REPTILES & AMPHIBIANS

First Checklist of Herpetofauna in Mt. Arayat National Park and Vicinity, Pampanga Province, Luzon Island, The Philippines

Yu-Sing Lin[1], Shan-Min Chen[2], Jake Wilson B. Binaday[3], Chin-Chia Shen[1], and Ace Kevin S. Amarga[1,4]

[1]School of Life Science, National Taiwan Normal University- Gongguan Campus, Taipei, Taiwan (linyusing89329@gmail.com [corresponding author]; https://orcid.org/0009-0004-0766-5870)
[2]Conservation and Evolutionary Biology Lab, Department of Entomology, National Taiwan University (https://orcid.org/0009-0009-7346-0909)
[3]Crocodylus Porosus Philippines, Inc., Davao del Norte, Philippines
[4]Biodiversity Program, Taiwan International Graduate Program, Biodiversity Research Center, Academia Sinica, Taipei, Taiwan (https://orcid.org/0000-0002-9776-6576)

Mt. Arayat is an isolated stratovolcano in the Central Luzon Plains, Pampanga Province, Luzon Island, The Philippines (Fig. 1). It encompasses a land area of 3,715 ha and its peak is 1,030 m asl (Dagamac et al. 2014; Suba et al. 2019a). Geologically, Mt. Arayat is situated in the rear of the volcanic front of the Bataan Segment of the Taiwan-Luzon Volcanic Arc and is composed primarily of a basalt-bearing rich concentration of clinopyroxene phenocrysts (Bau and Knittel 1993). In 1993, Mt. Arayat was designated as a national park under Presidential Proclamation No. 594. As one of the key biodiversity areas in the Philippines declared by the Department of Environment and Natural Resources (DENR), Mt. Arayat harbors a rich diversity of flowering plants including medicinally important species (Bagunu et al. 2018; Suba et al. 2019a, 2019b). In addition, Mt. Arayat is home to one of the few extant populations of the endangered Luzon endemic cycad, *Cycas riuminiana* (Bösenberg 2023) and the newly discovered Rubiaceae, *Pyrostria arayatensis* (Suba et al. 2020).

Faunal surveys, especially published accounts, are a crucial element when documenting the herpetofauna of a particular area and can serve as vital reference for future conservation efforts and studies of biodiversity. Compared to other mountainous regions and protected areas on Luzon Island, such as the Cordillera Mountain Range (Brown et al. 2012), Balbalasang-Balbalan National Park (Diesmos et al. 2005), Aurora Province (Siler et al. 2011), the Zambales Mountains (Brown et al. 1996), and the Sierra Madre Mountain Range (Brown et al. 2013), no published report or even a checklist addresses the herpetofauna of Mt. Arayat National Park. To fill this gap, we present the first checklist of reptiles and amphibians in Mt. Arayat National Park and vicinity.

Methods

We conducted a rapid biodiversity survey in Mt. Arayat National Park, Pampanga Province, Luzon Island, on 3–7 July 2023 supplemented by additional fieldwork on 12–13 November 2023. Prior to fieldwork, we secured a collection permit from the Department of Environment and Natural Resources–Biodiversity Management Bureau (DENR-BMB, Manila, Philippines). Fieldwork was conducted primarily on the Magalang and Arayat sides of Mt. Arayat National Park and in nearby areas. Using visual encounter surveys in the national park and vicinity, we searched for herpetofauna in habitats including grasslands, orchard plantations, agroforests, and lowland secondary forest (Fig. 2). When possible, we photographed animals *in situ* using a Nikon D850 with 105.0 mm f/2.8 macro lens. Names of taxa cited in this study generally follow Uetz et al. (2023) for reptiles and Frost (2023) for amphibians.

Results and Discussion

We documented a total of 25 herpetofaunal species in 20 genera representing the families Agamidae, Bufonidae, Ceratobatrachidae, Colubridae, Dicroglossidae, Gekkonidae, Microhylidae, Ranidae, Rhacophoridae, Scincidae, and Viperidae. Of these, 12 were Philippine endemics: *Bronchocela marmorata* (Marbled Bloodsucker), *Dendrelaphis luzonensis* (Luzon Bronzebacked Treesnake), *Gekko mindorensis* (Mindoro Narrow-disked Gecko), *Kaloula kalingensis* (Kalinga Narrowmouthed Frog), *Limnonectes woodworthi* (Woodworth's Frog), *Otosaurus cumingii* (Luzon Giant Forest Skink), *Pinoyscincus abdictus aquilonius, Platymantis corrugatus* (Rough-backed Forest Frog), *P. dorsalis* (Common Forest Frog), *P. mimulus* (Diminutive Forest Frog), *Sanguirana luzo-*

Copyright is held by the authors. Articles in R&A are made available under a Creative Commons Attribution-NonCommercial 4.0 International license.

Reptiles & Amphibians ISSN 2332-4961
https://doi.org/10.17161/randa.v31i1.21437

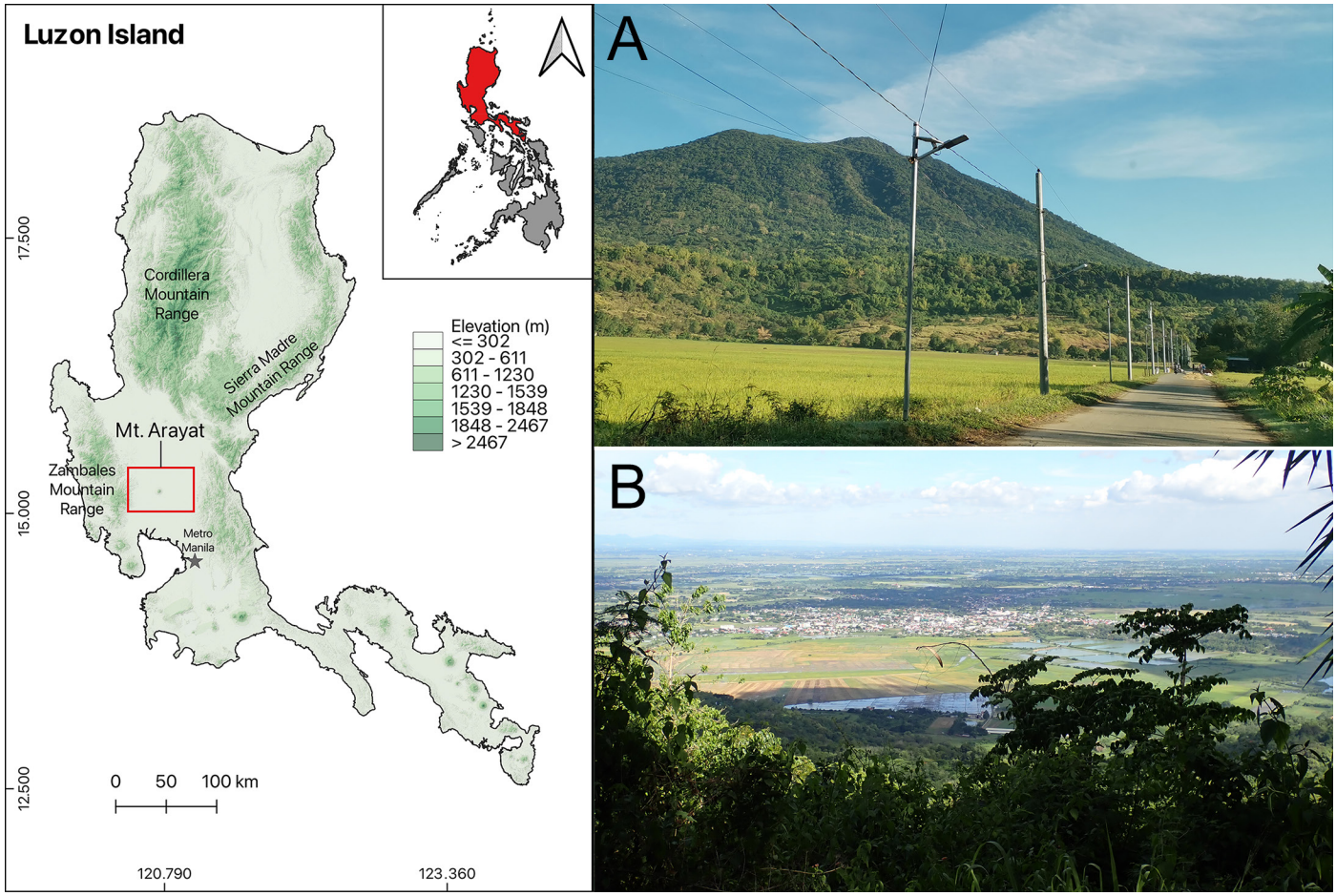

Figure 1. Location and landscape of Mt. Arayat National Park in Central Luzon, Philippines: Location of the Mt. Arayat volcano in Luzon Island (left); view of Mt. Arayat (A); and the Central Luzon plains viewed from Mt. Arayat. Photographs by L. Terbio (A) and Dr. H.-Y. Tseng (B).

Figure 2. Some representative habitats surveyed for the presence of herpetofauna in Mt. Arayat National Park: Forest edge (A) orchard (B); and mid-elevation secondary forest (C). Photographs by Dr. H.-Y Tseng (A) and Y-S Lin (B-C).

nensis (Luzon Stream Frog), and *Trimeresurus flavomaculatus* (Philippine Pitviper).

AMPHIBIA

Family Bufonidae

***Rhinella marina* (Linnaeus 1758) (Fig. 3A).**—*Rhinella marina* is a terrestrial toad native to Central and South America that has been introduced far beyond its native range as a biological control agent, especially in areas with sugar cane plantations (Zug and Zug 1979; Easteal 1981). In the Philippines, *R. marina* was intentionally introduced during the 1930s to control insect pests damaging the sugar cane industry (Merino 1936). To date, *R. marina* has the widest distribution of all alien amphibian species in the Philippines, where it occurs on almost all major islands (Diesmos et al. 2015; Pili et al. 2019). It exhibits a high degree of tolerance

for anthropogenic disturbance and has been observed to be abundant in residential areas as well as agricultural fields (Diesmos et al. 2006; Brown et al. 2012). We encountered several individuals in the lowland, particularly near residential settlements and in grasslands.

Family Ceratobatrachidae

***Platymantis dorsalis* (Duméril 1853) (Fig. 3B).**—This is a widely distributed Philippine endemic that occurs on multiple Philippine islands including Alabat, Batan, Calagnaan, Cagraray, Catanduanes, Cebu, Danjugan, Leyte, Lubang, Luzon, Marinduque, Masbate, Negros, Pan de Azucar, Panay, Polillo, Rapu-Rapu, Sicogon, and Ticao (Gaulke 2011; Diesmos et al. 2015; Supsup et al. 2016; Dandoy and Amarga 2017). This species is typically observed in forest litter, along stream banks, in decaying vegetation, and perching on top of rocks and fallen logs (McLeod et al. 2011; Binaday et al. 2017). Furthermore, *P. dorsalis* is morphologically variable and has been recognized as a species complex (i.e., the *P. dorsalis* group) (Alcala and Brown 1999; Brown et al. 2000). This species is common in lowland forests and we encountered several individuals in forest litter near stream banks.

***Platymantis corrugatus* (Duméril 1853) (Fig. 3C–D).**—This Philippine endemic was first described under the genus *Hylodes* (Duméril 1853) and is known to occur in all major islands of the Philippine Archipelago except Palawan and its neighboring islands (Alcala and Brown 1998; Diesmos et al. 2015). It occurs in a wide range of habitats including agroforests, lowland secondary forests, and forest edges (Supsup et al. 2016), usually in forest-floor leaf litter and rotting vegetation (Supsup et al. 2016; Venturina et al. 2020). We encountered a few individuals in forest litter at low elevations, where it coexisted with *P. dorsalis* and *P. mimulus*. In addition, we observed two color variants (yellow-orange and brown) and also noted color morphs were in other Luzon volcanoes such as Mt. Bulusan (Binaday et al. 2017).

***Platymantis mimulus* Brown, Alcala, and Diesmos 1997.**—This small Luzon endemic ceratobatrachid resembles *P. dorsalis* and was first described from Mt. Makiling, a dormant volcano on Luzon (Brown et al. 1997; Diesmos et al. 2015); it has been recorded on several mountains including Mt. Makiling (Laguna Province) (Brown et al. 1997; Gonzalez et al. 2020) and the Mounts Palay-Palay Mataas and Gulod Protected Landscape (Cavite Province) (Causaren

Figure 3. Some amphibians on Mt. Arayat and vicinity: *Rhinella marina* (A); *Platymantis dorsalis* (B); *Platymantis corrugatus* (C–D).

2009), as well as in the Subic Bay area (Zambales Province) (Devan-Song and Brown 2012) and the Pantabangan-Carranglan Watershed (Nueva Ecija Province) (Gojo Cruz et al. 2018). We encountered two individuals near stream banks along with several individuals of *P. dorsalis*.

Family Dicroglossidae

***Limnonectes woodworthi* (Taylor 1923) (Fig. 4A).**—*Limnonectes woodworthi*, one of 11 congeners, has been recorded on Camiguin Norte, Catanduanes, Luzon, and Polillo (Diesmos et al. 2015). This fanged frog primarily inhabits riparian environments (Inger 1954) and has been reported to oviposit on stream banks as well as in shallow pools (Brown et al. 2000; Binaday 2018). In addition, Brown et al. (2013) noted that *L. woodworthi* is common in mountain streams across Luzon. This species is hunted as bushmeat for local consumption (Scheffers et al. 2012). We documented a single individual near a stream bank on a lower elevation of Mt. Arayat.

***Occidozyga laevis* (Günther 1858) (Fig. 4B).**—This small dicroglossid is one of two species of the genus *Occidozyga* recorded in the Philippines (the other is the endemic *Occidozyga diminutiva*) (Diesmos et al. 2015). It is endemic in Southeast Asia and has been recorded in Brunei, Indonesia, Malaysia, Philippines, Singapore, and Thailand (IUCN SSC Amphibian Specialist Group 2022). *Occidozyga laevis* is widely distributed across the Philippines and known to occur on Alabat, Balabac, Bohol, Bonoon, Busuanga, Cagraray, Calagnaan, Calauit, Camiguin Sur, Catanduanes, Cebu, Coron, Dinagat, Guimaras, Inampulugan, Leyte, Lubang, Luzon, Marinduque, Masbate, Mindanao, Mindoro, Negros, Palawan, Panay, Polillo, the Romblon Island Group, Samar, Sicogon, and the Sulu Archipelago (Diesmos et al. 2015), where it exploits a wide variety of habitats ranging from forested areas to agricultural lands and shallow temporary pools (Inger 1954; Sanguila et al. 2016). Furthermore, *O. laevis* in the Philippines tends to exhibit high phenotypic variability that sometimes results in taxonomic confusion with other Sundaic species such as *O. sumatrana* (Chan et al. 2020). We documented several individuals in agricultural areas and shallow ephemereal puddles in the vicinity of Mt. Arayat.

Family Microhylidae

***Kaloula kalingensis* Taylor 1922 (Fig. 4C).**—This mountain-dwelling species was first described based on a gravid female collected in 1920 from the Municipality of Balbalan,

Figure 4. Some amphibians on Mt. Arayat and vicinity: *Limnonectes woodworthi* (A); *Occidozyga laevis* (B); *Kaloula kalingensis* (C); *Kaloula pulchra* (D).

Kalinga Province (Taylor 1922a). It was previously considered a subspecies of *Kaloula baleata* by Inger (1954) before being re-elevated to species by Ross and Gonzales (1992). This arboreal microhylid usually has been observed in water-filled tree holes and phytotelmata (Brown et al. 2000) and is known to provide parental care of tadpoles (Willis 2012). *Kaloula kalingensis* is an endemic confined to the Greater Luzon faunal region and has been recorded on the islands of Luzon and Palaui, a small island and a protected area under the jurisdiction of Cagayan Province (Diesmos et al. 2015). On Luzon, *K. kalingensis* has been documented in mountainous regions of several provinces including Ilocos Norte, Kalinga, Zambales, Nueva Ecija, Aurora, Laguna, and Quezon (Taylor 1922a; Brown et al. 1996, 2000; Diesmos et al. 2002, 2005; Gojo Cruz et al. 2018; Gonzalez et al. 2020). Recently, Lin and Amarga (2024b) recorded this species on Mt. Arayat, the first published record in Pampanga Province. Blackburn et al. (2013) suggested that this frog represents a species complex.

***Kaloula pulchra* Gray 1831 (Fig. 4D).**—*Kaloula pulchra* is considered a native species in much of southern, eastern, and Southeastern Asia, where it has been recorded in Bangladesh, Brunei, Cambodia, China, Hong Kong, India, Indonesia, Laos, Malaysia, Myanmar, Singapore, Thailand, and Vietnam (Frost 2023). However, it is considered an introduced invasive species on Taiwan (Lee et al. 2019) and in the Philippines (Pili et al. 2019), where it has been recorded on islands that include Boracay, Cebu, Leyte, Luzon, Mindanao, Marinduque, Mindanao, Mindoro, Negros, Palawan, and Samar (Fidenci 2009; Sy 2013; Sy et al. 2014; Diesmos et al. 2015; Sy and Del Prado 2019; Sy and Pernia 2021; Banagudos 2023). According to Diesmos et al. (2006), the introduction of *K. pulchra* might have been a product of the pet trade. We found several individuals near residential areas in the vicinity of Mt. Arayat, a few of which were partially buried in soil.

Family Ranidae

***Hylarana erythraea* (Schlegel 1837) (Fig. 5A).**—*Hylarana erythraea* is a widely distributed species native in a majority of countries in Southeast Asia including Brunei. Cambodia, Indonesia, Laos, Malaysia, Singapore, and Vietnam (Frost 2023). It was unintentionally introduced into the Philippines in the 1800s via the agricultural trade (Pili et al. 2019). Inger (1954) inferred that populations in the Philippines might have originated from Borneo. Currently, *H. erythraea* has been reported on several islands in the archipelago including Borocay, Calagnaan, Guimaras, Leyte, Luzon, Masbate, Mindoro, Negros, Panay, the Romblon Island Group, and Samar (Diesmos et al. 2015). This species usually inhabits open grasslands with ephemeral ponds, agricultural areas, and irrigation ditches (Al-Ghaferi et al. 2010; Devan-Song and Brown 2012). We encountered several individuals in lowlands near Mt. Arayat, especially in grasslands with ephemeral water sources and irrigated areas.

***Sanguirana luzonensis* (Boulenger 1896).**—This stream frog is highly polymorphic (McLeod et al. 2011) and is distributed throughout the Luzon Faunal Region (Diesmos et al. 2015). It has been reported on Catanduanes, Luzon, Marinduque, and Polillo (Diesmos et al. 2015), where it is common in riparian habitats in pristine forests at mid- to high elevations but it also can tolerate high levels of disturbance (Brown et al. 2013). *Sanguirana luzonensis* was first recorded near Mt. Arayat by Lin et al. (2024a), who described individuals perching on boulders near stream banks at lower elevations.

Family Rhacophoridae

***Polypedates leucomystax* (Gravenhorst 1829) (Fig. 5B).**—This species is native to Southeast Asia and its range extends to China and India (IUCN SSC Amphibian Specialist Group 2023). It is, however, considered an introduced species in Japan (Kuraishi et al. 2009), where it was first reported in the

Figure 5. Some amphibians on Mt. Arayat and vicinity: *Hylarana erythraea* (A); *Polypedates leucomystax* (B).

Ryukyus Archipelago (Kuramoto 1965). In the Philippines, *P. leucomystax* is known to occur on Batan, Bohol, Cagayan, Cagraray, Calagnaan, Caluya, Camiguin Norte, Camiguin Sur, Catanduanes, Cebu, Dinagat, Fuga, Gigantes Norte, Gigantes Sur, Guimaras, Inampulugan, Jolo, Leyte, Lubang, Luzon, Mactan, Marinduque, Masbate, Mindanao, Mindoro, Negros, Pacijan, Palaui, Palawan, Pan de Azucar, Panay, Polillo, the Romblon Island Group, Samar, Semirara, Sibay, Sicogan, and Verde (Diesmos et al. 2015). *Polypedates leucomystax* inhabits lowland secondary forests and vegetation near streams as well as in agricultural areas and areas near human habitation (Ibrahim et al. 2008; Devan-Song and Brown 2012; Gojo Cruz et al. 2018). We encountered a few individuals at lower elevations and on vegetation near residential areas at the base of the mountain.

REPTILIA

Family Agamidae

***Bronchocela marmorata* Gray 1845.**—*Bronchocela marmorata* is the only endemic species among the three B*ronchocela* recorded in the Philippines (Uetz et al. 2023). It was first described from the materials collected by the prolific British collector Hugh Cuming during his expedition in the Philippines (Gray 1845). This species has a wide distribution range and has been recorded in several islands including Catanduanes, Caramoan, Luzon, Mindoro, Polillo, Sibuyan, and Tablas (Hallermann 2005; Siler et al. 2012b; Clores et al. 2021). It usually inhabits lowland secondary to mid-elevation montane forests as well as disturbed habitats including forest edges bordering agricultural areas (Siler et al. 2012b) where it was observed perching on exposed tree branches for basking. Furthermore, *B. marmorata* represents a cryptic species complex and warrants further taxonomic evaluation (McLeod et al. 2011; Siler et al. 2012b). We encountered a single individual perching on the tree in mid-elevation of Mt. Arayat.

***Draco spilopterus* (Wiegmann 1834) (Fig. 6A).**—This species was first described under the now defunct genus *Dracunculus* from a specimen collected in Manila, Philippines (Wiegmann 1834). Among the Philippine species of *Draco*, *D. spilopterus* has the widest distribution range and has been reported in different islands including Catanduanes, Cebu, Guimaras, Luzon, Marinduque, Masbate, Negros, Panay, Polillo, and Siquijor (McGuire and Alcala 2000). Within its range, this species is known to inhabit coconut plantations in agricultural areas and agroforests (McGuire and Alcala 2000) and mainly feed on ants (Tabug et al. 2018). Interestingly, Supsup et al. (2016) collected a specimen at a cave opening in Cebu. Furthermore, McGuire and Heang (2001) suggested that *D. spilopterus* in the Philippines represents a species complex. We encountered a single individual climbing on a tree trunk around mid-day.

Figure 6. Some reptiles on Mt. Arayat and vicinity: *Draco spilopterus* (A); *Dendrelaphis luzonensis* (B); *Gonyosoma oxycephalum* (C); *Otosaurus cumingii* (D).

Family Colubridae

***Boiga dendrophila divergens* Taylor 1922.**—This one of four subspecies of *B. dendrophila* in the country has been recorded on Luzon and nearby islands, Mindoro, and the Babuyan Group of Islands (Leviton et al. 2018). It is abundant in coastal habitats but also has been recorded in low-elevation riparian habitats (Brown et al. 2013). This taxon was first reported on Mt. Arayat by Lin et al. (2024b), who described a single individual encountered at night foraging on boulders near a stream bank.

***Dendrelaphis luzonensis* Leviton 1961 (Fig. 6B).**—This Philippine endemic is assigned to the *Dendrelaphis caudolineatus* group, a species complex endemic to Southeast Asia (Van Rooijen and Vogel 2012). Prior to its elevation, *D. luzonensis* was described as a subspecies of *D. caudolineatus* (Leviton 1961). This diurnal species is currently distributed on Luzon Island (from the Tayabas Isthmus northward) (Van Rooijen and Vogel 2012), and also has been reported on the Babuyan Island group and Marinduque (Leviton et al. 2018) and Sibuyan Island (Meneses et al. 2022). Lin and Amarga (2024a) recently recorded *D. luzonensis* on Mt. Arayat, the first published record in Pampanga Province. The individual was documented near the forest edge.

***Gonyosoma oxycephalum* (Boie 1827) (Fig. 6C).**—*Gonyosoma oxycephalum* is a large arboreal colubrid native to continental and maritime Southeast Asia, where it has been recorded in Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam (Uetz et al. 2023). It was first described as *Coluber oxycephalus* based on the material collected on the island of Java (Indonesia) (Boie 1827). In the Philippines, it is the sole representative of the genus *Gonyosoma* (Weinell et al. 2019) and has been recorded on the Babuyan Islands, Balabac, Batan, Bohol, Dinagat, Leyte, Lubang, Luzon, Marinduque, Mindanao, Negros, Palawan, Panay, Sabtang, Sibuyan, and the Sulu Archipelago (Taylor 1922b; Leviton et al. 2018; Weinell et al. 2019). Taylor (1922b) noted that *G. oxycephalum* feeds primarily on small mammals and birds, including squirrels and woodpeckers (Quan 2018; Fernando and Sy 2019). We found a single individual on a Tamarind Tree (*Tamarindus indica*) approximately 10 m above the ground.

Family Gekkonidae

***Cyrtodactylus philippinicus* (Steindachner 1867) (Fig. 7A).**—*Cyrtodactylus philippinicus*, first described in the genus *Gymnodactylus* from a specimen collected from an unspecified locality in the Philippines (Steindachner 1867), was placed in the genus *Cyrtodactylus* by Kluge (1993). In the Philippines this species has been recorded on Babuyan Claro (Oliveros et al. 2011), Camiguin Norte (Oliveros et al. 2011), Catanduanes (Welton et al. 2010), Cebu (Supsup et al. 2016), Lubang (Siler et al. 2010), Luzon (Siler et al. 2010; Binaday et al. 2017), Mindoro (Siler et al. 2010), Negros (Siler et al. 2010), Panay (Gaulke 2011; Amarga 2023), Polillo (Welton et al. 2010), and the Romblon Island Group (Siler et al. 2012b; Meneses et al. 2022), where it inhabits

Figure 7. Some reptiles on Mt. Arayat and vicinity: *Cyrtodactylus philippinicus* (A); *Gekko gecko* (B); *Gekko mindorensis* (C); *Trimeresurus flavomaculatus* (D).

forested areas and vegetation in riparian areas (Brown et al. 2000). Due to its extensive distribution and ability to tolerate disturbance, *C. philippinicus* is designated as Least Concern (Brown et al. 2012). We encountered several individuals in secondary forest at mid-elevations.

***Gekko gecko* (Linnaeus 1758) (Fig. 7B).**—This gecko species is widely distributed in southern and southeastern Asia and its range extends to southern China and Taiwan (Uetz et al. 2023). It is infrequently encountered in forested areas but is abundant near human settlements, particularly on man-made structures such as posts and buildings (Aowphol et al. 2006; Brown et al. 2013). *Gekko gecko* is considered as an aggressive generalist predator and is known to prey on many invertebrates (Aowphol et al. 2006) and small vertebrates such as swiftlets and rats (Bucol and Alcala 2013; Quah and Chong 2023). These geckos have been heavily exploited for traditional medicine (particularly Chinese medicine) resulting in declines of local populations (Bauer 2009; Caillabet 2013). We encountered this species in agroforested area at lower elevations on Mt. Arayat as well as a single individual living in the office of a forest ranger.

***Gekko mindorensis* Taylor, 1919 (Fig. 7C).**—*Gekko mindorensis*, one of 16 species in the genus *Gekko* recorded in the Philippines (Uetz et al. 2023), was first described from a specimen collected at Pocanil Point, Mindoro Oriental, in 1916 (Taylor 1919). This widely distributed Philippine endemic is known to occur on Batan, Camiguin Sur, Cebu (Supsup et al. 2016), Guimaras (Brown et al. 2008; Linkem et al. 2010), Lubang (Brown et al. 2008; Linkem et al. 2010), Luzon (Brown et al. 1996), Masbate (Brown et al. 2008; Linkem et al. 2010), Mindanao, Mindoro (Taylor 1919), Negros (Brown et al. 2008; Linkem et al. 2010), and Panay (Brown et al. 2008; Linkem et al. 2010). It typically inhabits boulders, karst formations, and tree trunks (Ferner et al. 2000; Supsup et al. 2016). Recent molecular analyses revealed that *G. mindorensis* represents a species complex (Siler et al. 2012a; Siler et al. 2014). We encountered a few individuals in crevices of large boulders in secondary forest on Mt. Arayat.

***Hemidactylus frenatus* Duméril and Bibron 1836.—**This common synanthropic gecko is widely distributed across tropical Asia, northern Australia, and several Pacific islands (Bauer 1994; Uetz et al. 2023). *Hemidactylus frenatus* is considered an introduced species in the Americas, where it has been reported in Belize, Colombia, Ecuador, Guatemala, Honduras, Mexico, Panama, and the United States (Torres-Carvajal 2015; Uetz et al. 2023). Outside its native range, populations expand rapidly and it frequently competes with native lizards (Torres-Carvajal 2015; Weterings and Vetter 2018). Often associated with man-made structures, where it forages at night for insects (Brown et al. 2000; Devan-Song and Brown 2012), we encountered several individuals, often on lamp posts, in residential areas and in the vicinity of the forest ranger's office.

***Hemidactylus platyurus* (Schneider 1797).**—This species often is syntopic with *H. frenatus* on man-made structures in residential areas (Devan-Song and Brown 2012; Supsup et al. 2016). It is widely distributed in the Philippine archipelago. In agricultural areas, *H. platyurus* can be encountered perching on coconut tree trunks, in leaf axils, and on small branches. We encountered individuals along with *H. frenatus* in residential areas.

Family Scincidae

***Eutropis multifasciata* (Kuhl 1820).**—*Eutropis multifasciata* is a diurnally active, predominantly Southeast Asian skink known to occur in a wide range of habitats ranging from lowland tropical forest to agricultural land, disturbed riparian zones, and gardens (Shea et al. 2018). Conspicuous intrapopulational color polymorphism is evident, particularly on lateral surfaces (Brown et al. 2013). In the Philippines, the species has been recorded on Balabac, Bohol, Camiguin Sur, Cebu, Leyte, Luzon, Mindanao, Negros, Palawan, Panay, and the Romblon Island Group (Boulenger 1894; Brown and Alcala 1980; Ross 1990; Ferner et al. 2000; Sanguila et al. 2016; Supsup et al. 2016, 2020; Venturina et al. 2020; Meneses et al. 2022; Decena et al. 2023). We encountered several individuals in agroforest (including the small area of bamboo thickets) and grasslands at lower elevations on Mt. Arayat.

***Otosaurus cumingii* (Gray 1845) (Fig. 6D).**—This ground-dwelling endemic is widely distributed in the Philippines and has been recorded on Bohol, Calotcot, Dinagat, Mindanao, Mindoro, Sibuyan, and Sicogon (Siler et al. 2012b; Uetz et al. 2023). It inhabits secondary forest and forest edges (Brown et al. 2000) as well as karst environments (Del Prado et al. 2018). It is usually encountered at elevation of 200–500 m asl (Brown et al. 2013), where it typically forages on the forest floor and logs around midday (Brown and Alcala 1980; Brown et al. 2013). We encountered a few individuals in secondary forest with another skink, *P. abdictus aquilonius*.

***Pinoyscincus abdictus aquilonius* (Brown and Alcala 1980).**—One of two subspecies of the endemic diurnally active skink *Pinoyscincus abdictus* in the Philippines (the other is *P. a. abdictus*) (Linkem et al. 2011; Uetz et al. 2023), this taxon was first described as *Sphenomorphus abdictus* (Brown and Alcala 1980). Linkem et al. (2011) revisited the systematics of Philippine *Sphenomorphus* and established the genus *Pinoyscincus*. This subspecies is endemic to the Greater Luzon faunal region (Brown et al. 2010) and has been reported in the Babuyan Island group (Oliveros et al. 2011), and on Luzon (Brown et al. 1996, 2000, 2012) and Polillo (Gojo Cruz et al. 2016). It typically occurs at low- to mid-elevation (300–1,000 m asl) tropical lowland forest where it inhabits soil and leaf litter (Brown and Alcala 1980; Brown et al. 1996; Oliveros et al. 2011). Gojo Cruz et al. (2018) recorded

P. abdictus aquilonius in slightly disturbed mixed vegetation, indicating a degree of tolerance of anthropogenic disturbance. We encountered this species foraging in the leaf litter in secondary forest on Mt. Arayat.

Family Viperidae

***Trimeresurus flavomaculatus* (Gray 1842) (Fig. 7D).—**This endemic Philippine pitviper occurs throughout Luzon, Visayas, and Mindanao (Leviton et al. 2018). It is highly polymorphic in body coloration (Siler et al. 2011). *Trimeresurus flavomaculatus* is arboreal and is commonly encountered sleeping in trees, particularly in riparian habitats in secondary forests (Brown et al. 2012). We encountered one individual in a sapling about 0.5 m above the ground along a hiking trail on Mt. Arayat.

This checklist provides baseline information on the amphibians and reptiles in Mt. Arayat National Park and vicinity. Other than accounts of *Boiga dendrophila divergens*, *Dendrelaphis luzonensis*, *Kaloula kalingensis,* and *Sanguirana luzonensis* in Lin and Amarga (2024a, 2024b) and Lin et al. (2024a, 2024b), all species listed are the first local records for Mt. Arayat National Park and its vicinity. Due to the limited fieldwork, this account of the herpetofauna of Mt. Arayat and vicinity is far from complete. We strongly encourage more fieldwork to further document the species occurring in the area. We anticipate that such efforts would record additional herpetofaunal species inhabiting the Luzon PAIC including *Ahaetulla prasina* (Boie 1827), *Coelognathus erythrurus manillensis* Jan 1863, *Fejervarya vittigera* (Wiegmann 1834), *Gehyra mutilata* (Wiegmann 1834), *Hydrosaurus pustulatus* (Eschscholtz 1829), *Kaloula picta* (Duméril and Bibron 1841), *Lamprolepis smaragdina* (Lesson 1829), *Lipinia pulchella* (Gray 1845), *Lycodon capucinus* Boie 1827, *Malayopython reticulatus* (Schneider 1801), *Oligodon ancorus* (Girard 1858), *Ptyas luzonensis* (Günther 1873), and *Varanus marmoratus* (Wiegmann 1834). We also expect that fossorial species such as *Indotyphlops braminus* (Daudin 1803) and *Malayotyphlops ruficauda* (Gray 1845) are present

Table 1. Herpetofauna encountered in Mt. Arayat National Park and vicinity.

Family	Species	Status
Bufonidae	*Rhinella marina*	Introduced
Ceratobatrachidae	*Platymantis dorsalis*	Philippine endemic
	Platymantis corrugatus	Philippine endemic
	Platymantis mimulus	Luzon endemic
Dicroglossidae	*Limnonectes woodworthi*	Philippine endemic
	Occidozyga laevis	Native
Microhylidae	*Kaloula kalingensis*	Luzon endemic
	Kaloula pulchra	Introduced
Ranidae	*Hylarana erythraea*	Introduced
	Sanguirana luzonensis	Luzon endemic
Rhacophoridae	*Polypedates leuomystax*	Native
Agamidae	*Bronchocela marmorata*	Philippine endemic
	Draco spilopterus	Native
Colubridae	*Boiga dendrophila divergens*	Philippine endemic subspecies
	Dendrelaphis luzonensis	Luzon endemic
	Gonyosoma oxycephalum	Native
Gekkonidae	*Cyrtodactylus philippinicus*	Philippine endemic
	Gekko gecko	Native
	Gekko mindorensis	Philippine endemic
	Hemidactylus frenatus	Native
	Hemidactylus platyurus	Native
Scincidae	*Eutropis multifasciata*	Native
	Otosaurus cumingii	Philippine endemic
	Pinoyscincus abdictus aquilonius	Philippine endemic
Viperidae	*Trimeresurus flavomaculatus*	Philippine endemic

in the area. In addition, because of its location and unique geological history, we suggest that Mt. Arayat might harbor yet undescribed species. The potential role of Mt. Arayat as a refugium for herpetofauna with limited dispersal capabilities also merits investigation, as do topics that include population dynamics of both native and introduced species and the comparative acoustic diversity of amphibians and its role in biomonitoring and conservation assessments.

None of the documented species were classified as threatened on the IUCN Red List (IUCN 2023). However, *Boiga dendrophila* (Mangrove Snake), *Bronchocela marmorata* (Marbled Bloodsucker), *Gekko gecko* (Tokay Gecko), *Gonyosoma oxycephalum* (Green Red-tailed Ratsnake), and *Trimeresurus flavomaculatus* (Philippine Pitviper) were listed as Other Threatened Species (OTS) in DENR Administrative Order 2019-9 (DENR 2019). Furthermore, residents of local communities inhabiting Mt. Arayat and vicinity might exploit certain herpetofaunal species for bushmeat, as has been recorded in many Asian countries (Klemens and Thorbjarnarson 1995; Kusrini 2005), and some species are known to be sold to the local markets as ingredients of exotic cuisines (Grano 2020). In the Philippines, known herpetofaunal bushmeat includes fanged frogs (*Limnonectes* spp.), pythons, monitor lizards (*Varanus* spp.), and even cobras (Scheffers et al. 2012; Welton et al. 2013), possibly providing an available avenue for investigation on ethnozoological insights of local residents with reference to herpetofaunal bushmeat utilization, sustainability, and conservation in Mt. Arayat National Park and vicinity.

Acknowledgements

We thank the Department of Environment and Natural Resources–Biodiversity Management Bureau (Manila, Philippines) for providing permits for fieldwork and collection (Wildlife Gratuitous Permit No. 320); members of our expedition team, Dr. Jing-Fu Tsai (National Museum of Natural Science), Dr. Hui-Yun Tseng (National Taiwan University), Dr. Yu-Feng Hsu (National Taiwan Normal University), Erin Krichilsky (American Museum of Natural History), Zong-Yu Shen (Academia Sinica), Larry Cahilog (Mt. Hamiguitan Range Wildlife Sanctuary), and Edsel Alfie Lao (Wild Expeditions Palawan) for assistance during fieldwork; our local collaborators, Mr. Wilson Xavier Eloreta (DENR Region III Office), and Mr. Luisito Terbio (Pampanga State Agricultural University) for assistance with logistics and accommodation; Dr. Rafe M. Brown (Department of Ecology & Evolutionary Biology, University of Kansas, Lawrence, Kansas, USA) for confirming the identities of our samples, and Mr. Christian Supsup (Department of Ecology & Evolutionary Biology, University of Kansas) for providing the map in Fig. 1.

Literature Cited

Alcala, A.C. and W.C. Brown. 1998. *Philippine Amphibians: An Illustrated Field Guide*. Bookmark Inc. Press, Makati, The Philippines.

Alcala, A.C. and W.C. Brown. 1999. Philippine frogs of the genus *Platymantis* (Amphibia: Ranidae). *Philippine Journal of Science* 128: 281–287.

Al-Ghaferi, N., J. Koloziejek, N. Nowotny, L. Coquet, T. Jouenne, J. Leprince, H. Vaudry, J.D. King, and J.M. Conlon. 2010. Antimicrobial peptides from the skin secretions of the South-East Asian frog *Hylarana erythraea* (Ranidae). *Peptides* 31: 548–554. https://doi.org/10.1016/j.peptides.2009.12.013.

Amarga, A.K.S. 2023. First record of Philippine bent-toed gecko (*Cyrtodactylus philippinicus*) (Squamata: Gekkonidae) in Upper Jalaur Watershed, Panay Island, Philippines. *Southeast Asia Vertebrate Records* 2023: 7–9.

Aowphol, A., K. Thirakhupt, J. Nabhitabhata, and H.K. Voris. 2006. Foraging ecology of the Tokay gecko, *Gekko gecko* in a residential area in Thailand. *Amphibia-Reptilia* 27: 491–503. https://doi.org/10.1163/156853806778877121.

Bagunu, J.V., E.V. Totaan, V.T. Bagunu, G.M. Calaguas, N.B. Supan, and Z.F. Liwanag. 2018. Ethnobotany of traditional medicinal plants of Mount Arayat, Pampanga, Philippines. *Journal of Traditional Medicine & Clinical Naturopathy* 7: 30. https://doi.org/10.4172/2573-4555-C3-009.

Banagudos, J.K.G. 2023. First record of Asiatic painted frog (*Kaloula pulchra*) on Negros Island, Philippines. *Southeast Asia Vertebrate Records* 2023: 21–22.

Bau, M. and U. Knittel. 1993. Significance of slab-derived partial melts and aqueous fluids for the genesis of tholeiitic and calc-alkaline island-arc basalts: Evidence from Mt. Arayat, Philippines. *Chemical Geology* 105: 233–251. https://doi.org/10.1016/0009-2541(93)90128-6.

Bauer, A.M. 1994. *Gekkonidae. Part 1. Australia and Oceania*. Das Tierreich 109. Walter De Gruyter Publishers, Berlin, Germany.

Bauer, A.M. 2009. Geckos in traditional medicine: forensic implications. *Applied Herpetology* 6: 81–96. https://doi.org/10.1163/157075408X397509.

Binaday, J.W.B. 2018 Observations on the nest of Woodworth's frog *Limnonectes woodworthi* and predation of its eggs by ants. *Southeast Asia Vertebrate Records* 2018: 40–43.

Binaday, J.W.B., A.K.S. Amarga, E.S. Barrameda, Jr., and B.J.M. Bonagua. 2017. Amphibians and reptiles in the vicinity of Bulusan Lake, Bulusan Volcano Natural Park, Sorsogon, Philippines. *Philippine Journal of Science* 146: 339–351.

Blackburn, D.C., C.D. Siler, A.C. Diesmos, J.A. McGuire, D.C. Cannatella, and R.M. Brown. 2013. An adaptive radiation of frogs in a Southeast Asian island archipelago. *Evolution* 67: 2631–2646. https://doi.org/10.1111/evo.12145.

Boie, F. 1827. Bemerkungen über Merrem's Versuch eines Systems der Amphibien, 1. Lieferung: Ophidier. *Isis von Oken* 20: 508–566.

Bösenberg, J.D. 2023. Bayit. *Cycas riuminiana*. *The IUCN Red List of Threatened Species* 2023: e.T239047689A69155789. https://dx.doi.org/10.2305/IUCN.UK.2023-1.RLTS.T239047689A69155789.en.

Boulenger, G.A. 1894. XIV.—On the herpetological fauna of Palawan and Balabac. *Journal of Natural History* 14: 81–89.

Brown, R.M., J.W. Ferner, R.V. Sison, P.G. Gonzales, and R.S. Kennedy. 1996. Amphibians and reptiles of the Zambales Mountains of Luzon Island, Republic of the Philippines. *Herpetological Natural History* 4: 1–22.

Brown, R.M., C.W. Linkem, A.C. Diesmos, D.S. Balete, M.V. Duya, and J.W. Ferner. 2010. Species boundaries in Philippine montane forest skinks (Genus *Sphenomorphus*): three new species from the mountains of Luzon and clarification of the status of the poorly known *S. beyeri*, *S. knollmanae*, and *S. laterimaculatus*. *Scientific Papers of the Natural History Museum, the University of Kansas* 42: 1–27.

Brown, R.M., J.A. McGuire, J.W. Ferner, N. Icarangal, Jr., and R.S. Kennedy. 2000. Amphibians and reptiles of Luzon Island, II: Preliminary report on the herpetofauna of Aurora Memorial National Park, Philippines. *Hamadryad* 25: 175–195.

Brown, R.M., C.H. Oliveros, C.D. Siler, and A.C. Diesmos. 2008. A new *Gekko* from the Babuyan islands, northern Philippines. *Herpetologica* 64: 305–320. https://doi.org/10.1655/07-078.1.

Brown, RM., C.H. Oliveros, C.D. Siler, J.B. Fernandez, L.J. Welton, P.A.C. Buenavente, M.L.L. Diesmos, and A.C. Diesmos. 2012. 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, R.M., C.D. Siler, C.H. Oliveros, L.J. Welton, A. Rock, J. Swab, M. van Weerd, J. van Beijen, E. Jose, D. Rodriguez, E. Jose, and A.C. Diesmos. 2013. 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, W.C. and A.C. Alcala. 1980. *Philippine Lizards of the Family Scincidae*. Silliman University Press, Dumaguete City, The Philippines.

Brown, W.C., A.C. Alcala, and A.C. Diesmos. 1997. A new species of the genus *Platymantis* (Amphibia: Ranidae) from Luzon Island, Philippines. P*roceedings of the Biological Society of Washington* 110: 18–23.

Bucol, A. and A. Alcala. 2013. Tokay gecko, *Gekko gecko* (Sauria: Gekkonidae) predation on juvenile house rats. *Herpetology Notes* 6: 307–308.

Caillabet, O.S. 2013. *The Trade in Tokay Geckos* Gekko gecko *in South-East Asia: with a Case Study on Novel Medicinal Claims in Peninsular Malaysia*. TRAFFIC, Petaling Jaya, Selangor, Malaysia.

Causaren, R.M. 2009. Preliminary report on the anurans of Mts. Palay-Palay Mataasna-Gulod Protected Landscape, Luzon Island, Philippines. *Philippine Journal of Systematic Biology* 8: 40–56. https://doi.org/10.3860/pjsb.v3i1.1012.

Chan, K.O., S. Schoppe, E.L.B. Rico, and R.M. Brown. 2020. 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(2): 1–14. https://doi.org/10.26757/pjsb2020b14007.

Clores, M.A., J. B. Bautista, J.B. Fernandez, M.A. Cuesta, and R.M. Brown. 2021. Diversity and distribution of amphibians and reptiles in the Caramoan Island Group, Maqueda Channel, Southern Luzon, Philippines. *Journal of Asia-Pacific Biodiversity* 14: 1–14. https://doi.org/10.1016/j.japb.2020.11.005.

Dagamac, N.H., S. Stephenson, and T.E. dela Cruz. 2014. The occurrence of litter Myxomycetes at different elevations in Mt. Arayat National Park, Pampanga, Philippines. *Nova Hedwigia* 98: 187–196. https://doi.org/10.1127/0029-5035/2013/0142.

Dandoy, D.M.S. and A.K.S. Amarga. 2017. Geographic distribution. *Platymantis dorsalis* (Common Forest Frog). *Herpetological Review* 48: 808.

Decena, S.C.P., D.R. Macasait, Jr., and M.S. Arguelles. 2023. Species accounts, assemblage, and microhabitats of amphibians and reptiles of northeastern Leyte, Philippines. *Philippine Journal of Science* 152: 1–34.

Del Prado, Y.L.C., A.N. Pili, N.A.L.E. Caguimbal, C.M.C. Uy, D.M.P. Apo, N.M. Ayuste, K.M.M. De Castro, P.N.K. Supelan, A.C. Diesmos, and M.L.L. Diesmos. 2018. *Otosaurus cumingi* (Philippine Giant Forest Skink). Nest site and environmentally cued hatching. *Herpetological Review* 49: 119–120.

DENR. 2019. *Administrative Order No. 2019-09. Updated National List of Threatened Philippine Fauna and their Categories*. Department of Environment and Natural Resources, Diliman, Quezon City, The Philippines.

Devan-Song, A. and R.M. Brown. 2012. Amphibians and reptiles of Luzon Island, Philippines, VI: The herpetofauna of the Subic Bay Area. *Asian Herpetological Research* 3: 1–20. https://doi.org/10.3724/SP.K.1245.2012.00001.

Diesmos, A.C., J.L. Watters, N.A. Huron, D.R. Davis, A.C. Alcala, R.I. Crombie, L.E. Afuang, G. Gee-Das, R.V. Sison, M.B. Sanguila, M.L. Penrod, M.J. Labomte, C.S. Davey, E.A. Leone, M.L.L. Diesmos, E.Y. Sy, L.J. Welton, R.M. Brown, and C.D. Siler. 2015. Amphibians of the Philippines, part I: Checklist of the species. *Proceedings of the California Academy of Sciences* 62: 457–539.

Diesmos, A.C., M.L.L. Diesmos, and R.M. Brown. 2006. Status and distribution of alien invasive frogs in the Philippines. *Journal of Environmental Science and Management* 9: 41–53.

Diesmos, A.C., R.M. Brown, and A.C. Alcala. 2002. New species of narrow-mouthed frog (Amphibia: Anura: Microhylidae; Genus *Kaloula*) from the mountains of Southern Luzon and Polillo Islands, Philippines. *Copeia* 2002: 1037–1051. https://doi.org/10.1643/0045-8511(2002)002[1037:NSONMF]2.0.CO;2.

Diesmos, A.C., R.M. Brown, and G.V.A. Gee. 2005. Preliminary report on the amphibians and reptiles of Balbalasang-Balbalan National Park, Luzon Island, Philippines. *Technical Journal of Philippine Ecosystems and Natural Resources* 13: 63–80.

Easteal, S. 1981. The history of introductions of *Bufo marinus* (Amphibia: Anura); a natural experiment in evolution. *Biological Journal of the Linnean Society* 16: 93–113. https://doi.org/10.1111/j.1095-8312.1981.tb01645.x.

Fernando, A.G.S. and E.Y. Sy. 2019. Red-tailed Green Ratsnake *Gonyosoma oxycephalum* predation on White-bellied Woodpecker in the Philippines. *Southeast Asia Vertebrate Records* 2019: 33–34.

Ferner, J.W., R.M. Brown, R.V. Sison, and R.S. Kennedy. 2000. The amphibians and reptiles of Panay Island, Philippines. *Asiatic Herpetological Research* 9: 34–70.

Fidenci, P. 2009. Geographic distribution. *Kaloula pulchra* (Asian Painted Frog). *Herpetological Review* 40: 446.

Frost, D.R. 2023. *Amphibian Species of the World: An Online Reference. Version 6.2*. American Museum of Natural History, New York, New York, USA. <https://amphibiansoftheworld.amnh.org/index.php>.

Gaulke, M. 2011. *The Herpetofauna of Panay Island, Philippines. An Illustrated Field Guide*. Edition Chimaira, Frankfurt am Main, Germany.

Gojo Cruz, P.H., L.E. Afuang, J.C.T. Gonzalez, D.G. Tabaranza, M.D. Alejado, M.A. Cajano, and D.L. Afuang. 2016. Diversity and distribution of herpetofauna in Balesin Island, Polillo, Quezon, Philippines. *Sylvatrop* 25: 37–56.

Gojo Cruz, P.H.C., L.E. Afuang, J.C.T. Gonzalez, and W.S. Gruezo. 2018. Amphibians and reptiles of Luzon Island, Philippines: the herpetofauna of Pantabangan-Carranglan Watershed, Nueva Ecija Province, Caraballo Mountain Range. *Asian Herpetological Research* 9: 201–223. https://doi.org/10.16373/j.cnki.ahr.180050.

Gonzalez, J.C.T., A.P.O. de Guia, J.C. Dimalibot, K.V. Pantua, W.O. Gustilo, and N.C. Bantayan. 2020. Understory to canopy vertebrate fauna of a lowland evergreen forest in Mt. Makiling Forest Reserve, Philippines. *Biodiversity Data Journal* 8: e56999. https://doi.org/10.3897/BDJ.8.e56999.

Grano, M. 2020. The Asian market of frogs as food for humans during COVID-19. Risk and consequences for public health. *Medicine Papers* 6(4): 77–87.

Gray, J.E. 1845. *Catalogue of the Specimens of Lizards in the Collection of the British Museum*. Trustees of the British Museum, London, UK.

Hallermann, J. 2005. A taxonomic review of the genus *Bronchocela* (Squamata: Agamidae), with description of a new species from Vietnam. *Russian Journal of Herpetology* 12: 167–182. https://doi.org/10.30906/1026-2296-2005-12-3-167-183.

Ibrahim, H.J., M.S. Shahrul Anuar, A. Norhayati, K.O. Chan, and M.A. Mohd Abdul Muin. 2008. *The Common Amphibians and Reptiles of Penang Island*. The State Forestry Department of Penang, Palau, Penang, Malaysia.

Inger, R.F. 1954. Systematics and zoogeography of Philippine Amphibia. *Fieldiana Zoology* 33: 181–531.

IUCN. 2023. *The IUCN Red List of Threatened Species.* Version 2023-1. <https://www.iucnredlist.org>.

IUCN SSC Amphibian Specialist Group. 2022. Philippine Oriental Frog. *Occidozyga laevis*. *The IUCN Red List of Threatened Species* 2022: e.T138097048A114915577. https://dx.doi.org/10.2305/IUCN.UK.2022-2.RLTS.T138097048A114915577.en.

IUCN SSC Amphibian Specialist Group. 2023. Java Whipping Frog. *Polypedates leucomystax*. *The IUCN Red List of Threatened Species* 2023: e.T73729553A63882856. https://dx.doi.org/10.2305/IUCN.UK.2023-1.RLTS.T73729553A63882856.en.

Klemens, M.W. and J.B. Thorbjarnarson. 1995. Reptiles as a food source. *Biodiversity and Conservation* 4: 281–298. https://doi.org/10.1007/BF00055974.

Kluge, A.G. 1993. *Gekkonid Lizard Taxonomy*. International Gecko Society, San Diego, California, USA.

Kuraishi, N., M. Matsui, and H. Ota. 2009. Estimation of the origin of *Polypedates leucomystax* (Amphibia: Anura: Rhacophoridae) introduced to the Ryukyu Archipelago, Japan. *Pacific Science* 63: 317–325. https://doi.org/10.2984/049.063.0302.

Kuramoto, M. 1965. A record of *Rhacophorus leucomystax* from the Ryukyu Islands. *Bulletin of the Fukuoka Gakugei University Part III* 15: 59–61.

Kusrini, M.D. 2005. Edible Frog Harvesting in Indonesia: Evaluating Its Impact and Ecological Context. Unpublished Ph.D. dissertation, James Cook University, Townsville, Australia.

Lee, K.-H., T.-H. Chen, G. Shang, S. Clulow, Y.-J. Yang, and S.-M. Lin. 2019. A check list and population trends of invasive amphibians and reptiles in Taiwan. *ZooKeys* 829: 85–130. https://doi.org/10.3897/zookeys.829.27535.

Leviton, A.E. 1961. Description of a new subspecies of the Philippine snake *Dendrelaphis caudolineatus*. *Occasional Papers of the Natural History Museum of Standford University* 9: 1–6.

Leviton, A.E., C.D. Siler, J.L. Weinell, and R.M. Brown. 2018. Synopsis of the snakes of the Philippines. A synthesis of data from biodiversity repositories, field studies, and the literature. *Proceedings of the California Academy of Sciences* 64: 399–568.

Lin, Y.-S. and A.K.S. Amarga. 2024a ("2023"). Geographic distribution.

Dendrelaphis luzonensis (Luzon Bronzeback Tree Snake). *Herpetological Review* 54: 404.

Lin, Y.-S. and A.K.S. Amarga. 2024b ("2023"). Geographic distribution. *Kaloula kalingensis* (Kalinga Narrowmouth Toad). *Herpetological Review* 54: in press.

Lin, Y.-S., C.-C. Shen, and A.K.S. Amarga. 2024a ("2023"). Geographic distribution. *Sanguirana luzonensis* (Luzon Stream Frog). *Herpetological Review* 54: in press.

Lin, Y.-S., J.W. Binaday, and A.K.S. Amarga. 2024b ("2023"). Geographic distribution. *Boiga dendrophila divergens* (Luzon Mangrove Snake). *Herpetological Review* 54: in press.

Linkem, C.W., A.C. Diesmos, and R.M. Brown. 2011. Molecular systematics of the Philippine forest skinks (Squamata: Scincidae: *Sphenomorphus*): testing morphological hypotheses of interspecific relationships. *Zoological Journal of the Linnean Society* 163: 1217–1243. https://doi.org/10.1111/j.1096-3642.2011.00747.x.

Linkem, C.W., C.D. Siler, A.C. Diesmos, E. Sy, and R.M. Brown. 2010. A new species of Gekko (Squamata: Gekkonidae) from central Luzon Island, Philippines. *Zootaxa* 2396: 37–49. https://doi.org/10.11646/zootaxa.2396.1.3.

McGuire, J.A. and A.C. Alcala. 2000. A taxonomic revision of the flying lizards (Iguania: Agamidae: *Draco*) of the Philippines islands, with a description of a new species. *Herpetological Monographs* 14: 81–138. https://doi.org/10.2307/1467046.

McGuire, J.A. and K.B. Heang. 2001. Phylogenetic systematics of Southeast Asian flying lizards (Iguania: Agamidae: *Draco*) as inferred from mitochondrial DNA sequence data. *Biological Journal of the Linnean Society* 72: 203–229. https://doi.org/10.1111/j.1095-8312.2001.tb01312.x.

McLeod, D.S., C.D. Siler, A.C. Diesmos, M.L. Diesmos, V.S. Garcia, A.O. Arkonceo, K.L. Balaquit, C.C. Uy, M.M. Villaseran, E.C. Yarra, and R.M. Brown. 2011. Amphibians and reptiles of Luzon Island, V: The herpetofauna of Angat Dam Watershed, Bulacan Province, Luzon Island, Philippines. *Asian Herpetological Research* 2: 117–198. https://doi.org/10.3724/SP.J.1245.2011.00177.

Meneses, C.G., C.D. Siler, P.A. Alviola, J.B. Balatibat, J.C.T. Gonzalez, C.A. Natividad, and R.M. Brown. 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: 941–984. https://doi.org/10.15560/18.5.941.

Merino, G. 1936. Introduction of the giant toad, *Bufo marinus*, into the Philippines. *The Philippine Journal of Agriculture* 7: 283–286.

Oliveros, C.H., H. Ota, R.I. Crombie, and R.M. Brown. 2011. The herpetofauna of the Babuyan Islands, northern Philippines. *Scientific Papers of the Natural History Museum, The University of Kansas* 43: 1–20.

Pili, A.N., C.E. Supsup, E.Y. Sy, M.L.L. Diesmos, and A.C. Diesmos. 2019. Spatial dynamics of invasion and distribution of alien frogs in a biodiversity hotspot archipelago, pp. 337–347. In: C.R. Veitch, M.N. Clout, A.R. Martin, J.C. Russell, and C.J. West (eds.), *Island Invasives: Scaling Up to Meet the Challenge. Proceedings of the International Conference on Island Invasives 2017*. Occasional Paper of the IUCN Species Survival Commission No. 62, Gland, Switzerland.

Quah, E.S.H. and J.L. Chong. 2023. Reptile predators of swiftlets (genus *Aerodramus*) with a focus on their impacts on the swiftlet farming industry. *Herpetology Notes* 16: 457–462.

Quan, M.T.M. 2018. Red-tailed racer predating on plantain squirrel. *Singapore Biodiversity Records* 2018: 55–56.

Ross, C.A. 1990. Amphibians and reptiles of Dinagat and Siargao Islands, Philippines. *Philippine Journal of Science* 119: 257–286.

Ross, C.A. and P.C. Gonzales. 1992. Amphibians and reptiles of Catanduanes Island, Philippines. *National Museum Papers* 2: 50–76.

Sanguila, M.B., K.A. Cobb, C.D. Siler, A.C. Diesmos, A.C. Alcala, and R.M. Brown. 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.

Scheffers, B.R., R.T. Corlett, A. Diesmos, and W.F. Laurance. 2012. Local demand drives a bushmeat industry in a Philippine forest preserve. *Tropical Conservation Science* 5: 133–141. https://doi.org/10.1177/194008291200500203.

Shea, G., A. Allison, O. Tallowin, J. McGuire, D. Iskandar, B. Cai, Y. Wang, J. Yang, and G. Shang. 2018. Common Mabuya. *Eutropis multifasciata*. *The IUCN Red List of Threatened Species* 2018: e.T195295A2376842. https://dx.doi.org/10.2305/IUCN.UK.2018-2.RLTS.T195295A2376842.en.

Siler, C.D., J.R. Oaks, K. Cobb, H. Ota, and R.M. Brown. 2014. Critically endangered island endemic or peripheral population of a widespread species? Conservation genetics of Kikuchi's gecko and the global challenge of protecting peripheral oceanic island endemic vertebrates. *Diversity and Distributions* 20: 756–772. https://doi.org/10.1111/ddi.12169.

Siler, C.D., J.R. Oaks, J.A. Esselstyn, A.C. Diesmos, and R.M. Brown. 2010. Phylogeny and biogeography of Philippine bent-toed geckos (Gekkonidae: *Cyrtodactylus*) contradict a prevailing model of Pleistocene diversification. *Molecular Phylogenetics and Evolution* 55: 699–710. https://doi.org/10.1016/j.ympev.2010.01.027.

Siler, C.D., L.J. Welton, J.M. Siler, J. Brown, A. Bucol, A.C. Diesmos, and R.M. Brown. 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.

Siler, C.D., J.R. Oaks, L.J. Welton, C.W. Linkem, J.C. Swab, A.C. Diesmos, and R.M. Brown. 2012a. Did geckos ride the Palawan raft to the Philippines. *Journal of Biogeography* 39: 1217–1234. https://doi.org/10.1111/j.1365-2699.2011.02680.x.

Siler, C.D., J.C. Swab, C.H. Oliveros, A.C. Diesmos, L. Averia, A.C. Alcala, and R.M. Brown. 2012b. Amphibians and reptiles, Romblon Island Group, central Philippines: comprehensive herpetofaunal inventory. *Check List* 8: 443–462. https://doi.org/10.15560/8.3.443.

Steindachner, F. 1867. 3. Reptilien, 98 pp. + 3 plates. In: B. von Wüllerstorf-Ubair, *Reise der Österreichischen Fregatte Novara um die Erde in den Jahren 1857, 1858, 1859. Zoologischer Theil. Erster Band (Wirbelthiere)*. Kaiserlichen Akademie der Wissenschaften, Wien (Vienna), Austria.

Suba, M.D.L., A.H. Arriola, and G.J. Alejandro. 2019a. A checklist and conservation status of the medicinal plants of Mount Arayat National Park, Pampanga, Philippines. *Biodiversitas* 20: 1034–1041. https://doi.org/10.13057/biodiv/d200414.

Suba, M.D.L., A.H. Arriola, and G.J. Alejandro. 2019b. A preliminary checklist of vascular plants of Mt. Arayat National Park, Pampanga, Philippines. *Biodiversity Journal* 10: 37–46. https://doi.org/10.31396/Biodiv.Jour.2019.10.1.37.46.

Suba, M.D.L., N.R.P. Arcangel, J.T. Jalipa, J.G.L. Jurilla, J.M.J. Villaseñor, A.H. Arriola, and G.J.D Alejandro. 2020. *Pyrostria arayatensis* (Vanguerieae, Rubiaceae), a new species from Mt. Arayat National Park, Pampanga, Philippines. *Annales Botanici Fennici* 57: 309–312. https://doi.org/10.5735/085.057.0414.

Supsup, C.E., A.A. Asis, U.V. Carestia Jr., A.C. Diesmos, N.A.D. Mallari, and R.M. Brown 2020. Variation in species richness, composition and herpetological community structure across a tropical habitat gradient of Palawan Island, Philippines. *Herpetozoa* 33: 95–111. https://doi.org/10.3897/herpetozoa.33.e47293.

Supsup, C.E., N.M. Puna, A.A. Asis, B.R. Redoblado, M.F.G. Panaguinit, F.M. Guinto, E.B. Rico, A.C. Diesmos, R.M. Brown, and N.A.D. Mallari. 2016. Amphibians and reptiles of Cebu, Philippines: The poorly understood herpetofauna of an island with very little remaining natural habitat. *Asian Herpetological Research* 7: 151–179. https://doi.org/10.16373/j.cnki.ahr.150049.

Sy, E.Y. 2013. Geographic distribution. *Kaloula pulchra* (Asiatic Painted Frog). *Herpetological Review* 44: 621.

Sy, E.Y. and Y.L.C. Del Prado. 2019. New distributional records of introduced frogs on Leyte Island, Philippines. *Southeast Asia Vertebrate Records* 2019: 65–67.

Sy, E.Y. and M. Pernia. 2021. First record of Asiatic painted frog *Kaloula pulchra* on Samar Island, Philippines. *Southeast Asia Vertebrate Records* 2021: 1–2.

Sy, E.Y., D. Villareal, and G.C. Gamalo. 2014. Geographic distribution. *Kaloula pulchra* (Asiatic Painted Frog). *Herpetological Review* 45: 276–277.

Tabug, M.A., L.V. Necesito, D.E.M. General, and A.C. Diesmos. 2018. Diet of *Draco spilopterus* from Ilocos Norte Province and Laguna Province, Philippines. *Southeast Asia Vertebrate Records* 2018: 74–75.

Taylor, E.H. 1919. New or rare Philippine reptiles. *Philippine Journal of Science* 14: 105–125.

Taylor, E.H. 1922a. Additions to the herpetological fauna of the Philippine Islands. I. *Philippine Journal of Science* 21: 161–206.

Taylor, E.H. 1922b. *The Snakes of the Philippine Islands*. Department of Agriculture and Natural Resources, Bureau of Science, Manila, The Philippines.

Torres-Carvajal, O. 2015. On the origin of South American populations of the common house gecko (Gekkonidae: *Hemidactylus frenatus*). *NeoBiota* 27:

69–79. https://doi.org/10.3897/neobiota.27.5437.

Uetz, P., P. Freed, R. Aguilar, F. Reyes, and J. Hošek (eds.). 2023. *The Reptile Database*. <https://reptile-database.reptarium.cz/>.

Van Rooijen, J. and G. Vogel. 2012. A revision of the taxonomy of *Dendrelaphis caudolineatus* (Gray, 1834) (Serpentes: Colubridae). *Zootaxa* 3272: 1–25. https://doi.org/10.11646/zootaxa.3272.1.1.

Venturina, R.E.L., Y.L.C. Del Prado, R.A.C. Kamir, M.N. Balmores, and A.C. Diesmos. 2020. A revised checklist of amphibians and reptiles in Camiguin Sur, Misamis Oriental, Mindanao, Philippines. *Asian Herpetological Research* 11: 28–43. https://doi.org/10.16373/j.cnki.ahr.190036.

Weinell, J.L., E. Hooper, A.E. Leviton, and R.M. Brown. 2019. Illustrated key to the snakes of the Philippines. *Proceedings of the California Academy of Sciences* 66: 1–49.

Welton L.J., C.D. Siler, C.W. Linkem, A.C. Diesmos, and R.M. Brown. 2010. Philippine bent-toed geckos of the *Cyrtodactylus agusanensis* complex: Multilocus phylogeny, morphological diversity, and descriptions of three new species. *Herpetological Monographs* 24: 55–85. https://doi.org/10.1655/HERPMONOGRAPHS-D-10-00005.1.

Welton, L.J., C.D. Siler, C.W. Linkem, A.C. Diesmos, M.L. Diesmos, E. Sy, and R.M. Brown. 2013. Dragons in our midst: Phyloforensics of illegally traded Southeast Asian monitor lizards. *Biological Conservation* 159: 7–15. https://doi.org/10.1016/j.biocon.2012.10.013.

Weterings, R. and K.C. Vetter. 2018. Invasive house geckos (*Hemidactylus* spp.): their current, potential and future distribution. *Current Zoology* 64: 559–573. https://doi.org/10.1093/cz/zox052.

Wiegmann, A.F.A. 1834. Amphibien, pp. 185–268. In: F.J.F. Meyen, *Beiträge zur Zoologie gesammelt auf einer Reise um die Erde*. Band 17. Siebente Abhandlung. Nova Acta Physico-Medica Academia Caesarea Leopoldino-Carolina, Halle, Germany.

Willis, R.D. 2012. *Kaloula kalingensi*s (Narrow-mouthed Frog). Parental care. *Herpetological Review* 43: 321.

Zug, G.R. and P.B. Zug. 1979. The Marine Toad, *Bufo marinus*: a natural history resumé of native populations. *Smithsonian Contributions to Zoology* 284: 1–58.