80 condenser microphones, at distances of 1–3 m. Ambient, substrate, and cloacal temperatures were measured immediately after recording using digital infrared thermometers. To perform a comparative call analysis among lineages, we initially screened the call quality (e.g., low background noise, no overlapping calls, consistent call structure, and 0.5–2m distance from the recorder) using Raven Pro v.1.6.5 (K. Lisa Yang Centre for Conservation Bioacoustics at the Cornell Lab of Ornithology, 2024). We then selected individual calls that were low in background noise and standardised each by trimming 0.5 seconds from the period preceding the start and following the end of the call group using Audacity v.3.7.1 (Audacity Team, 2025). We developed a custom R script that can automate the extraction of 15 call properties (temporal and spectral) relevant to frog call analysis, which has been used in several studies (Gingras & Fitch, 2013; Köhler et al., 2017; Xie et al., 2018, 2020; Prasad et al., 2022). The call properties include average frequency, average wavelength, minimum and maximum amplitude, rise time, fall time, call duration, delta power, dominant frequency, low and high peak frequency, bandwidth spread, spectral centroid, zero crossing rate, and rate of dominant call (for details, see Supplementary Table S2). Several of these call properties have been used in studies of Philippine frogs, including *P. pygmaeus* and *P. levigatus* (Brown & Alcala, 1974; Alcala et al., 1998). The R script is available at https://github.com/csupsup/VocalProps.

To quantify acoustic variation among populations, PCA was performed on measured spectral and temporal call properties using the built-in prcomp function in R. Call oscillograms and spectrograms were visualised in R using the Seewave package (Sueur et al., 2008). High-loading variables from the PCA were extracted for statistical comparisons. Normality of residuals was assessed with Shapiro–Wilk tests. Because residuals deviated from normality for all traits, nonparametric Kruskal–Wallis tests were used to compare call variables among *P. pygmaeus*, *P. levigatus*, and *P. guiting*, new species. Pairwise differences were evaluated using Wilcoxon rank-sum tests with Bonferroni adjustment for multiple comparisons. All analyses were conducted in R (R Core Team, 2025).

Species concept. We applied the unified, general lineage species concept (de Queiroz, 1998, 1999, 2005a, b) in recognising new species. The complex geological history of the Philippine archipelago has contributed to the differentiation of metapopulation lineages among Pleistocene Island Groups or PAICs, resulting in a recurring pattern where these lineages tend to be distinct between but not within PAICs (Brown & Alcala, 1970; Heaney, 1986; Heaney et al., 2005; Brown et al., 2013a). These metapopulation lineages separated by geological processes have differentiated over time, potentially following different evolutionary trajectories under isolation. Following the general lineage species concept, which considers species as metapopulation lineages differentiated by properties as sets of evidence, we identified new species as lineage segments occurring in either isolation or sympatry that have consistent morphological differences and are further supported by congruent differences in genetic, bioacoustics, and ecological data. This integrative taxonomic approach provides a framework for refining species boundaries in complex, biodiverse regions like the Philippines.

RESULTS

Morphology. Principal Component 1 (PC1) and Principal Component 2 (PC2), respectively, explain 19.35% and 10.45% of the morphological variation in *P. pygmaeus* and *P. guiting*, new species (Fig. 2; Supplementary Tables 3 and 4). PC1 was dominated by limb-length measurements, with tibia length (absolute loading value = 0.43), tarsus length (0.39), femur length (0.38), foot length (0.37), and Toe4 length (0.20) contributed the highest loading magnitudes. Although these loadings are negative in the PCA output, their absolute values are reported here to emphasise variable importance. Notably, these characters also exhibited the highest mean differences in the t-tests, further highlighting their contributions in differentiating the two species. Among these, tibia length ($t = 8.78$, $p < 0.05$), tarsus length ($t = 5.70$, $p < 0.05$), femur length ($t = 8.59$, $p < 0.05$), and foot length ($t = 7.61$, $p < 0.05$) showed highly significant differences. These mensural traits that showed statistically significant differences between *P. pygmaeus* and *P. guiting*, new species, support clear morphological divergence.

Similarly, PC2 was primarily influenced by the ratio of Toe4 disc width relative to Finger III disc width (absolute loading = 0.43), Toe4 penultimate width (0.42), and Toe4 disc width (0.40). However, only Toe4 disc width ($t = 3.29$, $p < 0.05$) and the penultimate width of Toe4 ($t = 2.28$, $p < 0.05$) exhibited statistically significant differences, albeit with negligible mean differences. These results suggest that key morphological differences between *P. pygmaeus* and *P. guiting*, new species, align well with the primary contributors to PC1, supporting their taxonomic distinction.

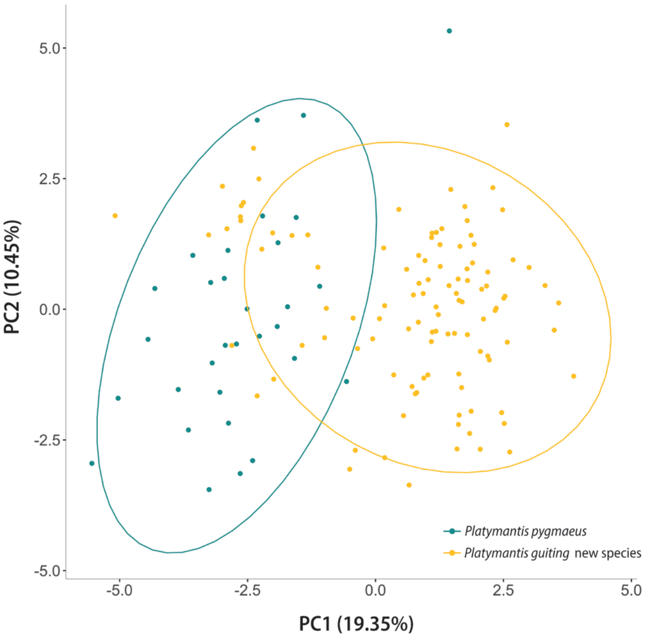

Fig. 2. Multivariate Principal Component Analysis (PCA) scatter plot based on morphological characters of *Platymantis pygmaeus* and *P. guiting*, new species. PC1 is primarily driven by positive loadings from tibia, tarsus, femur, foot length, and Toe IV length, while PC2 is influenced mainly by Toe IV disc width and penultimate disc width. All contributing variables differ significantly between the two species.

Phylogeny. The 16S mitochondrial gene phylogeny yielded congruent Maximum Likelihood and Bayesian Inference trees (Fig. 3, Supplementary Fig. S1), and both strongly support the deep node separating *P. pygmaeus* populations from Luzon from *P. guiting*, new species, populations from the Romblon Island Group (100% UFB, 1.0 BPP), although some internal nodes within each clade exhibit lower support. The RIG population was recovered as a moderately supported monophyletic lineage. *P. pygmaeus* was recovered as the first diverging lineage within *Lahatnanguri*, sister to all other clade members, aligning with previous multilocus phylogenetic analyses on *Platymantis* (Brown et al., 2015b). *Platymantis levigatus* and *P. guiting*, new species, were recovered as sister species (98% UFB, 0.90 BPP). These RIG lineages are sister to a clade containing *P. banahao*, *P. cornutus*, and *P. insulatus*. Within *P. guiting*, new species, two weakly supported clades were recovered (61% UFB, 0.84 BPP), with one group corresponding to high-elevation populations in Mt. Guiting-Guiting and another to low-elevation populations from Sibuyan and Tablas Islands. Despite clear genetic separation between *Platymantis guiting*, new species, and *P. pygmaeus*, their exact evolutionary relationship within the clade remains unresolved due to limited phylogenetic signal and low support for deeper nodes in the phylogenetic tree.

Acoustics. Principal component analysis of 15 acoustic variables revealed clear separation among *Platymantis pygmaeus*, *P. levigatus*, and *P. guiting*, new species (Fig. 4; Supplementary Tables 4 and 5). PC1 explained 47.36% of the total variation and was dominated by variables related to call frequency characteristics, including bandwidth spread (absolute loading = 0.35), average frequency (0.36), maximum amplitude (0.35), and high peak frequency (0.35). Although these variables loaded negatively in the PCA output (Supplementary Tables 4 and 5), their absolute loading values are reported here to emphasise their contribution to PC1.

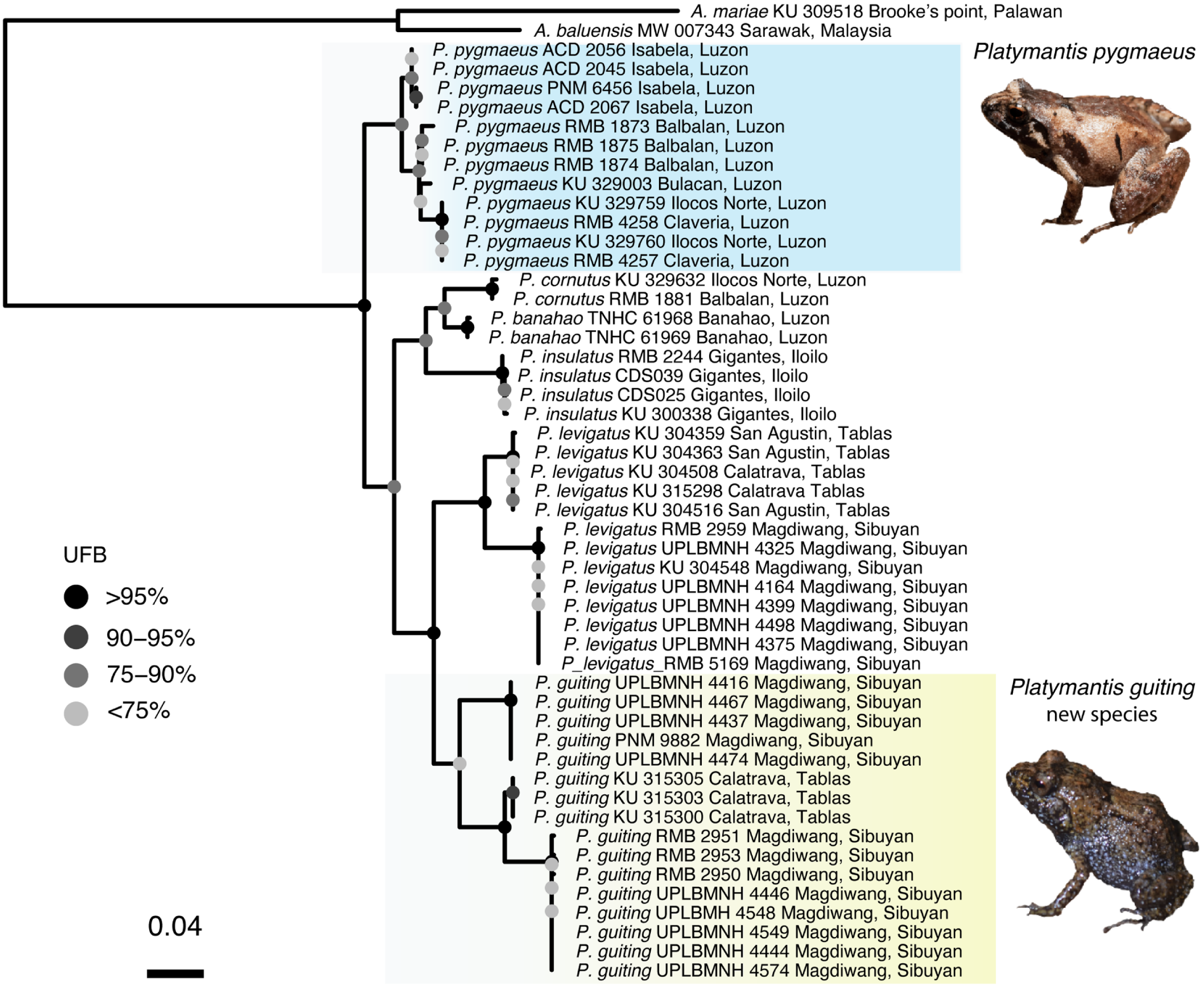

Fig. 3. Maximum likelihood phylogenetic tree of *Platymantis* subgenus *Lahatnanguri,* with *Alcalus mariae* and *A. baluensis* as outgroups, inferred from the analysis of the 16S mitochondrial gene fragment. Ultrafast bootstrap (UFB) support values are indicated by coloured circles. The scale bar indicates the number of nucleotide substitutions per site. Photos by RMB (*P. pygmaeus*) and CGM (*P. guiting*, new species).

Individuals of *P. levigatus*, and *P. guiting*, new species, were associated with these high-magnitude PC1 loadings. In contrast, individuals of *P. pygmaeus* clustered on the opposite side of PC1, associated with average wavelengths (0.35) and minimum amplitude (0.34). On the other hand, PC2 explained about 21.16% of the total variation. *Platymantis levigatus* clustered higher along PC2, influenced by fall times (0.35) and high-peak frequency (0.19). In contrast, *P. guiting*, new species, formed a distinct cluster characterised by dominant (0.55) and low-peak (0.55) frequencies.

Analysis of high-loading acoustic variables revealed clear differentiation among the three *Platymantis* species. For PC1-associated traits, median average frequency ($\chi^2 = 26.04$, df = 2, $p < 0.05$), bandwidth spread ($\chi^2 = 29.12$, df = 2, $p < 0.05$), high peak frequency ($\chi^2 = 24.10$, df = 2, $p < 0.05$), average wavelength ($\chi^2 = 26.04$, df = 2, $p < 0.05$), and minimum amplitude ($\chi^2 = 34.22$, df = 2, $p < 0.05$) differed significantly among species. Pairwise Wilcoxon tests indicated that *P. pygmaeus* differed significantly from both *P. guiting*, new species, and *P. levigatus* for all traits, while *P. guiting*, new species, and *P. levigatus* also differed significantly in all cases except average frequency and average wavelength, where differences were smaller but still significant ($p < 0.05$; Supplementary Table 7). For PC2-associated traits, median fall time ($\chi^2 = 24.30$, df = 2, $p < 0.05$), dominant frequency ($\chi^2 = 11.61$, df = 2, $p < 0.05$), and low peak frequency ($\chi^2 = 14.72$, df = 2, $p < 0.05$) were also significantly different among species. Pairwise comparisons revealed that *P. pygmaeus* differed consistently from both *P. guiting*, new species, and *P. levigatus* for fall time, while differences in dominant and low peak frequencies were smaller and primarily driven by contrasts between *P. guiting*, new species, and *P. levigatus* (Supplementary Table 7). These results demonstrate robust acoustic differentiation among the three species, with *P. pygmaeus* exhibiting the most divergent call characteristics across both frequency and temporal parameters.

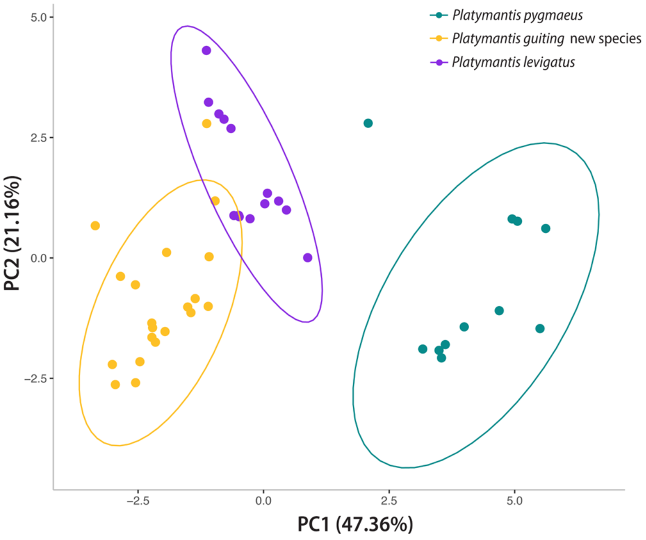

Fig. 4. PCA scatter plot of advertisement call properties for *Platymantis pygmaeus*, *P. levigatus*, and *P. guiting*, new species, PC1 (47.36% of variation) separates *P. pygmaeus* from the latter two based on average wavelength and zero crossing rate. PC2 (21.16% of variation) distinguishes *P. guiting*, new species, from *P. levigatus*, primarily based on dominant and low peak frequencies.

TAXONOMY AND SYSTEMATICS

Family Ceratobatrachidae Boulenger, 1884

Platymantis (*Lahatnanguri*) *guiting*, new species

(Figs. 5, 6)

Platymantis pygmaeus Alcala & Brown, 1999
Platymantis np. sp. cf. *pygmaea* Brown, 2004
Platymantis sp. Siler et al., 2012
Platymantis sp. 17. Brown et al., 2015b
Platymantis (*Lahatnanguri*) *pygmaeus* Meneses et al., 2020

Holotype. PNM 9882 (CGM 768; UPLB-MNH-Z-NS 4463), adult male, collected under leaf litter on 26 May 2017 by C. G. Meneses, J. and W. Bulalacao, and S. A. Gonzales in mossy forest at 1,557 meters above sea level (m asl) on Mount Guiting-Guiting Natural Park, Sitio Logdeck, Barangay Tampayan, Municipality of Magdiwang, Sibuyan Island, Romblon Province, Luzon Island, Philippines (12.4291°N, 122.5572°E; datum: WGS 84).

Paratopotypes. A total of 94 specimens were collected from the same locality and various elevations, comprising 80 adult males and 14 adult females. Specifically, UPLB-MNH-Z-NS 4416–4426 (adult males) were collected on 25 October 2016 by C. G. Meneses, J. and W. Bulalacao, and S. A. Gonzales from the mossy forest at a similar elevation as the holotype. UPLB-MNH-Z-NS 4427–4429, 4433–4436, 4443 (adult males) and UPLB-MNH-Z-NS 4430, 4432 (adult females) were collected on 26 October 2016. UPLB-MNH-Z-NS 4437–4440 (adult males) and 4441, 4442 (adult females) were collected on 28 October 2016. UPLB-MNH-Z-NS 4444–4446 (adult males) were collected on 28 October 2016 at an elevational range of 576–939 m asl in montane forest (12.44750°N, 122.54944°E). Additional specimens from this site include UPLB-MNH-Z-NS 4262 (adult males) collected on 11 November 2016, and UPLB-MNH-Z-NS 4476–4478, 4479, 4480, and 4481 (adult males), as well as UPLB-MNH-Z-NS 4472 and 4474 (adult females) collected on 1 and 10–13 June 2017. UPLB-MNH-Z-NS 4548–4561 and 4564–4571 (adult males) and UPLB-MNH-Z-NS 4562, 4563, and 4572 (adult females) were collected on 13–16 November 2016 at an elevation of 213–405 m asl in secondary-growth lowland forest with remnants of dipterocarp forest (12.45472°N, 122.54444°E). UPLB-MNH-Z-NS 4574 and 4573 (adult males) were collected on 19 and 22 November 2016 at 50–149 m asl elevation in secondary-growth lowland forest mixed with private agricultural lands (12.48139°N, 122.55028°E). UPLB-MNH-Z-NS 4447, 4449, 4450, 4453–4461, and 4464–4470 (adult males) and UPLB-MNH-Z-NS 4448, 4451, 4452, 4459, and 4462 (adult females) were collected on 26 May 2017 from the same locality and elevation as the holotype. UPLB-MNH-Z-NS 4471 and 4473, 4475 (adult males) were collected on 1 June 2017 from a transition zone between montane and mossy forest, at 1,121–1,492 m asl elevation (12.43361°N, 122.55417°E).

Other paratypes. KU 315300–315305, six adult males, collected by J. Fernandez on 08 January 2008 in Sitio Piqueno, Barangay Balogo, Municipality of Calatrava, Tablas Island, Romblon, at an elevation of 171 m asl (12.60523°N, 122.04552°E; datum: WGS 84). Additionally, KU 300431, KU 30043, and KU 309117 (three adult males) were collected by C. D. Siler in 2005 and 25 March 2008, respectively, in Mount Guiting-Guiting Natural Park, Barangay Talaba, Municipality of Magdiwang, Romblon Province, at 15 m asl (12.49165°N, 122.59088°E; datum: WGS 84).

Referred specimens. Eight adult males (Field Collector Nos. RMB 2946, 2947, 2949–2952, 2954, 2960) and one adult female (Field Collector No. RMB 2953) were collected by A. Diesmos, G. V. A. Gee, M. L. D. Diesmos, and R. M. Brown in 2001 from Sitio Logdeck, Barangay Tampayan, Municipality of Magdiwang, Sibuyan Island, Romblon Province, Luzon Island, Philippines (for details, see Supplementary Material 1).

Diagnosis. *Platymantis guiting*, new species, is classified within the subgenus *Lahatnanguri* (variable Philippine Forest frogs) based on 16S mitochondrial phylogeny. *Lahatnanguri* is one of five subgenera of *Platymantis* identified in a multilocus phylogenetic study of the family Ceratobatrachidae (Brown et al., 2015b). Due to the broad morphological and ecological diversity among members of this clade and the absence of clear synapomorphies, an exclusive diagnostic framework for the subgenus *Lahatnanguri* remains elusive. However, within this subgenus, the new species is distinguished from all members except *P. pygmaeus* by its very small size, relatively shorter limb proportions and a distinct, stereotyped advertisement call characterised by a single-pulsed, repetitive clicking.

Comparisons. Our comparison of *Platymantis guiting*, new species, was focused on recognised members of the subgenus *Lahatnanguri*, specifically with *P. pygmaeus*, to which the new species was previously assigned. The

Fig. 5. Observed colour variation in live specimens of *Platymantis guiting*, new species, collected from Mt. Guiting-Guiting Natural Park. Photos by CGM.

subgenus *Lahatnanguri* includes *P. pygmaeus*, *P. levigatus*, *P. banahao*, *P. cornutus*, *P. biak*, and *P. insulatus*. The new species is easily distinguishable from all congeners by its notably smaller body size—males average 14.23 ± 0.99 mm and females 14.94 ± 0.97 mm, compared to >25 mm for all other species (Table 1). Additionally, *P. guiting*, new species, differs from *P. biak* by its darker brown colouration (vs. mottled green and black), rugose skin (vs. smooth), and preference for forest leaf litter microhabitats (vs. karst environments). Compared to *P. cornutus*, *P. banahao*, and *P. insulatus,* the new species differs from all three by the absence (vs. presence) of laterally-expanded digital discs; it additionally differs from *P. cornutus* and *P. banahao* by occupying a ground-dwelling microhabitat (vs. arboreal); and it is further differentiated from *P. insulatus* by the presence of rugose skin (vs. smooth).

The new species is most distinct from its sister species *P. levigatus* in several key traits, including its smaller body size (11.80–16.50 vs. 24.20–36.10 mm), shorter relative tibia length (43.5% vs. 53.3% of snout-vent length, rugose skin (vs. smooth), and darker brown colouration (vs. brownish olive). Furthermore, *P. guiting*, new species, inhabits forest litter, in contrast to the riparian habitat preference of *P. levigatus*. Phenotypically, *P. guiting*, new species, closely resembles *P. pygmaeus* from Luzon Island in terms of body size and colouration, though *P. pygmaeus* displays sexual dimorphism that *P. guiting*, new species, lacks. Although both species have a comparable overall body size (all measurements in mm; ~14.50 mm), females of *P. pygmaeus* are slightly larger (17.70 ± 0.71) than those of *P. guiting*, new species, (14.93 ± 0.97). Despite these similarities, *P. guiting*, new species, exhibits significantly shorter hindlimbs: tibia length in males is 6.24 ± 0.0.68 (vs. 7.37 ± 0.64 in *P. pygmaeus*), femur length is 6.95 ± 0.49 (vs. 7.90 ± 0.58), tarsus length is 4.21 ± 0.34 (vs. 4.72 ± 0.46), foot length is 6.00 ± 0.52 (vs. 6.92 ± 0.58), and the fourth toe length is 4.23 ± 0.38 (vs. 4.61 ± 0.62) (Table 1; Fig. 7).

Description of holotype. A mature male (Figs. 5A, 8); habitus very small; head as wide as body, its length 41.9% snout–vent length; snout tip not pointed in dorsal or lateral aspects; snout 41.9% of head length; eyes moderate and anterolaterally protruding beyond width of head in dorsal aspect; eye diameter equals 13.5% of snout–vent length, 32.3% of head length, 76.9% of snout length, and 85% of the eye–naris distance; pupil horizontally elliptical; canthus rostralis straight, nostrils oriented laterally; internarial region

Table 1. Summary of diagnostic traits for *Platymantis guiting*, new species, compared with other members of the subgenus *Lahatnanguri*. Sample sizes for each sex used to measure mensural characters are provided for reference. All measurements are reported as ranges (mean ± standard deviation). Only adult specimens in good morphometric condition were included.

Characters		***P. guiting*** **(92 m, 16 f)**	***P. pygmaeus*** **(29 m, 2 f)**	***P. levigatus*** **(66 m, 53 f)**	***P. biak*** **(14 m, 3 f)**	***P. cornutus*** **(55 m, 22 f)**	***P. insulatus*** **(15 m, 6 f)**
Snout-vent length	(male)	11.80–16.50 (14.23 ± 0.99)	12.30–16.50 (14.45 ± 1.06)	24.20–36.10 (30.26 ± 2.70)	28.70–39.40 (34.85 ± 3.15)	23.40–31.80 (27.15 ± 1.74)	35.50–47.10 (39.84 ± 3.55)
	(female)	13.20–16.50 (14.93 ± 0.97)	17.20–18.20 (17.70 ± 0.71)	29.10–38.60 (34.64 ± 1.86)	37.90–41.10 (39.70 ± 1.64)	25.80–38.70 (33.32 ± 3.72)	40.20–42.90 (41.80 ± 1.00)
Tibia length	(male)	5.20–8.90 (6.24 ± 0.68)	5.40–8.30 (7.37 ± 0.64)	13.80–19.30 (16.32 ± 1.14)	16.60–21.80 (19.41 ± 1.55)	11.90–15.90 (13.32 ± 0.91)	19.00–24.70 (21.27 ± 1.62)
	(female)	5.40–7.20 (6.21 ± 0.50)	8.30–8.80 (8.55 ± 0.35)	15.80–20.00 (17.96 ± 0.99)	20.80–21.30 (21.07 ± 0.25)	8.10–18.90 (16.02 ± 2.49)	–
Foot length	(male)	4.30–8.10 (6.00 ± 0.52)	5.60–8.00 (6.92 ± 0.58)	13.60–19.70 (16.18 ± 1.2)	15.10–21.50 (18.73 ± 1.83)	11.10–15.50 (13.15 ± 0.95)	17.60–24.60 (20.47 ± 2.07)
	(female)	5.50–6.60 (6.15 ± 0.38)	8.10–8.70 (8.40 ± 0.42)	14.70–20.00 (17.81 ± 1.09)	19.20–20.20 (19.80 ± 0.53)	9.20–19.10 (15.96 ± 2.40)	–
Tarsus length	(male)	3.60–5.40 (4.21 ± 0.34)	3.20–5.40 (4.71 ± 0.46)	7.80–11.20 (9.49 ± 0.65)	9.00–12.50 (11.08 ± 0.93)	7.00–9.90 (8.13 ± 0.61)	11.20–14.50 (12.38 ± 0.93)
	(female)	4.00–5.00 (4.29 ± 0.26)	5.60–5.90 (5.75 ± 0.21)	8.60–11.50 (10.30 ± 0.58)	11.60–12.20 (12.00 ± 0.35)	7.50–16.40 (10.39 ± 1.85)	–
Femur length	(male)	5.80–8.90 (6.95 ± 0.49)	6.50–9.20 (7.90 ± 0.58)	13.00–19.50 (16.48 ± 1.23)	15.90–21.20 (18.84 ± 1.48)	11.40–15.30 (13.31 ± 0.92)	19.00–25.10 (21.17 ± 1.70)
	(female)	6.10–7.50 (6.88 ± 0.42)	8.80–8.90 (8.85 ± 0.07)	16.00–20.20(18.32 ± 0.96)	20.10–20.60 (20.40 ± 0.26)	12.20–19.60 (16.26 ± 1.88)	–
Toe IV length	(male)	3.40–5.40 (4.23 ± 0.38)	3.40–6.00 (4.61 ± 0.62)	9.10–14.60 (11.41 ± 1.06)	11.40–15.70 (13.84 ± 1.06)	8.20–11.40 (9.62 ± 0.72)	13.00–18.00 (14.99 ± 1.51)
	(female)	4.00–5.40 (4.53 ± 0.42)	5.50–5.90 (5.70 ± 0.28)	2.40–15.70 (12.43± 2.23)	14.10–14.70 (14.43 ± 0.31)	4.50–13.90 (11.41 ± 2.05)	–
Digital disks		Non-expanded	Non-expanded	Slightly expanded, depressed	Moderately expanded	Widely expanded	Widely expanded
Dorsal skin rugosity		Smooth	Smooth	Very smooth	Smooth	Few scattered low tubercles	Faintly to moderately granular
Ventral colour markings (in preservative)		Distinct white spots or mottles	No to sparse light spots	Dark flecks	Small tan speckles	No spots	Distinct brown flecks

Characters	***P. guiting*** **(92 m, 16 f)**	***P. pygmaeus*** **(29 m, 2 f)**	***P. levigatus*** **(66 m, 53 f)**	***P. biak*** **(14 m, 3 f)**	***P. cornutus*** **(55 m, 22 f)**	***P. insulatus*** **(15 m, 6 f)**
Dorsal colour pattern (in preservative)	Grayish brown with grey speckles	Gray-brown with some dark patches	Brownish slate, without any distinct markings	Brownish green with black blotches	Reddish brown with two lines on side of back	Grayish olive green with dark spots
Iris colour above/ below pupil	Gold/brown	Gold/light brown	Gold/greenish to dark brown	Pale gold/silver	Gold/dark brown	Silver/silver
Advertisement call	Syk-syk…syk-syk	tik…tik…tik.	Shree-er-ee…shree-er-ee	Slow series of low tonal notes	Fast amplitude-modulated call: tutututututut….	Long atonal clicking pulse: Click-click-click…
Microhabitat preference	Ground: forest floor	Ground: forest floor	Ground: riparian	Ground; karst habitat (cave)	Arboreal	Ground; karst habitat (cave)
Distribution range	Romblon Island Group	Luzon Island	Romblon Island Group	Bulacan Province, Luzon Island	Central Cordillera, Luzon Island	South Gigante Islands

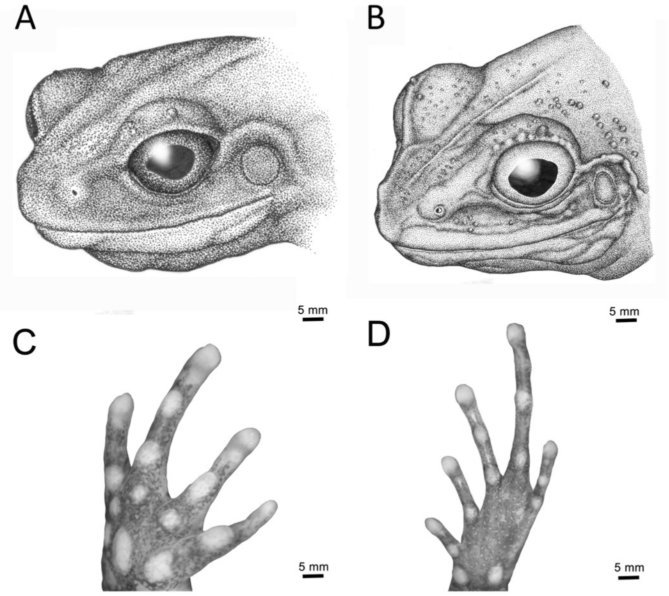

Fig. 6. Comparative illustrations of *Platymantis guiting*, new species, and *P. pygmaeus*, showing A, oblique view of the head of *P. guiting* (RMB 2946) with a distinct canthus rostralis and shallow tympanum; B, oblique view of the head of *P. pygmaeus* (RMB 4257) for comparison, with a more prominent tympanum and angular snout; C, ventral view of the palmar surface of the right manus of *P. guiting* showing digital discs and subarticular tubercles; and D, ventral view of the pes of *P. guiting* illustrating expanded toe discs (scale bars = 5 mm). Illustrations by Michael Garfield.

slightly concave; tympanic annulus distinct, 65% of eye diameter; supratympanic fold moderately protuberant, thick, extending from posterior corner of eye across entire dorsal margin of tympanum, along dorsoposterial sedge of annulus, and to supra-axillary region.

Hands and feet small (2.70 mm and 5.80 mm, respectively); manus length 46.6% pes length; limbs well developed; tibia length 37.2% snout–vent length, 94.8% pes length; fingers slender; terminal discs not expanded (Figs. 8C, 8D); dorsal surfaces of terminal phalanges without cutaneous flaps between ultimate and penultimate phalanges; relative lengths of fingers IV < I < II < III; subarticular tubercles prominent, convex, smooth; one subarticular tubercle below Finger I and II, one tubercle under Finger III and IV; supernumerary tubercles present at bases of all digits, distinct, round, prominent for Finger II–IV but elongate and modified into a tubercular ridge under Finger I; inner metacarpal tubercle moderately enlarged, ovoid, with raised nearly spade-like anteromedial edge (Fig. 8C); outer metacarpal tubercle consists of two substructures: an inner (medial) tubercle, slightly smaller and less pronounced than inner metacarpal tubercle; and outer postaxial tubercle, equal in size to a supernumerary tubercle; forearms slender, short (4 mm); nuptial pads absent.

Skin of dorsal surfaces of head, trunk, and limbs with granular tubercles; skin of dorsal surfaces of limbs, hands and feet smooth with unevenly distributed finely granular tubercles; skin of chin, throat, and undersurfaces of limbs smooth with white irregular spots; skin granular from sternal to inguinal regions; ventral surfaces of thighs finely granular (Fig. 8A).

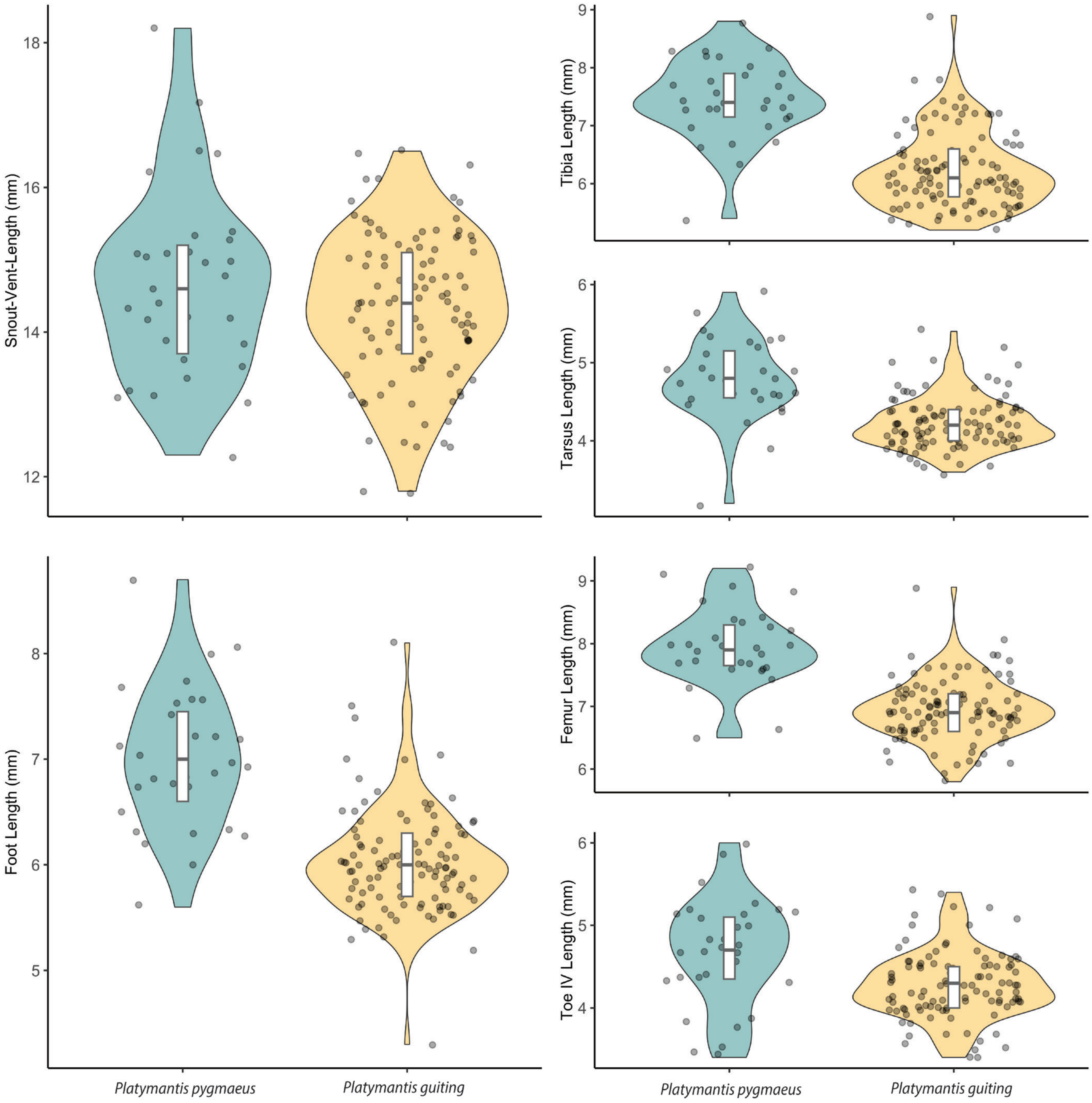

Fig. 7. Violin plots of snout-vent length and key diagnostic morphological characters between *Platymantis pygmaeus* and *Platymantis guiting*, new species. Points represent individual samples.

Toes short (5.8 mm, narrow; Fig. 8D); terminal discs not expanded; cutaneous flaps absent above ultimate-penultimate phalangeal articulations; plantar surface of foot smooth, with well-developed, prominently protuberant subarticular tubercles (Fig. 8D); relative lengths of toes I < II < V < III < IV; outer metatarsal tubercle round, small, but moderately prominent; inner metatarsal tubercle elongate, prominent.

Measurements of holotype (in mm). Snout–vent length 14.80; head length 6.20; head width 6.20; snout length 2.60; forearm length 4.00; femur length 6.90; tibia length 5.50; tarsus length 4.30; pes length 5.80; manus length 2.70; Finger I length 1.40; Finger III length 1.80; Toe IV length 3.70; eye–narial distance 1.70; interorbital distance 1.90; internarial distance 1.90; eye diameter 2.00; horizontal tympanic annulus diameter 1.30; Finger 1 disc width 0.30; Finger III disc width 0.40; Toe IV disc width 0.40; Finger III penultimate phalange width 0.30; Toe IV penultimate phalange width 0.30.

Colouration of holotype in preservative. Dorsal surfaces of head, body, and limbs greyish-brown to dark grey base, subtly mottled with lighter grey or off-white speckles, creating a slightly textured appearance; anterior portions of head darker greyish-brown; limbs banded with thick black bars: bar absent across the canthus rostralis to anterior edge of eye, around margin of the palpebrum, and across supratympanic fold; tympanum medium brown; lips with alternating brown

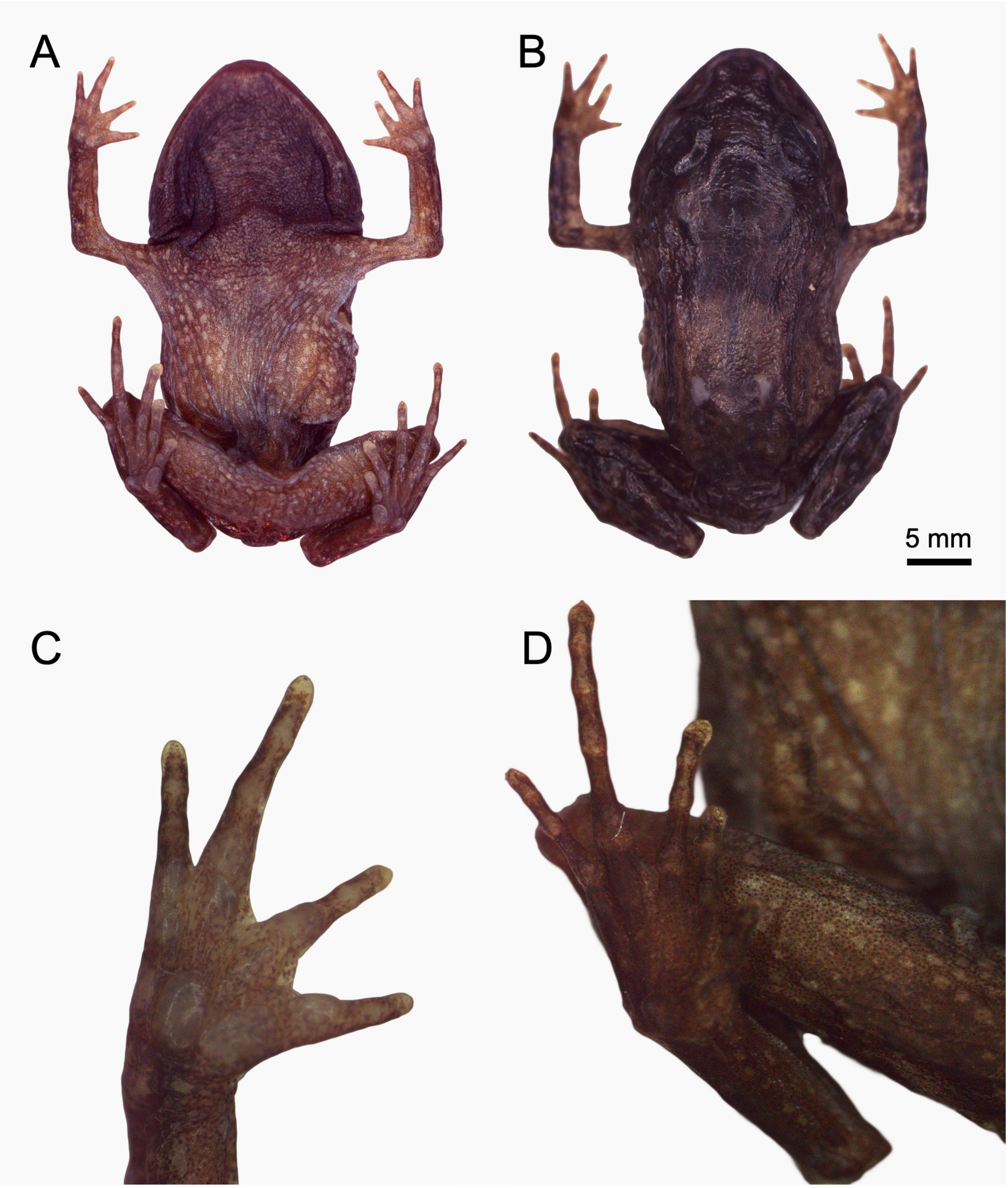

Fig. 8. A–D, *Platymantis guiting*, new species, holotype male (PNM 9882: CGM 768, UPLB-MNH-Z-NS 4463), Sibuyan Island, Romblon Island, Philippines; A, ventral view of body; B, dorsal view of body; C, ventral view of right manus; and D, ventral view of right pes. Scale bars = 5.00 mm. Photos by CGM.

and white vertical labial bars; dark transverse limb bars of irregular widths; upper arm with a faint irregular white mottled pattern; forearms each with single transverse black bar, thighs with two, tibia with faintly one to two, tarsus with none; anterior flank colouration similar to dorsum on left and right, both sides progressively fading to pale greyish-brown base hue with a distinct mottled pattern: mottled pattern characterised by a light greyish-brown base colour interspersed with scattered, irregular patches of a lighter shade, possibly off-white or light grey on throat, sternal region with scattered off-white to light grey spots, inguinal region with light greyish-brown base and distinct mottled

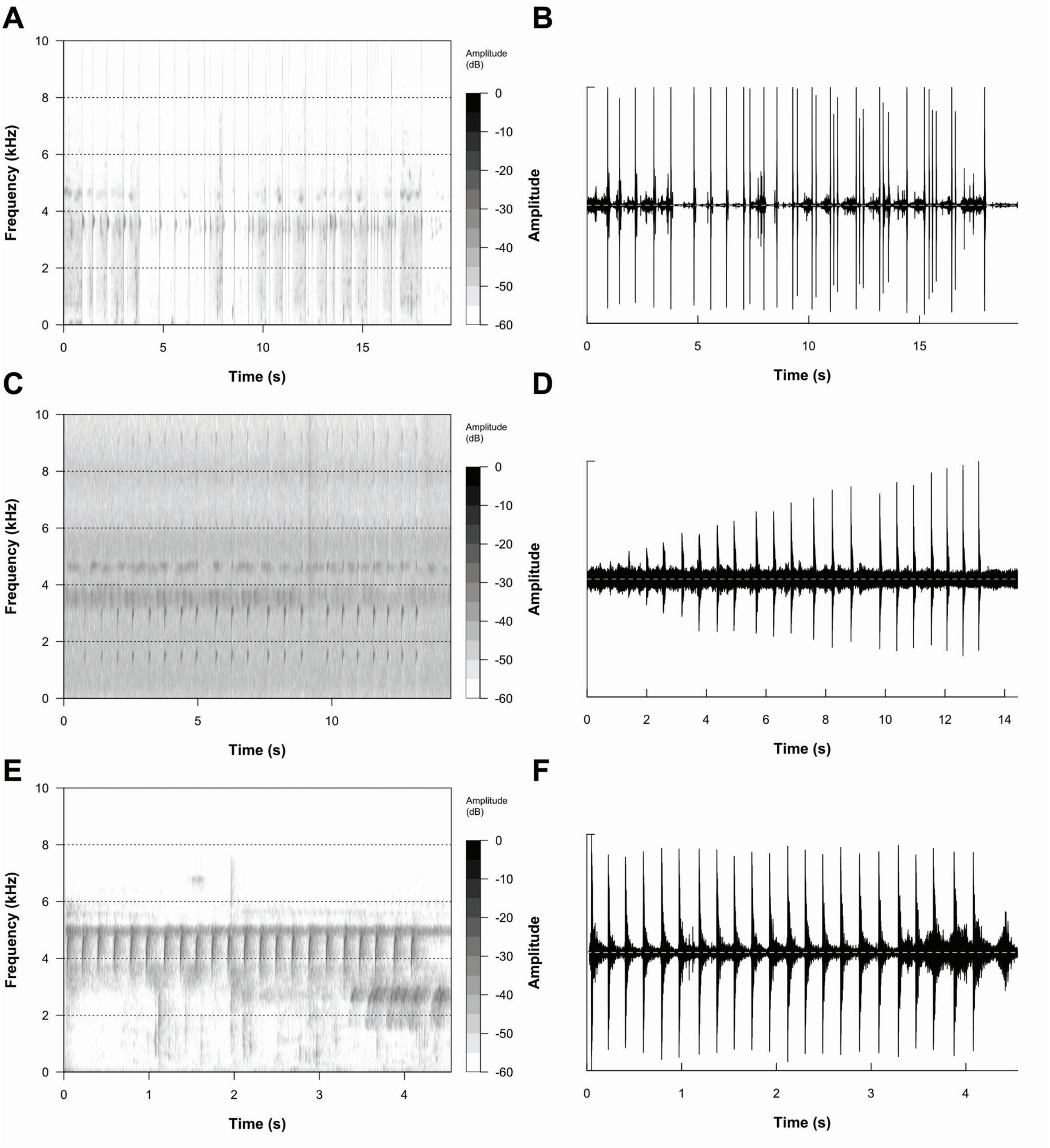

Fig. 9. Advertisement calls of *Platymantis guiting* (new species), *P. levigatus*, and *P. pygmaeus* (left to right). Left panels show spectrograms; right panels show oscillograms. A, B, *P. guiting* (new species) from Sibuyan Island; C, D, *P. levigatus* from Sibuyan Island; E, F, *P. pygmaeus* from Luzon Island.

pattern of white spots; ventral surfaces of limbs greyish-brown to dark grey; ventral surfaces of hands and feet light greyish-brown with light grey subarticular tubercles; dorsal surfaces of hands greyish-brown, with no alternating bands bars on Fingers I–IV; dorsal surfaces of feet with greyish-brown colouration above Toes I–V.

Colouration of holotype in life. Dorsum predominantly dark brown to black, with irregularly distributed golden-brown, tan, and greyish mottling; granular dorsal tubercles slightly lighter, creating a subtle textural contrast; head dark brown to black with faint golden-brown speckling along canthal and loreal regions; upper eyelid scattered with fine golden-brown flecks (Fig. 5); snout slightly lighter dorsally, blending with darker tones on lateral surfaces of head; iris deep reddish-brown with fine black reticulation surrounding round, black pupil; lateral body surface transition from dark brown dorsum to a mottled mix of dark brown, greyish, and tan speckles; lateral body skin slightly smoother than the dorsum; throat and chest greyish-brown with dense white

Table 2. Advertisement call properties of *Platymantis guiting*, new species, *Platymantis pygmaeus*, and *Platymantis levigatus*.

Call Properties	***Platymantis guiting*, new species**	***Platymantis pygmaeus***	***Platymantis levigatus***
Average Frequency (kHz)	11.02 (11.02 ± 0.00)	4.00–11.02 (4.70 ± 2.22)	11.02 (11.02 ± 0.00)
Average Wavelength (m/s)	0.03 (0.03 ± 0.00)	0.03–0.09 (0.08 ± 0.02)	0.03 (0.03 ±0.00)
Min. Amplitude (m)	-32,768.00–-28,423.00 (-32,178.80 ± 1,194.27)	-22,536.00–-4,349.00 (-13,013.50 ± 7,581.34)	-31,987.00–-15,238.00 (-23,718.83 ± 6,405.92)
Max. Amplitude (m)	32,766.00–32,767.00 (32,766.95 ± 0.22)	4,485.00–22,424.00 (13,122.60 ± 7.25)	14,486.00–32,767.00 (28,043.33 ± 6,455.02)
Rise Time (ms)	0.82–25,642.45 (3606.12 ± 6,844.76)	7.25–14,736.56 (4,223.43 ± 4,806.46)	235.51–29,771.90 (11,792.30 ± 8,383.16)
Fall Time (ms)	0.05–0.14 (0.08 ± 0.02)	0.06–0.07 (0.06 ± 0.00)	0.07–0.29 (0.12 ± 0.06)
Call Duration (ms)	11,200.70–129,753.06 (44,631.67 ± 29,502.44)	1,450.06–21,873.22 (8,138.20 ± 6,615.80)	11,908.53–31,191.32 (17,923.28 ± 5,992.35)
Δ Power (dB)	90.31 (90.31 ± 0.0)	73.04–87.06 (80.84 ± 5.85)	83.72–90.31 (88.78 ± 2.25)
Dominant Freq. (kHz)	0.00–5.49 (4.12 ± 1.24)	0.01–4.98 (3.61 ± 1.73)	1.26–4.66 (2.66 ± 0.95)
Low Peak Freq. (kHz)	0.0–5.48 (4.13 ± 1.23)	0.01–4.96 (3.61 ± 1.74)	0.85–3.19 (2.39 ± 0.93)
High Peak Freq. (kHz)	38.61–44.10 (39.98 ± 1.24)	11.02–44.09 (15.20 ± 10.22)	39.44–42.84 (41.44 ± 0.95)
Bandwidth Spread (kHz)	2.88–5.28 (4.10 ± 0.63)	1.01–3.98 (1.46 ± 0.89)	2.88–3.55 (3.15 ± 0.24)
Spectral Centroid (kHz)	3.94–7.07 (5.61 ± 0.77)	3.69–5.22 (4.13 ± 0.42)	3.40–4.89 (4.11 ± 0.48)
Zero Crossing Rate	8,661.44–16,457.42 (13,605.19 ± 2,145.20)	14,208.37–17,280.45 (16,426.98 ± 858.24)	8,229.01–18,307.37 (14,453.78 ± 3,192.64)
Rate of Dominant Sound (kHz)	0.00–2,492.88 (985.19 ± 956.86)	0.16–72.68 (26.46 ± 25.77)	18.92–94.23 (48.05 ± 23.14)

to cream-coloured speckling; belly slightly lighter, with fine reticulations; ventral limbs greyish-brown with faint mottling; forelimbs and hind limbs dark brown with diffuse, irregular tan to golden-brown banding; dorsal surface of limbs speckled with lighter flecks; ventral limbs greyish-brown with subtle mottling; digit dark brown with slightly lighter, non-expanded tips.

Variation. The type series of *Platymantis guiting*, new species, and photographs of live specimens reveal notable colouration variation, typical of many *Platymantis* species across the Philippines. Populations of various species exhibit diverse colour patterns, as observed in previous fieldwork (RMB & CGM, pers. obs.). The new species, both male and female, shows some degree of variation in dorsal but not ventral colouration patterns.

After seven years in preservative, the dorsal colouration of most specimens has faded to shades of brown or dark brown, while the ventral surface typically displays a white mottled pattern. The type series exhibited similar dorsal colouration but demonstrated variation in the lateral surfaces of the body. In some specimens, the lateral colouration transitions from a light brown background with white mottling on the sides to a more distinct shift from brown (dorsal) to greyish tones (ventral), with irregular white spots occurring along the lateral body in the axilla–groin region and extending towards the ventral surface (Fig. 8).

In life, colouration varied widely across specimens. Some were reddish-brown or ochre with fine granular textures and a white mottled ventral surface. Others were brown, with a reddish-brown colouration in the front head region and lateral body surfaces. A few individuals exhibited distinct dark brown horizontal bars on the head near the interorbital region and another prominent bar on the dorsal body surface. A subset of specimens displayed brown dorsal colouration with an enlarged light brown patch on the lateral body surface, which is evident in the preserved specimens, featuring irregular white mottling patterns (Figs. 5, 8).

Variation in limb banding was observed across the specimens, with some showing prominent dark bands, while others displayed more subtle markings. Iris colour also varied, ranging from a deep reddish-brown with fine black reticulation surrounding the pupil, to more uniform brown or dark brown hues (Fig. 5).

Advertisement call and interspecific acoustic comparison. *Platymantis guiting*, new species, is acoustically distinct from *P. levigatus* and *P. pygmaeus*, differing in a combination of temporal and spectral parameters (Table 2). Both *P.*

Fig. 10. Appearance of typical habitat characteristics of *Platymantis guiting*, new species. View of Mt. Guiting-Guiting Natural Park, Municipality of Magdiwang, Barangay Tampayan, Sibuyan Island, Philippines. Photos by CGM.

guiting, new species, and *P. levigatus* share elevated average frequencies (11.02 ± 0.00 kHz) and shorter average wavelengths (0.03 ± 0.00 m/s), distinguishing them from *P. pygmaeus* of Luzon, which exhibits lower average frequencies (4.70 ± 2.22 kHz) and longer wavelengths (0.08 ± 0.02 m/s). However, *P. guiting*, new species, is further separated from *P. levigatus* and *P. pygmaeus* by its markedly prolonged call duration (44,631.67 ± 29,502.44 ms) compared with the substantially shorter calls of *P. pygmaeus* (8,138.20 ± 6,615.80 ms) and *P. levigatus* (17,924.28 ± 5,992.35). The calls of *P. guiting*, new species, also exhibit higher dominant frequencies (4.12 ± 1.24 kHz) than *P. levigatus* (2.66 ± 0.95 kHz) and *P. pygmaeus* (3.61 ± 1.73 kHz), as well as consistently elevated power contrasts (Δ Power = 90.31 ± 0.00) and amplitude envelopes approaching recording saturation (min. = -32,178.80 ± 1,194.27; max. = 32,766.95 ± 0.22). The temporal envelope of *P. guiting*, new species, is characterised by abrupt onsets and offsets, with mean rise times of 3,606.12 ± 6,844.76 and fall times of 0.08 ± 0.02 ms, producing a sharply defined pulse structure and uniform amplitude throughout the call. In contrast, *P. levigatus* exhibits more gradually modulated calls with longer rise times (11,792.30 ± 8,383.16) and lower amplitude (min. = -23,718.83 ± 6,405.92; max. = 28,043.33 ± 6,455.02) and power (Δ Power = 88.78 ± 2.25). The oscillogram of *P. guiting*, new species, shows a rapid, densely packed sequence of pulses with relatively uniform amplitude throughout the call (Fig. 9). Collectively, the combination of prolonged call duration, abrupt temporal envelope, and elevated dominant-frequency energy provides strong acoustic evidence distinguishing *P. guiting*, new species, from *P. pygmaeus* and *P. levigatus*, supporting its recognition as a distinct species from its congeners.

Distribution. The new species has been documented in both Sibuyan and Tablas islands, Romblon Island Group (Siler et al., 2012; Meneses et al., 2022). Although its presence on Romblon Island is strongly suspected due to the proximity and microhabitat similarity with Tablas and Sibuyan, the occurrence of the new species on Romblon Island remains unverified and warrants further investigation (Romblon Island is the provincial capital, most heavily populated, and most environmentally disturbed of the province's three major islands).

Ecology and natural history. *Platymantis guiting*, new species, is a direct-developing, terrestrial frog found in ultramafic forests of Mount Guiting-Guiting in Sibuyan Island and in forested regions of Tablas Island. Specimens were collected from lowland forests (50 m asl) to upper montane forest (1,590 m asl), although calls were heard up to 2,000 m asl. The species is found in mature secondary-growth forests, as well as mixed secondary and primary forest assemblages, where it is associated with ultramafic rock substrates.

Individuals of *P. guiting*, new species, were frequently encountered in rock crevices, spaces between boulders, and beneath layers of decomposing leaf litter on the forest floor (Fig. 10). Calling activity varies with elevation: at higher elevations (1,400–1,500 m asl), males vocalise continuously throughout the day, whereas at lower elevations (50–900 m asl), calling is primarily nocturnal. This variation in calling pattern suggests potential relationships with environmental variables, such as temperature and humidity, influencing vocal behaviour across elevations.

Observations concerning reproduction in the species remain limited. Egg clutches were only recorded from a few gravid females. Eggs are uniformly yellow and lack external pigmentation, a characteristic observed in other direct-developing *Platymantis* species (Alcala, 1962; Narayan et al., 2011). Further studies (similar to those carried out on *Eleutherodactylus coqui* [Thomas, 1966; Townsend & Stewart, 1985]) are required to document nesting behaviour and embryonic development of this diminutive *Platymantis* species.

The species is sympatric and syntopic with *Platymantis lawtoni* Brown & Alcala, 1974 and *Platymantis paengi* Siler, Linkem, Diesmos & Alcala, 2007 which occupy similar microhabitats in Sibuyan's montane forest. Additionally, non-syntopic frogs recorded in the area include *Limnonectes leytensis* (Boettger, 1893), *Hylarana erythraea* (Schlegel, 1837), *Polypedates leucomystax* (Gravenhorst, 1829), *Rhacophorus pardalis* Günther, 1858, *Fejervarya moodiei* (Taylor, 1920), *Fejervarya vittigera* (Wiegmann, 1834), *Occidozyga laevis* (Günther, 1858), and *Kaloula conjuncta negrosensis* (Peters, 1863), which likely use distinct ecological niches (Siler et al., 2012; Meneses et al., 2022).

Suggested IUCN conservation status. *Platymantis guiting*, new species, is endemic to the forested regions of Sibuyan and Tablas islands, Romblon Island Group, with a total geographical area that spans fewer than 5,000 km². On Sibuyan, the only legislated protected area is Mount Guiting-Guiting Natural Park (157 km²), yet large portions of the mountain's low-elevation forests are outside of the protected area boundary and vulnerable to forestland conversion into agriculture and extractive activities like mining. Given these threats and its restricted distribution, *P. guiting*, new species, qualifies as Endangered B1ab(iii) under the IUCN Red List Categories and Criteria Version 3.1 (IUCN, 2012).

Etymology. The specific epithet *guiting* is derived from Mount Guiting-Guiting, the highest peak on Sibuyan (and the larger Romblon Island Group), with an elevation of 2,058 m asl. This mountain is a prominent geographical feature of the region and a biodiversity hotspot at the heart of Sibuyan Island, characterised by its unique flora and fauna (Brown & Alcala, 1974; Goodman & Ingle, 1993; Nerz et al., 1997; Lit & Eusebio, 2008; Esselstyn & Goodman, 2010; Brown et al., 2011; Davis et al., 2016; Heaney et al., 2005; Rickart et al., 2005; Siler et al., 2012, 2016; Lucañas, 2021; Tautel & Dupo, 2021; Ermilov & Corpuz-Raros, 2022a, b; Meneses et al., 2022). The name honours the ecological significance of the mountain and its role in conserving locally endemic species of herpetofauna in RIG.

DISCUSSION

For decades, the new species *Platymantis guiting* remained hidden under the name *P. pygmaeus* due to their striking phenotypic and ecological similarities, despite being distinct species. However, the disjunct distribution between these populations raised questions about whether they represented a single evolutionary lineage (Brown, 2004; Meneses et al., 2022). This uncertainty prompted our investigation, using a statistically robust sample size, to assess characteristics that might distinguish and justify their recognition as separate species. Through an integrative approach—incorporating morphological, bioacoustics, and genetic evidence—we confirmed that *P. guiting*, new species, represents a distinct species, increasing the total number of recognised *Platymantis* species to 33. This taxonomic revision also redefines the distribution of *P. pygmaeus*, restricting its populations to Luzon Island while assigning those in Romblon Island Group (RIG) to the newly described *P. guiting*.

Platymantis species in the Philippines are monophyletic, forming five largely diagnosable clades, each named as a separate subgenus (Brown et al., 2015b). These frogs are widely distributed across the archipelago. However, most species are restricted to specific biogeographic subregions or PAICs, with *P. corrugatus*—and, to a lesser extent, *P. dorsalis*—as notable exceptions (Diesmos et al., 2015). However, phenotypic convergence across distantly related *Platymantis* species occupying different PAICs complicates species identification. It remains possible that morphological convergence obscures distinct evolutionary lineages in other species groups, which may have contributed to slow progress in amphibian taxonomy in the Philippines (Brown et al., 2012; Meneses et al., 2024). This challenge has likely resulted in the long-standing misclassification of *P. guiting*, new species, under *P. pygmaeus*.

Phylogenetic information from the 16S mitochondrial gene marker showed that *P. guiting*, new species, is more closely related to *P. levigatus*, another species endemic to RIG, than to *P. pygmaeus*. This non-sister relationship between the *P. guiting,* new species, and *P. pygmaeus* suggests convergent evolution of their highly miniaturised terrestrial body form, a trait so far observed only in these two species. Despite their similar body sizes, *P. guiting*, new species, has shorter hindlimbs, a characteristic linked to climbing, burrowing, or walking behaviour in frogs (Vidal-García et al., 2014; Citadini et al., 2018). Field observations support this inference; when disturbed, *P. guiting*, new species, individuals remained motionless and curled on leaf litter rather than jumping, a consistently observed behaviour across their elevational range.

The sister relationship between the new species, *P. guiting,* and *P. levigatus* suggests that both species may have diversified in situ within RIG, with morphological divergence associated with differences in microhabitat use. Within-island speciation is hypothesised to have contributed to the accumulation of biodiversity even in small and geologically young islands like RIG (Heaney, 1986; Brown et al., 2013a). Such a mechanism is theoretically possible when sympatric species compete less and exploit different niches (Schluter, 1996; Gavrilets, 2014). *P. levigatus* is larger, has longer hindlimbs, and possesses smoother skin. These are traits linked to its riparian lifestyle. Although both species occur in sympatry, *P. levigatus* is more confined to streamside habitats, whereas *P. guiting*, new species, primarily inhabits forest interiors away from water sources. Notably, *P. guiting*, new species, occupies a broader elevational range (up to 1,572 m asl) compared to *P. levigatus* (up to 1,490 m asl) on Sibuyan Island. This pattern of morphological specialisation is common within the *Lahatnanguri* subgenus of *Platymantis*, contributing to the absence of clear synapomorphies distinguishing this clade from other *Platymantis* subgenera.

However, some uncertainty remains due to limited phylogenetic signal and moderate support for deeper nodes within the Bayesian tree, indicating that evolutionary relationships within the *P. pygmaeus* species complex require further resolution. To address these uncertainties, future research should incorporate additional molecular markers with higher resolution, such as genome-wide SNP data or whole mitochondrial genomes. Integrating these genetic data with detailed ecological and behavioural studies, as well as population genomic analyses, could clarify fine-scale population structure, gene flow, and the mechanisms driving morphological and ecological divergence within the Romblon Island Group.

The discovery of *P. guiting*, new species, highlights the importance of employing multiple lines of evidence in resolving taxonomic ambiguities within morphologically cryptic yet highly diverse species groups (Hillis, 2019). Although genomic data could provide finer-scale resolution of lineage divergence, its application remains resource-intensive and requires specialised expertise (Vilaça et al., 2024)—barriers that may slow taxonomic progress in biodiversity-rich yet resource-constrained regions like the Philippines. Although reliance on the 16S mitochondrial gene marker in amphibian taxonomy is often debated (Hillis, 2019; Chan et al., 2022), our recognition of *P. guiting*, new species, is strongly supported by congruent differences in morphology and bioacoustics. Given the country's extraordinary but threatened biodiversity (Heaney & Regalado, 1998; Alcala et al., 2006; Huais et al., 2025), this integrative approach remains a practical yet scientifically robust method for species recognition. Ethical specimen collection, complemented by documentation of behavioural and morphological traits, is therefore crucial in addressing biodiversity knowledge shortfalls (Walters et al., 2021; Guedes et al., 2024).

Taxonomy remains a cornerstone of informed conservation policy and management. The identification of *P. guiting*, new species, as an endemic and threatened species within the small biogeographic subregion of RIG underscores the urgency of implementing aggressive, targeted conservation interventions in response to landcover changes, particularly agricultural expansion and extractive activities. Immediate actions should include strengthening existing management mechanisms and expanding coverage of Mt. Guiting-Guiting Natural Park, legislating Calatrava-San Andres-San Agustin Watershed Forest Reserve as a full component of the National Integrated Protected Areas System, and establishing area-based conservation measures for key biodiversity areas across RIG. These efforts are critical for preventing further forest loss, ensuring the persistence of RIG's unique biodiversity and preserving the region's ecological integrity. The species epithet *guiting*, derived from the name of RIG's highest mountain, may serve as a powerful reminder of the vulnerable and irreplaceable natural heritage at stake.

ACKNOWLEDGEMENTS

We extend our sincere gratitude to the Department of Environmental and Natural Resources Region IV-B for facilitating collecting permits. We are indebted to the Protected Area Management Board of Mount Guiting-Guiting Natural Park, its Protected Area Superintendent M.R. Rocero and dedicated staff and rangers for their unwavering support and collaboration. Fieldwork was conducted under the auspices of multiple Memoranda of Understanding with the KU, UPLB, and UPLBMNH. The study adhered to Wildlife Gratuitous Permits to Collect No. MIMAROPA-2017-0005, 201, 212, and 221, with ethical oversight granted by KU Institutional Animal Care and Use Committees (IACUC Approval No. 158-04).

Funding for this work was generously provided by The Rufford Foundation (Project No. 20625-1), Idea Wild, UP COOPERATE Grant, DOST-ASTHRDP thesis grant awarded to CGM. Earlier fieldwork of RMB was supported by the US National Science Foundation, specifically NSF Grants DEB 1654388, DEB 0073199, and DEB 0743491. We are also grateful for a complimentary subscription to Raven Pro for visual and analytical processing of our frog call data. During writing, CGM and KMEP were supported by a Graduate Research Assistantship from KU Department of Ecology and Evolutionary Biology.

We thank Michael Garfield for scientific illustration and technical photography of the new species and *P. pygmaeus* (Fig. 6). CGM expresses special thanks to the following: Aimee Lynn B. Dupo and the UPLB Cave Ecology Laboratory for their support and guidance; communities of Magdiwang for their warm hospitality and invaluable support during fieldwork; UPLB-MNH former director J.C.T. Gonzalez and current Director Marian De Leon for granting access to their facilities and resources; field collaborators, including J. and W. Bulalacao, J.B. Gurobat, S.A. Gonzales, G. Campomanes, and E. Cosico; and expedition co-leader, the late James D.V. Alvarez, whose leadership was instrumental during CGM's Sibuyan expedition.

LITERATURE CITED

Abraham RK, Herr MW, Sterkhova VV, Otterholt R, Siler CD, Sanguila MB & Brown RM (2021) Revisiting Linnaean and Wallacean shortfalls in Mindanao fanged frogs: The *Limnonectes magnus* complex consists of only two species. Herpetological Monographs, 35: 112–140. https://doi.org/10.1655/HERPMONOGRAPHS-D-20-00010

Alcala AC (1962) Breeding behavior and early development of frogs of Negros, Philippine Islands. Copeia, 1962(4): 679–726. https://doi.org/10.2307/1440671

Alcala A, Alcala E, Buot Jr I, Diesmos A, Dolar ML, Fernando E, Gonzalez JC & Tabaranza Jr B (2006) Philippine biodiversity: Ecological roles, uses, and conservation status. Transactions of the National Academy of Science and Technology Philippines, 28: 203–214. https://doi.org/10.57043/transnastphl.2006.4589

Alcala AC, Brown WC & Diesmos AC (1998) Two new species of the Genus *Platymantis* (Amphibia: Ranidae) from Luzon Island, Philippines. Proceedings of the California Academy of Sciences, 50: 381–388. https://researcharchive.calacademy.org/research/herpetology/philippine_collection/phil_pdfs/casp_50_381.pdf

Alcala AC & Brown WC (1999) Philippine frogs of the genus *Platymantis* (Amphibia: Ranidae). Philippine Journal of Science, 128: 281–287. https://philjournalsci.dost.gov.ph/wp-content/uploads/1999/12/Philippine-frogs-of-the-genus-platymantis.pdf

Audacity Team (2004). Audacity version 3.7.1 [Computer software]. https://www.audacityteam.org/

Barley AJ, White J, Diesmos AC & Brown RM (2013) The challenge of species delimitation at the extremes: diversification without morphological change in Philippine sun skinks. Evolution, 67: 3556–3572. https://doi.org/10.1111/evo.12219

Bickford D, Lohman DJ, Sodhi NS, Ng PKL, Meier R & Das I (2007) Cryptic species as a window on diversity and conservation. Trends in Ecology & Evolution, 22: 148–155. https://doi.org/10.1016/j.tree.2006.11.004

Boettger O (1893) Drei neue Wasserfrösche (Rana) von den Philippinen. *Zoologischer Anzeiger,* 16: 363–366.

Boulenger GA (1884) Diagnoses of new reptiles and batrachians from the Solomon Islands, collected and presented to the British Museum by H. B. Guppy, Esq., M.B., H.M.S. "*Lark*". Proceedings of the Zoological Society of London, 1884: 210–213. https://doi.org/10.1111/j.1096-3642.1884.tb02822.x

Bouckaert RR & Drummond AJ (2017) bModelTest: Bayesian phylogenetic site model averaging and model comparison. BMC Evolutionary Biology, 17: 42. https://doi.org/10.1186/s12862-017-0890-6

Bouckaert RR, Heled J, Kühnert D, Vaughan T, Wu C-H, Xie D, Suchard MA, Rambaut A & Drummond AJ (2014) BEAST 2: A Software Platform for Bayesian Evolutionary Analysis. PLOS Computational Biology, 10: e1003537. https://doi.org/10.1371/journal.pcbi.1003537

Brown RM (2004) Evolution of ecomorphological variation and acoustic diversity in mate-recognition signals of southeast Asian forest frogs (subfamily Platymantinae). Unpublished PhD thesis, The University of Texas at Austin, Texas, USA. 47–48 pp. http://www.zo.utexas.edu/faculty/antisense/Brown,%20Rafe%20-%20dissertation.pdf (Accessed 27 February 2026)

Brown RM (2009) Frogs in Island Archipelagos. In*:* Gillespie RG & Clague DA (eds.) Encyclopedia of Islands. University of California Press, Berkeley, pp. 347–351. https://archive.org/details/encyclopedia-of-islands/page/347/mode/2up (Accessed 27 February 2026)

Brown RM, De Layola LA, Lorenzo A, Diesmos MLL & Diesmos AC (2015a) A new species of limestone karst inhabiting forest frog, genus *Platymantis* (Amphibia: Anura: Ceratobatrachidae: subgenus *Lupacolus*) from southern Luzon Island, Philippines. Zootaxa, 4048: 191–210. https://doi.org/10.11646/zootaxa.4048.2.3

Brown RM & Diesmos AC (2002). Application of lineage-based species concepts to oceanic island frog populations: the effects of differing taxonomic philosophies on the estimation of Philippine biodiversity. Silliman Journal, 42(2): 133–162. https://www.researchgate.net/publication/285004516 (Accessed 27 February 2026)

Brown RM & Diesmos AC (2009) Philippines, Biology. In*:* Gillespie RG & Clague DA (eds.) Encyclopedia of Islands. University of California Press, Berkeley, pp. 723–732. https://archive.org/details/encyclopedia-of-islands/page/723/mode/2up (Accessed 27 February 2026)

Brown RM, Diesmos AC & Alcala AC (2001) The state of Philippine herpetology and the challenges for the next decade. Silliman Journal, 42: 18–85. https://www.researchgate.net/publication/292418043 (Accessed 27 February 2026)

Brown RM, Diesmos AC, Sanguila MB, Siler CD, Diesmos MLD & Alcala AC (2012a) Amphibian conservation in the Philippines. FrogLog, 104: 40–43.

Brown RM & Gonzalez JCT (2007) A new forest frog of the genus *Platymantis* (Amphibia: Anura: Ranidae) from the Bicol peninsula of Luzon Island, Philippines. Copeia, 2007(2): 251–266. https://doi.org/10.1643/0045-8511(2007)7[251:ANFFOT]2.0.CO;2

Brown RM, Oliveros CH, Siler CD, Fernandez JB, Welton LJ, Buenavente PAC, Diesmos MLL & Diesmos AC (2012b) Amphibians and reptiles of Luzon Island (Philippines), VII: Herpetofauna of Ilocos Norte province, Northern Cordillera Mountain Range. Check List, 8: 469–490. https://doi.org/10.15560/8.3.469

Brown RM, Siler CD, Oliveros CH, Diesmos AC & Alcala AC (2011) A new *Gekko* from Sibuyan Island, central Philippines. Herpetologica, 67: 460–476. https://doi.org/10.1655/HERPETOLOGICA-D-11-00025.1

Brown RM, Siler CD, Oliveros CH, Esselstyn JA, Diesmos AC, Hosner PA, Linkem CW, Barley AJ, Oaks JR, Sanguila MB, Welton LJ, Blackburn DC, Moyle RG, Peterson AT & Alcala AC (2013a) Evolutionary processes of diversification in a model island archipelago. Annual Review of Ecology, Evolution, and Systematics, 44: 411–435. https://doi.org/10.1146/annurev-ecolsys-110411-160323

Brown RM, Siler CD, Oliveros CH, Welton LJ, Rock A, Swab J, Van Weerd M, van Beijnen J, Rodriguez D, Jose E & Diesmos AC (2013b) The amphibians and reptiles of Luzon Island, Philippines, VIII: The herpetofauna of Cagayan and Isabela Provinces, northern Sierra Madre Mountain Range. ZooKeys, 266: 1–120. https://doi.org/10.3897/zookeys.266.3982

Brown RM, Siler CD, Richards SJ, Diesmos AC & Cannatella DC (2015b) Multilocus phylogeny and a new classification for Southeast Asian and Melanesian forest frogs (family Ceratobatrachidae). Zoological Journal of the Linnean Society, 174(1): 130–168. https://doi.org/10.1111/zoj.12232

Brown WC & Alcala AC (1970) The zoogeography of the Philippine Islands, a fringing archipelago. Proceedings of the California Academy of Sciences, 4(38): 105–130. https://www.researchgate.net/profile/Angel-Alcala/publication/265317350_The_zoogeography_of_the_Philippine_Islands_a_fringing_archipelago/links/54ebd85f0cf2082851bec75e/The-zoogeography-of-the-Philippine-Islands-a-fringing-archipelago.pdf (Accessed 27 February 2026)

Brown WC & Alcala AC (1974) New frogs of the genus *Platymantis* (Ranidae) from the Philippines. Occasional Papers of the California Academy of Sciences, 113: 1–12. https://doi.org/10.5962/bhl.part.2818

Brown WC, Alcala AC, Diesmos AC & Alcala E (1997) Species of the *guentheri* group of *Platymantis* (Amphibia: Ranidae) from the Philippines, with descriptions of four new species.

Proceedings of the California Academy of Sciences, 4 (50): 1–20. https://www.biodiversitylibrary.org/part/51790 (Accessed 27 February 2026)

Chan KO & Grismer LL (2022) GroupStruct: An R package for allometric size correction. Zootaxa, 5124: 471–482. https://doi.org/10.11646/zootaxa.5124.4.4

Chan KO, Hertwig ST, Neokleous DN, Flury JM & Brown RM (2022) Widely used, short 16S rRNA mitochondrial gene fragments yield poor and erratic results in phylogenetic estimation and species delimitation of amphibians. BMC Ecology and Evolution, 22: 37. https://doi.org/10.1186/s12862-022-01994-y

Chan KO, Hutter CR, Wood PL, Su Y-C & Brown RM (2021a) Gene flow increases phylogenetic structure and inflates cryptic species estimations: A case study on widespread Philippine puddle frogs (*Occidozyga laevis*). Systematic Biology, 71: 40–57. https://doi.org/10.1093/sysbio/syab034

Chan KO, Mulcahy DG & Anuar S (2023) The artefactual branch effect and phylogenetic conflict: Species delimitation with gene flow in mangrove pit vipers (*Trimeresurus purpureomaculatus-erythrurus* complex). Systematic Biology, 72: 1209–1219. https://doi.org/10.1093/sysbio/syad043

Chan KO, Schoppe S, Rico ELB & Brown RM (2021b) Molecular systematic investigation of Philippine puddle frogs (Anura: Dicroglossidae: *Occidozyga* Kuhl and Van Hasselt, 1822) reveals new candidate species and a novel pattern of species dyads. Philippine Journal of Systematic Biology, 14: 1–14. https://doi.org/10.26757/pjsb2020b14007

Chernomor O, von Haeseler A & Minh BQ (2016) Terrace Aware data structure for phylogenomic inference from supermatrices. Systematic Biology, 65: 997–1008. https://doi.org/10.1093/sysbio/syw037

Citadini JM, Brandt R, Williams CR & Gomes FR (2018) Evolution of morphology and locomotor performance in anurans: relationships with microhabitat diversification. Journal of Evolutionary Biology, 31: 371–381. https://doi.org/10.1111/jeb.13228

Davis DR, Geheber AD, Watters JL, Penrod ML, Feller KD, Ashford A, Kouri J, Nguyen D, Shauberger K, Sheatsley K, Winfrey C, Wong R, Sanguila MB, Brown RM & Siler CD (2016) Additions to Philippine slender skinks of the *Brachymeles bonitae* complex (Reptilia: Squamata: Scincidae) III: A new species from Tablas Island. Zootaxa, 4132: 30–43. https://doi.org/10.11646/zootaxa.4132.1.3

de Queiroz K (1998) The general lineage concept of species, species criteria, and the process of speciation. Pp. 57–75 In: Howard DJ & Berlocher SH (eds.) Endless forms: Species and speciation. Oxford University Press, Oxford, New York, NY. https://evobiojournalclub.wordpress.com/wp-content/uploads/2013/01/dequeiroz1998.pdf (Accessed 27 February 2026)

de Queiroz K (1999) The general lineage concept of species and the defining properties of the species category. Pp. 49–89 In: Wilson RA (ed.) Species: new interdisciplinary essays. Massachusetts Institute of Technology Press, Cambridge, MA. https://doi.org/10.7551/mitpress/6396.003.0007

de Queiroz K (2005a) Ernst Mayr and the general lineage concept of species. Proceedings of the National Academy of Sciences, 102: 6600–6607. https://doi.org/10.1073/pnas.0502030102

de Queiroz K (2005b) Different species problems and their resolution. BioEssays, 27: 1263–1269. https://doi.org/10.1002/bies.20325

de Queiroz K (2007) Species concepts and species delimitation. Systematic Biology, 56: 879–886. https://doi.org/10.1080/10635150701701083

Diesmos AC, Brown RM & Gee GVA (2004) Preliminary report on the amphibians and reptiles of Balbalasang-Balbalan National Park, Luzon Island, Philippines. Sylvatrop, 13: 63–80. https://www.researchgate.net/publication/237221404_Preliminary_report_on_the_amphibians_and_reptiles_of_Balbalasang-Balbalan_National_Park_Luzon_Island_Philippines (Accessed 27 February 2026)

Diesmos AC, Scheffers BR, Mallari NAD, Siler CD & Brown RM (2020) A new forest frog of the genus *Platymantis* (Amphibia: Anura: Ceratobatrachidae: subgenus *Tirahanulap*) from Leyte and Samar islands, eastern Philippines. Zootaxa, 4830: 573–591. https://doi.org/10.11646/zootaxa.4830.3.6

Diesmos AC, Watters JL, Huron NA, Davis DR, Alcala AC, Crombie RI, Afuang LE, Gee-Das G, Sison RV, Sanguila MB, Penrod ML, Labonte MJ, Davey CS, Leone EA, Diesmos ML, Sy EY, Welton LJ, Brown RM & Siler CD (2015) Amphibians of the Philippines, part I: Checklist of the species. Proceedings of the California Academy of Sciences, 62: 457–539. https://www.researchgate.net/publication/291166856_Amphibians_of_the_Philippines_part_1_checklist_of_the_species (Accessed 27 February 2026)

Edgar RC (2004) MUSCLE: multiple sequence alignment with high accuracy and high throughput. Nucleic Acids Research, 32: 1792–1797. https://doi.org/10.1093/nar/gkh340

Ermilov SG & Corpuz-Raros L (2022a) Two new species of Flagellozetes (*Cosmogalumna*) (Acari, Oribatida, Galumnidae) from Sibuyan Island, Philippines, with a key to known species of the genus. Systematic and Applied Acarology, 27: 2076–2085. https://doi.org/10.11158/saa.27.10.16

Ermilov SG & Corpuz-Raros L (2022b) A new species of *Galumna* (Neogalumna) (Acari, Oribatida, Galumnidae) from the Philippines. Acarina, 30(1): 9–12. https://doi.org/10.21684/0132-8077-2022-30-1-9-12

Esselstyn JA & Goodman SM (2010) New species of shrew (Soricidae: *Crocidura*) from Sibuyan Island, Philippines. Journal of Mammalogy, 91: 1467–1472. https://doi.org/10.1644/10-MAMM-A-002.1

Gavrilets S (2014) Models of speciation: Where are we now? Journal of Heredity, 105: 743–755. https://doi.org/10.1093/jhered/esu045

Gingras B & Fitch WT (2013) A three-parameter model for classifying anurans into four genera based on advertisement calls. The Journal of the Acoustical Society of America, 133: 547–559. https://doi.org/10.1121/1.4768878

Goodman SM & Ingle NR (1993) Sibuyan Island in the Philippines–threatened and in need of conservation. Oryx, 27(3): 174–180. https://doi.org/10.1017/S0030605300027988

Gravenhorst JLC (1829) Deliciae Musei Zoologici Vratislaviensis. Fasciculus primus. Chelonios et Batrachia. Leopold Voss, Leipzig, 160 pp.

Guedes JJ, Diniz-Filho JAF & Moura MR (2024) Macroecological correlates of Darwinian shortfalls across terrestrial vertebrates. Biology Letters, 20(7): 20240216. https://doi.org/10.1098/rsbl.2024.0216

Günther ACLG (1858) Neue Batrachier in der Sammlung des Britischen Museums. Archiv für Naturgeschichte, 24: 319–328. https://doi.org/10.5962/bhl.part.5288

Heaney LR (1986) Biogeography of mammals in SE Asia: Estimates of rates of colonization, extinction and speciation. Biological Journal of the Linnean Society, 28: 127–165. https://doi.org/10.1111/J.1095-8312.1986.TB01752.X

Heaney LR & Regalado JJ (1998) Vanishing treasures of the Philippine rainforest. The Field Museum, Chicago, 88 pp.

Heaney LR, Walsh JS & Peterson AT (2005) The roles of geological history and colonization abilities in genetic differentiation between mammalian populations in the Philippine archipelago. Journal of Biogeography, 32: 229–247. https://doi.org/10.1111/j.1365-2699.2004.01120.x

Hillis DM (2019) Species delimitation in herpetology. Journal of Herpetology, 53: 3–12. https://doi.org/10.1670/18-123

Huais PY, Osorio Olvera L, Cordier JM, Tomba AN, Soberón J, Loyola R & Nori J (2025) Rethinking global hotspots for threatened terrestrial vertebrates. Global Ecology and Biogeography, 34: e13942. https://doi.org/10.1111/geb.13942

IUCN [International Union for Conservation of Nature] (2012) IUCN Red List Categories and Criteria: Version 3.1. Second edition. IUCN, Gland, Switzerland and Cambridge, United Kingdom, 32 pp.

K. Lisa Yang Center for Conservation Bioacoustics at the Cornell Lab of Ornithology (2024) Raven Pro: Interactive Sound Analysis Software (Version 1.6.5). The Cornell Lab of Ornithology, Ithaca, NY. https://www.ravensoundsoftware.com/

Kearse M, Moir R, Wilson A, Stones-Havas S, Cheung M, Sturrock S, Buxton S, Cooper A, Markowitz S, Duran C, Thierer T, Ashton B, Meintjes P & Drummond A (2012) Geneious Basic: an integrated and extendable desktop software platform for the organization and analysis of sequence data. Bioinformatics, 28: 1647– 1649. https://doi.org/10.1093/bioinformatics/bts199

Khalighifar A, Brown RM, Vallejos JG & Peterson AT (2021) Deep learning improves acoustic biodiversity monitoring and new candidate forest frog species identification (genus *Platymantis*) in the Philippines. Biodiversity and Conservation, 30: 643–657. https://doi.org/10.1007/s10531-020-02107-1

Köhler G (2012) Color Catalogue for Field Biologists: with 24 Color Photos and 300 Color Swatches. Herpeton, Offenbach, Germany, 49 pp.

Köhler J, Jansen M, Rodríguez A, Kok PJR, Toledo LF, Emmrich M, Glaw F, Haddad CFB, Rödel M-O & Vences M (2017) The use of bioacoustics in anuran taxonomy: theory, terminology, methods and recommendations for best practice. Zootaxa, 4251: 1–124. https://doi.org/10.11646/zootaxa.4251.1.1

Lit IL & Eusebio OL (2008) A new species of the genus *Pharnacia* (Phasmatodea: Phasmatidae: Phasmatinae: Pharnaciini) on mango trees in Sibuyan Island with notes on stick insects found on agricultural crops. The Philippine Agricultural Scientist, 91: 115–122. https://www.researchgate.net/publication/292698457_A_new_species_of_the_genus_Phamacia_phasmatodea_Phasmatidae_Phasmatinae_Pharnaciini_on_mango_trees_in_Sibuyan_Island_with_notes_on_stick_insects_found_on_agricultural_crops (Accessed 27 February 2026)

Lucañas CC (2021) *Bundoksia* gen. nov. (Dictyoptera: Blattodea: Blattidae), a new sexually dimorphic cockroach from the Philippines. Journal of Natural History, 55: 1009–1020. https://doi.org/10.1080/00222933.2021.1928317

Mallet J (1995) A species definition for the modern synthesis. Trends in Ecology & Evolution, 10: 294–299. https://doi.org/10.1016/0169-5347(95)90031-4

McLeod DS, Siler CD, Diesmos AC, Diesmos MLL, Garcia VS, Arkonceo AS, Balaquit KL, Uy CC, Vilaseran MM, Yarra EC & Brown RM (2012) Amphibians and reptiles of Luzon Island, V: the herpetofauna of Angat Dam Watershed, Bulacan Province, Luzon Island, Philippines. Asian Herpetological Research, 2: 177–198. https://doi.org/10.3724/SP.J.1245.2011.00177

Meneses CG, Pitogo KME, Supsup CE & Brown RM (2024) Philippine herpetology (Amphibia, Reptilia), 20 years on: Two decades of progress towards an increasingly collaborative, equitable, and inclusive approach to the study of the archipelago's amphibians and reptiles. ZooKeys, 1190: 213. https://doi.org/10.3897/zookeys.1190.109586

Meneses CG, Siler CD, Alviola PA, Gonzalez JCT, Balatibat JB, Natividad CA & Brown RM (2022) Amphibian and reptile diversity along a ridge-to-reef elevational gradient on a small isolated oceanic island of the central Philippines. Check List, 18: 941–948. https://doi.org/10.15560/18.5.941

Meneses CG, Siler CD, Gonzalez JCT, Wood Jr PL & Brown RM (2020) Molecular phylogenetic estimates of evolutionary affinities and the first reports of phenotypic variation in two secretive, endemic reptiles from the Romblon Island Group, central Philippines. Philippine Journal of Systematic Biology, 14: 1–20. https://doi.org/10.26757/pjsb2020b14002

Minh BQ, Nguyen MAT & von Haeseler A (2013) Ultrafast approximation for phylogenetic 705 bootstrap. Molecular Biology and Evolution, 30: 1188–1195. https://doi.org/10.1093/molbev/mst024

Narayan EJ, Hero JM, Christi KS & Morley CG (2011) Early developmental biology of *Platymantis vitiana* including supportive evidence of structural specialization unique to the Ceratobatrachidae. Journal of Zoology, 284(1): 68–75. https://doi.org/10.1111/j.1469-7998.2010.00782.x

Nerz J, Alt T, Mann P & Smith T (1997) *Nepenthes sibuyanensis*, a new *Nepenthes* from Sibuyan, a remote island of the Philippines. Carnivorous Plant Newsletter, 27: 18–23. https://doi.org/10.55360/cpn271.jn393

Nguyen L-T, Schmidt HA, von Haeseler A & Minh BQ (2015) IQ-TREE: a fast and effective stochastic algorithm for estimating maximum-likelihood phylogenies. Molecular Biology and Evolution, 32: 268–274. https://doi.org/10.1093/molbev/msu300

Peters WCH (1863) Fernere Mittheilungen über neue Batrachier. Monatsberichte der Königlichen Preussischen Akademie der Wissenschaften zu Berlin, 1863: 445–447. https://www.biodiversitylibrary.org/part/143371(Accessed 27 February 2026)

Prasad VK, Chuang M-F, Das A, Ramesh K, Yi Y, Dinesh KP & Borzée A (2022) Coexisting good neighbours: acoustic and calling microhabitat niche partitioning in two elusive syntopic species of balloon frogs, *Uperodon systoma* and *U. globulosus* (Anura: Microhylidae) and potential of individual vocal signatures. BMC Zoology, 7: 27. https://doi.org/10.1186/s40850-022-00132-x

R Core Team (2025) R: a language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. https://www.R-project.org/.

Rambaut A, Drummond AJ, Xie D, Baele G & Suchard MA (2018) Posterior summarization in Bayesian phylogenetics using Tracer 1.7. Systematic Biology, 67: 901–904. https://doi.org/10.1093/sysbio/syy032

Rickart EA, Heaney LR, Goodman SM & Jansa S (2005) Review of the Philippine genera *Chrotomys* and *Celaenomys* (Murinae) and description of a new species. Journal of Mammalogy, 86: 415–428. https://doi.org/10.1644/BEL-124.1

Sabaj-Pérez MH (2019). Standard symbolic codes for institutional resource collections in herpetology and ichthyology: An online reference (Version 7.1, August 16, 2019). American Society of Ichthyologists and Herpetologists. https://www.asih.org/resources/standard-symbolic-codes (accessed 15 February 2025).

Sanguila MB, Cobb KA, Siler CD, Diesmos AC, Alcala AC & Brown RM (2016) The amphibians and reptiles of Mindanao Island, southern Philippines, II: The herpetofauna of northeast Mindanao and adjacent islands. ZooKeys, 624: 1–132. https://doi.org/10.3897/zookeys.624.9814

Sanguila MB, Siler CD, Diesmos AC, Nuñeza O & Brown RM (2011) Phylogeography, geographic structure, genetic variation, and potential species boundaries in Philippine slender toads. Molecular Phylogenetics and Evolution, 61: 333–350. https://doi.org/10.1016/j.ympev.2011.06.019

Schlegel H (1837) Abbildungen neuer oder unvollständig bekannter Amphibien, nach der Natur oder dem Leben entworfen, herausgegeben und mit einem erläuternden Texte begleitet. Part 1. Arnz & Comp, Düsseldorf, 141 pp. https://doi.org/10.5962/bhl.title.95393

Schluter D (1996) Ecological causes of adaptive radiation. The American Naturalist, 148: S40–S64. https://www.jstor.org/stable/2463047 (Accessed 27 February 2026)

Siler CD, Davis DR, Diesmos AC, Guinto F, Whitsett C & Brown RM (2016) A new species of *Pseudogekko* (Squamata: Gekkonidae) from the Romblon Island Group, Central Philippines. Zootaxa, 4139: 248–260. https://doi.org/10.11646/zootaxa.4139.2.8

Siler CD, Diesmos AC, Linkem CW, Diesmos ML & Brown RM (2010) A new species of limestone-forest frog, genus *Platymantis* (Amphibia: Anura: Ceratobatrachidae) from central Luzon Island, Philippines. Zootaxa, 2482: 49–63. https://doi.org/10.11646/zootaxa.2482.1.3

Siler CD, Linkem CW, Diesmos AC & Alcala AC (2007) A new species of *Platymantis* (Amphibia: Anura: Ranidae) from Panay Island, Philippines. *Herpetologica,* 63: 351–364. https://doi.org/10.1655/0018-0831(2007)63[351:ANSOPA]2.0.CO;2

Siler CD, Swab JC, Oliveros CH, Diesmos AC, Averia L, Alcala AC & Brown RM (2012) Amphibians and reptiles, Romblon Island group, central Philippines: comprehensive herpetofaunal inventory. Check List, 8: 443. https://doi.org/10.15560/8.3.443

Siler CD, Welton LJ, Siler JM, Brown J, Bucol A, Diesmos AC & Brown RM (2011) Amphibians and reptiles, Luzon Island, Aurora Province and Aurora Memorial National Park, northern Philippines: New Island distribution records. Check List, 7: 182–195. https://doi.org/10.15560/7.2.182

Sueur J, Aubin T & Simonis C (2008) Seewave, a free modular tool for sound analysis and synthesis. Bioacoustics, 18: 213–226. https://doi.org/10.1080/09524622.2008.9753600

Tautel C & Barrion-Dupo AL (2022) A new *Pomasia* from the Philippines: *Pomasia concepcioni* n. sp. (Lepidoptera Geometridae Larentiinae Eupitheciini). Antenor: Tropical Lepidopterology Studies, 8: 173–175. https://www.researchgate.net/publication/361329123_A_new_Pomasia_from_the_Philippines_Pomasia_concepcioni_n_sp_lepidoptera_geometridae_larentiinae_Eupitheciini (Accessed 27 February 2026)

Taylor EH (1920) Philippine Amphibia. Philippine Journal of Science, 16: 213–359. https://www.biodiversitylibrary.org/page/706532#page/215/mode/1up (Accessed 27 February 2026)

Taylor EH (1922) Additions to the herpetological fauna of the Philippine Islands. I. Philippine Journal of Science, 21: 161–206. https://doi.org/10.5962/bhl.part.25389

Thomas R (1966) New species of Antillean *Eleutherodactylus*. Quarterly Journal of the Florida Academy of Sciences, 28: 375–391. https://www.jstor.org/stable/24315255

Thorpe RS (1975). Quantitative handling of characters useful in snake systematics with particular reference to intraspecific variation in the ringed snake *Natrix natrix* (L.). Biological Journal of the Linnean society, 7, 27–43. https://doi.org/10.1111/j.1095-8312.1975.tb00732.x

Townsend DS & Stewart MM (1985) Direct development in *Eleutherodactylus coqui* (Anura: Leptodactylidae): a staging table. Copeia, 1985(2): 423–436. https://doi.org/10.2307/1444854

Vences M, Miralles A & Dufresnes C (2024) Next generation species delimitation and taxonomy: implications for biogeography. Journal of Biogeography, 51: 1709–1722. https://doi.org/10.1111/jbi.14807

Vidal-García M, Byrne PG, Roberts JD & Keogh JS (2014) The role of phylogeny and ecology in shaping morphology in 21 genera and 127 species of Australo Papuan myobatrachid frogs. Journal of Evolutionary Biology, 27: 181–192. https://doi.org/10.1111/jeb.12292

Vilaça ST, Vidal AF, Pavan ACD, Silva BM, Carvalho CS, Povill C, Luna-Lucena D, Nunes GL, Figueiró HV, Mendes IS, Bittencourt JAP, Côrtes LG, Canesin LEC, Oliveira RRM, Damasceno RP, Vasconcelos S, Barreto SB, Tavares V, Oliveira G, Martins AB & Aleixo A (2024) Leveraging genomes to support conservation and bioeconomy policies in a megadiverse country. Cell Genomics, 4: 1–7. https://doi.org/10.1016/j.xgen.2024.100678

Walters AD, Cannizzaro AG, Trujillo DA & Berg DJ (2021) Addressing the Linnean shortfall in a cryptic species complex. Zoological Journal of the Linnean Society, 192(2): 277–305. https://doi.org/10.1093/zoolinnean/zlaa099

Watters JL, Cummings ST, Flanagan RL & Siler CD (2016) Review of morphometric measurements used in anuran species descriptions and recommendations for a standardized approach. Zootaxa, 4072: 477–495. http://doi.org/10.11646/zootaxa.4072.4.6

Wiegmann AFA (1834) Beiträge zur Zoologie, gesammelt auf einer Reise um die Erde, von Dr. F. J. F. Meyen, M. d. A. d. N. Amphibien. Nova Acta Physico-medica Academiae Caesareae Leopoldino-Carolinae Naturae Curiosorum, 17: 183–268.

Wickham H (2016) Data analysis. In: ggplot2: Elegant Graphics for Data Analysis. Springer International Publishing, pp. 189–201. https://doi.org/10.1007/978-3-319-24277-4_9

Xie J, Towsey M, Zhang J & Roe P (2018) Frog call classification: a survey. Artificial Intelligence Review, 49: 375–391. https://doi.org/10.1007/s10462-016-9529-z

Xie J, Towsey M, Zhang J & Roe P (2020) Investigation of Acoustic and Visual Features for Frog Call Classification. Journal of Signal Processing Systems, 92: 23–36. https://doi.org/10.1007/s11265-019-1445-4

Yu G, Smith DK, Zhu H, Guan Y & Lam TT-Y (2017) ggtree: an r package for visualization and annotation of phylogenetic trees with their covariates and other associated data. Methods in Ecology and Evolution, 8: 28–36. https://doi.org/10.1111/2041-210X.12628

SUPPLEMENTARY MATERIAL

All supplementary material can be found at the following link: https://doi.org/10.5281/zenodo.17809328

APPENDIX

Appendix 1. Macaulay library accession numbers of *Platymantis* advertisement call recordings included in acoustic analysis.

Species Name	Institution No.	Field No.	Macaulay Library No.	Locality
Platymantis guiting	UPBMNH-Z-NS 4262	CGM 477	ML638933343	Sibuyan Island
Platymantis guiting	UPBMNH-Z-NS 4438	CGM 072	ML638934112	Sibuyan Island
Platymantis guiting	UPBMNH-Z-NS 4439	CGM 073	ML638934115	Sibuyan Island
Platymantis guiting	UPBMNH-Z-NS 4440	CGM 074	ML638934117	Sibuyan Island
Platymantis guiting	UPBMNH-Z-NS 4443	CGM 242	ML638933671	Sibuyan Island
Platymantis guiting	UPBMNH-Z-NS 4444	CGM 353	ML638933673	Sibuyan Island
Platymantis guiting	UPBMNH-Z-NS 4445	CGM 354	ML638933667	Sibuyan Island
Platymantis guiting	UPBMNH-Z-NS 4446	CGM 355	ML638933669	Sibuyan Island
Platymantis guiting	PNM 9882	CGM 768	ML638933771	Sibuyan Island
Platymantis guiting	UPBMNH-Z-NS 4464	CGM 769	ML638934107	Sibuyan Island
Platymantis guiting	UPBMNH-Z-NS 4465	CGM 770	ML638934109	Sibuyan Island
Platymantis guiting	UPBMNH-Z-NS 4468	CGM 774	ML638934106	Sibuyan Island
Platymantis guiting	UPBMNH-Z-NS 4469	CGM 775	ML638934110	Sibuyan Island
Platymantis guiting	UPBMNH-Z-NS 4549	CGM 476	ML638933340	Sibuyan Island
Platymantis guiting	UPBMNH-Z-NS 4548	CGM 439	ML638933342	Sibuyan Island
Platymantis guiting	UPBMNH-Z-NS 4551	CGM 479	ML638933665	Sibuyan Island
Platymantis guiting	UPBMNH-Z-NS 4552	CGM 480	ML638933337	Sibuyan Island
Platymantis guiting	UPBMNH-Z-NS 4553	CGM 481	ML638933663	Sibuyan Island
Platymantis guiting	UPBMNH-Z-NS 4560	CGM 488	ML638933335	Sibuyan Island
Platymantis pygmaeus	KU 352867	CGM 1048	ML638944096	Luzon Island
Platymantis pygmaeus	KU 352868	CGM 1055	ML638944075	Luzon Island
Platymantis pygmaeus	KU 352869	CGM 1060	ML638944076	Luzon Island
Platymantis pygmaeus	KU 352870	CGM 1061	ML638944079	Luzon Island
Platymantis pygmaeus	KU 352871	CGM 1062	ML638944091	Luzon Island
Platymantis pygmaeus	KU 352872	CGM 1063	ML638944095	Luzon Island
Platymantis pygmaeus	Not captured		ML638944107	Luzon Island
Platymantis pygmaeus			ML638944113	Luzon Island
Platymantis pygmaeus			ML638944115	Luzon Island
Platymantis pygmaeus			ML638944120	Luzon Island
Platymantis pygmaeus			ML638944129	Luzon Island
Platymantis levigatus	UPBMNH-Z-NS 4330	CGM 388	ML638930289	Sibuyan Island
Platymantis levigatus	UPBMNH-Z-NS 4331	CGM 389	ML638930300	Sibuyan Island
Platymantis levigatus	UPBMNH-Z-NS 4332	CGM 390	ML638930332	Sibuyan Island
Platymantis levigatus	UPBMNH-Z-NS 4374	CGM 503	ML638930367	Sibuyan Island
Platymantis levigatus	UPBMNH-Z-NS 4375	CGM 505	ML638930400	Sibuyan Island
Platymantis levigatus	UPBMNH-Z-NS 4376	CGM 506	ML638930412	Sibuyan Island
Platymantis levigatus	UPBMNH-Z-NS 4381	CGM 544	ML638930455	Sibuyan Island
Platymantis levigatus	UPBMNH-Z-NS 4382	CGM 545	ML638930660	Sibuyan Island
Platymantis levigatus	UPBMNH-Z-NS 4383	CGM 546	ML638930667	Sibuyan Island
Platymantis levigatus	UPBMNH-Z-NS 4399	CGM 714	ML638930673	Sibuyan Island
Platymantis levigatus	UPBMNH-Z-NS 4498	CGM 715	ML638930674	Sibuyan Island