Illustrated Guide to the Reptiles and Amphibians of the Mariana Islands, Micronesia

compiled by

Alexander M Kerr

Marine Laboratory
University of Guam

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Dankulu na Saina Ma'åse!

SUMMARY

This report provides an annotated and illustrated checklist of the herpetofauna known from the Mariana Islands, with notes on taxonomy, physical description, biology and distribution. A total of 28 species of reptiles and amphibians are known to inhabit the Marianas, including six frogs and toads, 14 lizards, two snakes, and six turtles. Most of these are native, at least since prehistoric times, the remainder have become established relatively recently. I include here another 12 species that have been reported, mostly as released/escaped pets, but have apparently not become established, to date.

CONTENTS

INTRODUCTION

This technical report provides an annotated systematic account of the amphibians and reptiles of the Mariana Islands, Micronesia. Please let me know how I can improve this account. The primary purpose of this book is to raise interest in the herpetofauna of the Mariana Islands. Surprisingly, there are no comprehensive illustrated guides to the herpetofauna of the Marianas.

Geographical setting

The Mariana Islands are a north-south oriented, arc-shaped archipelago of small (10 to 540 km2) islands in the western tropical Pacific Ocean (13° to 20° N, 142° to 144° W), approximately 2400 km east of the Philippines. Of the 14 main islands, seven are currently inhabited by people, most quite sparsely. The climate is tropical maritime with marked wet and drier seasons, influenced by the Asian monsoons and frequent typhoons, especially between June and November. The Mariana archipelago formed by the volcanism resulting from the tectonic subduction of the Pacific plate under the Philippine plate. The largest and southernmost islands (Saipan, Tinian, Rota, Guam) are the oldest (ca. 40 my), volcanically quiescent, and of volcanic rocks or tectonically uplifted limestone. The islands to the north are much younger (to 5 my) and volcanically active, and entirely of volcanic composition. As a result of this geologic history, terrestrial habitats in the Mariana Islands include two main types of forests, typified by different communities of plants. Limestone forest is a

Figure 1. A small green sea turtle (*Chelonia mydas*) at Ypao, Guam. Photo by David Burdick (www.guamreeflife.com)

forest type found only rarely worldwide. The limestone forests unique to the Mariana Islands are found in the southern and older, Mariana Islands with tectonically uplifted limestone members. Ravine forests, by contrast are found on the volcanic soils of most islands in the archipelago, and as the name implies tend to be restricted to ravines and river basins. The more exposed areas are usually of savanna and covered in tall grasses. Guam and Saipan also possess minor, but significant areas of mangrove. The tallest mountains of Rota are just high enough to possess patches of another habitat, cloud forest, a forest type more common in the highest islands of the neighbouring Caroline archipelago.

Outline of this report

This report is organised by the primary evolutionary lineages to which the animals belong. This seems natural since these groups are also most similar in general appearance, which facilitates searching. After this, the animals are given alphabetically by family, then by genus and species. Following this is the family name in upper-case letters. Then comes the species' full scientific name, which follows when possible the taxonomic decisions of Haynes (1988; 1990; 2001) and Smith (2003). Scientific names are in italics, which by convention consists first of the genus name, always capitalized, the specific epithet, which is not, followed by the name of the person who first scientifically described the species, a comma, and the publication date of the description. Sometimes a subgenus name, capitalized and in parentheses, has also been designated. If the animal has since been reassigned to a genus other than that given by the original describer, then the describer's name and date of description are placed in parentheses.

English names are including when they could be found and seemed in general use. As well, most species lack species specific Chamorro names. Then, is included a reference to a figure in the appended set of colour plates illustrating the live animal. Following this is a section on taxonomy, giving the original genus name, if it has since changed, and any other widely used scientific names. Then follows a brief description of notable and

diagnostic aspects of the animal's morphology, color, habitat, and lifestyle, followed by locality records by island in the Marianas, its occurrence in Micronesia and global distribution and finally, information on the specimen(s) shown in the photograph(s).

The species lists of the different groups comes from various sources, including Leberer (2003) for turtles, Christy et al. (2007) for anurans, and Fritts et al. (undated) for lizards, as well as from discussion with government of Guam Division of Fish and Wildlife personnel, especially, Mr. Brent Tibbatts, and U.S. Fish and Wildlife Service personnel, especially, Mr. Elijah Wostl. The geographic range data comes primarily from the IUCN Red List of Threatened Species (IUCN 2011). Other sources of information are cited in the species accounts.

Chamorro names are not included in individual species accounts because most species do not have, at least currently, species-specific indigenous names. I view this conclusion with caution. Language is a seething tumult of constantly updated invention. For example, the 'green skink', *Lamprolepis smaragdina*, is an historic introduction to the Marianas. The Chamorro name for small, diurnal saurians with shiny scales is **achi'ak**, and the word for green is **betde**. Hence, it's not a stretch to predict that *L. smaragdina* will soon be widely referred in Chamorro as **achi'ak betde**, although, sometimes, the green anole, *Anolis carolinensis*, can go by that name.

Alexander M. Kerr
uogmarinelab@gmail.com
Marine Laboratory
University of Guam
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SYSTEMATIC ACCOUNT

AMPHIBIA

ANURA

BUFONIDAE

Rhinella marina (Linnaeus, 1758)

Cane Toad, Marine Toad, Giant Toad

(Fig. 6)

Synonyms: *Bufo marinus* Linnaeus, 1758.

Diagnosis: Measures about 10–15 cm from snout to vent, females much larger than males, dry and warty skin, distinct ridges above eyes, swollen parotoid glands behind each eye, blotchy yellow tan to dark brown above, ventral color cream, juveniles darker.

Biology: Probably a complex of several species. Nocturnal and terrestrial, inhabits humid areas with moderate cover, preferring open or disturbed habitat near human structures, hiding under leaf litter, branches or rocks during the day. Eggs laid in ponds, ditches, temporary pools, may breed in slightly brackish water, larvae are tolerant of high temperatures.

Range: Native to Central and South America. Intentionally introduced to Guam in.1937 (Christy et al. 2007) and elsewhere in the southern Mariana Islands.

Photo: Froggydarb (no affiliation), Springbrook National Park, Queensland, Australia, before 2009, http://commons.wikimedia.org/wiki/File:Bufo_marinus_from_Australia.jpg, licensed under the GNU Free Documentation License, Version 1.2.

ELEUTHERODACTYLIDAE

Eleutherodactylus coqui Thomas, 1966

Coqui

(Fig. 7)

Synonyms: None.

Diagnosis: About 3 to 4 cm in length, grey to brown in colour., no webbing between toes, possess small pads on toe tips. mottled or freckled brown or grayish-brown. It may have a "W" shaped marking behind the nape of the neck, a chevron at the middle of the back and an externally concave line on each side. (USDA Forest Service).

Biology: Not clear whether this is a complex of species. In its native range, found in a wide range of habitats from native forest to suburban areas. Hide in litter during day and are active and arboreal nocturally. Brood in enclosed areas such as in curled, fallen leaves and rolled palm fronds. Complete metamorphosis occurs within the egg. Young hatch as tiny froglets, parental care. Distinctive very loud "co-ki" call.

Range: Native to Puerto Rico. Introduced to other Caribbean islands and Florida, USA. Known in the Mariana Islands only from Guam from the calls of a few individuals in 2004 and is thought to be now absent (Christy et al. 2007).

Photo: Anonymous (US Department of Agriculture Forest Service), Puerto Rico, before 2008, from http://en.wikipedia.org/wiki/File:Common_Coqu%C3%AD.jpg, in the public domain as work prepared by an employee of the US government.

Eleutherodactylus planirostris **(Cope, 1862)**
Greenhouse Frog
(Fig. 3)

Synonyms: *Hylodes planirostris* Cope, 1862

Diagnosis: Greenhouse Frogs range in size from 1.6 – 3.2 cm. Females are generally more robust than males. Greenhouse Frogs are generally brown with distinct reddish/rusty tones and warty skin. Greenhouse Frogs can have either a striped (2 longitudinal, light stripes) or mottled (irregular dark and light markings) pattern. They have reddish eyes, a white belly, and legs banded with brown. Young have a tiny tail at hatching. Sounds like short, insect-like chirps (http://fl.biology.usgs.gov/)

Biology: Eggs are laid on the ground under moist cover and larval development occurs within the egg (Lazell, 1989).

Range: Probably originally native to Cuba. Introduced, probably from Hawaii, to Guam before 2003 and has established there (Christy et al. 2007).

Photo: Matthew Niemiller (no affiliation), Seminole, Tennessee, USA, 2007, from http://calphotos.berkeley.edu/, licensed under the Creative Commons Attribution 3.0 Generic license, © 2010 Matthew Niemiller cavemander17@gmail.com

HYLIDAE

***Litoria fallax* (Peters, 1880)**

Eastern Dwarf Tree Frog, Eastern Sedgefrog

(Fig. 8)

Synonyms: *Hylomantis fallax* Peters, 1880.

Diagnosis: From 2 to 3 cm in length as adults, females larger than males, colour dorsally variable with various combinations of, to entirely, brown or green back and sides, but always with a dark brown stripe from snout to eye and white line below eye to forelimb, toe discs small and 3/4 webbed, shape, colour.

Biology: Usually found in vegetation bordering swamps, streams, lagoons, ponds and farm dams often in large numbers. In the day it shelters in the leaf-axils of *Pandanus* and emergent vegetation and or/nearby trees. It can be found well away from water/breeding sites. Breeding occurs throughout spring/summer, usually after rain. Small clumps of eggs are laid attached to submerged vegetation; larvae are free swimming. (Hero et al. 2004). Call is high pitched, wr-e-e-ek ip-ip, repeated three or four times.

Range: Native to the eastern coast of Australia. Introduced to Mariana islands in Guam in 1968.

Photo: Arthur Chapman (no affiliation), no locality data, no date, from http://eol.org/pages/1048268/, Creative Commons-NonCommercial-ShareAlike 2.0 Generic license.

MICROHYLIDAE

***Microhyla pulchra* (Hallowell, 1861)**

Marbled Pigmy Frog, Beautiful Pygmy Frog, Guangdong Rice Frog

(Fig. 5)

Synonyms: *Engystoma pulchrum* Hallowell, 1861

Diagnosis: Measures about 6 to 8 cm from snout to vent, long pointed, semi-webbed hind toes, whitish below, warts on back, colors variable above, usually fugitive and blotchy, legs banded, color of Mariana specimens not given (Christy et al. 2007), sometimes with a cream line running from snout to vent.

Biology: It is mainly observed in forest edge situations. It inhabits disturbed areas such as cultivated fields, abandoned fields, grasslands and plantations, but is apparently not a commensal of large-scale agricultural areas. It breeds in large temporary rain pools, ponds or paddy fields. (Lau et al. 2004). Mating call is a rapid succession of loud staccato notes.

Range: Native to southeast Asia and southern China (Lau et al. 2004). Present on Guam since before 2004, but it is unclear if it has established (Christy et al. 2007).

Photo: Thomas Brown (no affiliation), Ngong Ping, Lantau, Hong Kong, 2011, from http://en.wikipedia.org/wiki/File:Microhyla_pulchra.jpg, licensed under the Creative Commons Attribution 2.0 Generic license.

RANIDAE

Fejervarya limnocharis sensu lato (Gravenhorst, 1829)

Grass Frog, Field Frog, Rice Frog

(Fig. 4)

Synonyms: *Rana limnocharis* Gravenhorst, 1829. Sometimes placed in Dicroglossidae.

Diagnosis: Measures about 4 to 6 cm from snout to vent, long pointed, semi-webbed hind toes, whitish below, raised, mostly longitudinal skin ridges on back, colors quite variable above, usually fugitive and blotchy, color of Mariana specimens not given (Christy et al. 2007), sometimes with a cream line running from snout to vent.

Biology: It inhabits most open wet habitat types, including ditches, marshes, and gardens. Its breeding and larval development take place in wetland habitats. It is comprised of several genetically distinct, morphologically similar geographically

separate species. (Lau et al. 2004). The call is a loud "ta, ta, ta, ta", repeated rapidly several times.

Range: Widely distributed in Asia from India to the Philippines and southern Japan. Present on Guam since before 2003, but it is unclear if it has established (Christy et al. 2007).

Photo: Shyamal, Javadi (no affiliation), Hills, Tamil Nadu, India, 2008, from http://fr.wikipedia.org/wiki/Fichier:RanaLimnocharisJavadi2.jpg, licensed under the Creative Commons Attribution 3.0 Generic license.

Fejervarya cancrivora **(Gravenhorst, 1829)**
Crab-eating Frog
(Fig. 37)

Synonyms: *Rana cancrivora* Gravenhorst, 1829. Sometimes placed in Dicroglossidae.

Diagnosis: Measures about 5 to 8 cm from snout to vent, long pointed, semi-webbed hind toes, snout more pointed than *F. limnocharis*, whitish below, raised, mostly longitudinal ridges, as well as small bumps on back, olive to brown dorsally with dark brown blotches sometimes in the shape of a 'W', color of Mariana specimens not given (Christy et al. 2007), sometimes with a cream line running from snout to vent.

Biology: It inhabits most open wet habitat types, including brackish water, where its prey often includes crustaceans, hence its common name. The call is like a quick and guttural clearing of one's throat.

Range: Widely distributed in Asia from India to Vietnam. Introduced and established in Irian Jyra, New Guinea. Present on Guam since at least 2005, but probably has not established (Christy et al. 2007).

Photo: W. A. Djatmiko (no affiliation), Bogor, western Java, 2005, from http://commons.wikimedia.org/wiki/File:Fejer_cancri_050403_002_tdp.jpg, licensed under the Creative Commons Attribution 3.0 Generic license.

Hylarana guentheri **(Boulenger, 1882)**
Günther's Frog, Günther's Amoy Frog

(Fig. 1)

Synonyms: *Rana elegans* Boulenger, 1882; *Rana guentheri* Boulenger, 1882

Diagnosis: Brown patterns dorsally; pointed snout; brown-coloured lateral folds; banded hind legs. (http://www.oocities.org/hkguyver/)

Biology: This frog inhabits pools, paddy fields, marshes, ditches and slow-moving streams and the surrounding habitat in lowlands and low plateaus. It breeds in pools and slow moving streams. It is tolerant of habitat modification and has also been observed breeding in artificial pools and rice fields. (Lau et al. 2004)

Range: Native to southern China, Taiwan, Vietnam (Lau et al. 2004). Accidentally introduced to Guam before 2001 and established there (Christy et al. 2007).

Photo: Thomas Brown (no affiliation), Sai Kung East Country Park, Hong Kong, 2011, from http://en.wikipedia.org/wiki/File:Rana_guentheri.jpg, licensed under the Creative Commons Attribution 2.0 Generic license.

RHACOPHORIDAE

Polypedates megacephalus Hallowell, 1860

Hong Kong Whipping Frog, Spot-legged Treefrog, or Brown Tree Frog

(Fig. 2)

Synonyms: None.

Diagnosis: Small, yellow brown with brown line behind eye.

Biology: It inhabits wide range of habitats including cultivated fields, grasslands, shrublands, plantations, forests, ponds, and marshes and near streams. It breeds in still water. Foam nests have been found to contain 300–400 eggs each and are often found in shallow, still water, typically attached to emergent vegetation (Christy et al. 2007).

Range: Native to southern and southwestern China; it is also found Taiwan, Hainan, Hong Kong. Introduced to Guam before 2004 and has established there (Christy et al. 2007).

Photo: Thomas Brown (no affiliation), Wu Kau Tang, Hong Kong, 2011, from http://en.wikipedia.org/wiki/File:Polypedetes_megacephalus.jpg, licensed under the Creative Commons Attribution 2.0 Generic license.

SAURIA

POLYCHROTIDAE

***Anolis carolinensis* (Voight, 1832)**

Green Anole

(Fig. 9)

Synonyms: *Lacerta principalis* Linnaeus 1758 (*fide* Dumeril & Bibron 1837)

Diagnosis: Adults 12-20 cm in total length, long thin lizard, pointed snout, flttened toe pads, males with extensible throat skin flap, colour dark brown to bright green, throat flap red.

Biology: A diurnal, arboreal lizard that occupies a wide variety of dry to wet habitats, from forested, disturbed to urban. On Guam, predation by the snake *Boigs irregularis* restricts *A. carolinensis* to near buildings and lawns. Eggs are buried in moist soil, sphagnum, leaf litter, rotting wood, or under rocks and debris.

Range: Native to the southeastern USA. Introduced to the Ryukyu Islands, Mexico, Spain, Hawaii and some Caribbean islands. Intentionally introduced to the Mariana islands of Guam (ca. 1960) and Saipan (ca. 1970). Reports on Guam of a related invasive, the brown anole, *A. sagrei*, has so far proven false.

Photo: Adam P. Summers (tennlizards.org), no locality data, no date, from http://www.tennlizards.org/anole.htm, no copyright info.

***Anolis sagrei* Cocteau in Duméril & Bibron, 1837**

Brown Anole, Cuban Anole

(Fig. 38)

Synonyms: *Norops sagrei* is also frequently used.

Diagnosis: Adults 12-20 cm in total length, snout broader than for *A. carolinensis*, flattened toe pads, males with extensible throat skin flap, body colour grey to dark brown with darker diamond pattern dorsally, never green, throat flap red and yellow.

Biology: A diurnal lizard, generally found on or near the ground, and in a wide variety of dry to wet habitats, from forested, disturbed to urban. Eggs are buried in moist soil, sphagnum, leaf litter, rotting wood, or under rocks and debris.

Range: Not established in the Mariana Islands, but a candidate invasive, given its occasional entry via air cargo and its proven ability to establish elsewhere. Native to the Cuba and the Bahama Islands. Introduced to and now common in southern Florida, Mexico and some other Caribbean Islands.

Photo: B. Tibbatts (Guam Dept. Agriculture), found on ornamental plant in transit, 2011.

GEKKONIDAE

Gehyra mutilata (Wiegmann, 1834)

Mutilating Gecko, Four-clawed Gecko

(Fig. 10)

Synonyms: *Hemidactylus* (*Peropus*) *mutilatus* Wiegmann, 1834.

Diagnosis: About 4 to 5.5 cm SVL, to 12 cm total length, stocky, slightly flattened tail, paired scales on undersides of toes, no ring of enlarged scales on the tail, pale reddish grey, dorsally covered with tiny white spots and larger reddish brown blotches, sometimes pale dorsal longitudinal stripe.

Biology: Abundant and nocturnally active in a wide variety of habitats, including on and in building, but most often in native forest, often seen with *G. oceanica*, often seen around night lights, 2 to 3 eggs laid in rock and bark cavities,

Range: Native from India through south-eastern Asia and Oceania, including the Mariana islands of Cocos, Guam, Rota, Tinian Saipan, Sarigan, Guguan, Alamagan, Pagan and Agrihan. Introduced to North America.

Photo: Thomas H. Fritts (USGS), no locality data, no date, from Fritts et al. (no date), in the public domain as work prepared by an employee of the US government.

Gehyra oceanica (Lesson, 1830)
Island Gecko
(Fig. 11)

Synonyms: *Stellio argyropus* von Tilenau, 1820 *nomen obscurum* (See Bauer 1994); *Gecko oceanicus* Lesson in Duperrey, 1830

Diagnosis: Largest of the Mariana Island geckos, to 10 cm SVL, but usually to 7 cm, tail more rounded and head shorter than *Perochirus ateles*, innermost digit reduced on hand, no rings of spines on base of tail, colour.

Biology: Can be abundant in forests, limestone karst, disturbed areas and around rural buildings, often seen with *G. mutilata*, but now rare on Guam, usually arboreal, lays non-adhesive eggs, sometimes in communal nests, separate sexes, nocturnal, genetic identity, etc.

Range: Native to New Guinea and many islands in Oceania, including. the Mariana islands of Cocos, Guam, Rota, Tinian, Saipan, Guguan, Alamagan, and Ascuncion.

Photo: Thomas H. Fritts (USGS), no locality data, no date, from Fritts et al. (no date), in the public domain as work prepared by an employee of the US government.

Perochirus ateles (Duméril, 1856)
Micronesian Gecko
(Fig. 12)

Synonyms: *Hemidactylus ateles* Dumeril, 1856

Diagnosis: A relatively large gecko, about 7 cm SVL, greatly reduced innermost toe and finger, toes webbed, toe-pad scales paired only distally, flattened tail with enlarged scales ventrally, reddish brown with faintly lighter blotches dorsally.

Biology: Prefers undisturbed forest, arboreal, nocturnal.

Range: Native to Micronesia; the type locality of the Philippines is thought to be in error (Bauer 1994). Native to the Mariana Islands of Cocos, Guam, Tinian and Saipan. Has not been collected on Guam since 1978, hence probably extinct due to the snake *Boiga irregularis*.

Photo: Thomas H. Fritts (USGS), no locality data, no date, from Fritts et al. (no date), in the public domain as work prepared by an employee of the US government.

Nactus pelagicus (Girard, 1858)
Rock Gecko, Pelagic Gecko
(Fig. 13)

Synonyms: *Heteronota pelagica* Girard, 1858
Diagnosis: Length, slender, round tail, dark brown with dorsal darker counter-shaded chevrons.
Biology: Prefers rocky areas in native forest, least likely Marianas gekkonid to live near humans, ground- and rock-dwelling, runs from approach, parthenogenic, nocturnal.
Range: Native to the islands of Melanesia, Polynesia and Micronesia, including the Mariana islands of Guam, Rota, Tinian, Sarigan and likely other less well-studied islands. Possibly extinct on Guam perhaps due to predation by the snake *Boiga irregularis*.
Photo: Thomas H. Fritts (USGS), no locality data, no date, from Fritts et al. (no date), in the public domain as work prepared by an employee of the US government.

Hemidactylus frenatus Schlegel in Duméril and Bibron, 1836
House Gecko, Pacific Gecko
(Fig. 14)

Synonyms: *Hemidactylus javanicus* Fitzinger, 1826 *nomen nudum*.
Diagnosis: 3.5 to 5.5 cm SVL, base of tail with rings of widely spaced spines, uniform light tan (see inset) or medium brown with numerous longitudinal blotches arranged on body and banding on tail and limbs.
Biology: Most common around and in human habitation, especially visible near outdoor lights at night, also often in Guam forests, their native gekkonids eliminated by the snake *Boiga irregularis*, parthenogenic, lays adhesive, prolate eggs, call a series of 7 to 8 chirps or a muted trill, etc.

Range: Native from India to south-eastern Asia, the Philippines and Oceania, including. the Mariana islands of Cocos, Guam, Rota, Tinian, Saipan, Alamagan, Pagan and Agrihan. Introduced to many places worldwide.

Photos: Thomas H. Fritts (USGS), no locality data, no date, from Fritts et al. (no date), in the public domain as work prepared by an employee of the US government.

Lepidodactylus lugubris (Duméril & Bibron, 1836)
Mourning Gecko
(Fig. 15)

Synonyms: *Platydactylus Lugubris* Duméril & Bibron, 1836

Diagnosis: About 4.5 cm SVL, smooth, flattened tail with distinct lateral ridge, possesses five digits on all feet, distinctive black band from snout through eyes to the neck, dorsally light brown, dorsal chevrons distinct or absent, pair of black blotches at base of tail always present.

Biology: Abundant in many habitats, especially near and in human habitation, nocturnal, but can be active in shadow or indoors during day, parthenogenic, call of single to 10 sharp chirps.

Range: Native to south-eastern Asia, China, Taiwan, Philippines, Oceania, including the Mariana islands of Cocos, Guam Rota, Tinian, Saipan, Guguan, Alamagan, Pagan, Agrihan, and Asuncion. Introduced to the Neotropics, including Hawaii.

Photo: Thomas H. Fritts (USGS), no locality data, no date, from Fritts et al. (no date), in the public domain as work prepared by an employee of the US government.

IGUANIDAE
Iguana iguana (Linnaeus, 1758)
Green Iguana, Common Iguana, Iguana
(Fig. 38)

Synonyms: *Lacerta iguana*.

Diagnosis: Adults 1.0 to 1.5 m in total length, a dorsal row of spines, very long tail, large males with a throat skin flap, body colour quite varied from grey to brown to bright green.

Biology: A large diurnal lizard, arboreal and strong swimmers, preferring forested habitats near water. Herbivorous. A clutch of 20 to 70 eggs are laid in an excavated burrow.

Range: Not established in the Mariana Islands, but individuals have been rarely seen on Guam, undoubtedly as released/escaped pets. Native to southern Mexico and south to southern Brazil. Introduced to southern Florida and some other Caribbean Islands, as well as Hawaii.

Photo: B. Tibbatts (Guam Dept. Agriculture), dead animal captured in Yigo, Guam, 2011.

SCINCIDAE

Emoia atrocostata (Lesson, 1830)

Tide-pool Skink, Mangrove Skink

(Fig. 16)

Synonyms: *Scincus atrocostata* Lesson, 1830.

Diagnosis: About 10 cm SVL and 26 cm total length, 38 or more scales around mid-body, length of interparietal scale 1.5 to 2 times basal width, 5 digits on the hands and feet, dorsally metallic grey, green or black with conspicuous tan or brown flecks arranged in transverse groups, ventrally white or greenish white. (Fritts et al. no date).

Biology: A specialist of the intertidal and adjacent strand vegetation, diurnally active, wary and so difficult to approach or find.

Range: Native to Ryukyu Islands, Taiwan, south-eastern Asia, Australia and many Pacific islands, including the Mariana islands of Cocos and Rota.

Photo: Nick Baker (ecologyasia.com), northern Sulawesi, Indonesia, no date, from http://www.ecologyasia.com/verts/lizards/mangrove_skink.htm, © Ecology Asia 2011, free use granted to non-profits, contact feedback@ecologyasia.com.

Emoia caeruleocauda de Vis, 1892
Blue-tailed Skink
(Fig. 17)

Synonyms: *Scincus cyanurus* Lesson, 1830 *in partim*.

Diagnosis: Length, 31-43 scales on underside of fourth toe, 5 digits on the hands and feet, body with three longitudinal dorsal stripes and blue tail only in juveniles and females, mid-stripe does not merge into blue tail colour, adult males dark brown dorsally, white ventrally, but with faint remnants of stripes on head and neck.

Biology: Lives in forest, mostly ground dwelling, easily spotted foraging during the day, apparently often competitively displaced by *Carlia fusca* on Guam, lays two eggs under rocks and in rotting wood.

Range: Native to New Guinea, Philippines, Melanesia and Micronesia, including the Mariana islands of Cocos, Guam, Rota, Tinian, Saipan, Anatahan, Sarigan, Alamagan, Agrihan, Maug.

Photo: Thomas H. Fritts (USGS), no locality data, no date, from Fritts et al. (no date), in the public domain as work prepared by an employee of the US government.

Emoia cyanura (Lesson, 1830)
Azure-tailed Skink
(Fig. 18)

Synonyms: *Scincus cyanura* Lesson, 1830.

Diagnosis: About 4 to 5.5 cm SVL, >50 scales on underside of fourth toe, noticable pineal eye spot atop head behind eyes, 5 digits on the hands and feet, centre stripe on head wider than for *E. caeruleocauda*, and whiter, mid-stripe does merges into blue tail colour.

Biology: Strand and back strand vegetation, edges between forest and disturbed ground, rarely in forest, lays two eggs under rocks and in rotting wood, forages during the day.

Range: Native to Melanesia through Polynesia, including Hawaii, and Micronesia, where in the Mariana islands, it is only found on Cocos and, probably, Guam, suggesting a late introduction to these islands (Brown).
Photo: Paddy Ryan (ryanphotographic.com), Fiji, no date, from Fritts et al. (no date), Educators and students may use photos with attribution.

Emoia slevini Brown & Falanruw, 1972
Slevin's Skink
(Fig. 19)

Synonyms: None.
Diagnosis: Length to 6 to 8.5 cm SVL, fewer than 38 scales around mid-body, length of interparietal scale less than 1.5 times basal width, 5 digits on the hands and feet, uniformly iridescent brown or also black laterally outlined with white spots, posterior ventrum yellow to orange in large specimens.
Biology: Inhabits the forest floor, field edges, reproduction, forages diurnally.
Range: Endemic to the Mariana islands of Cocos, Guam, Rota, Tinian, Sarigan, Guguan, Alamagan, Asuncion and Maug. Not seen on Guam since 1945.
Photo: Thomas H. Fritts (USGS), no locality data, no date, from Fritts et al. (no date), in the public domain as work prepared by an employee of the US government.

Carlia ailanpalai Zug, 2004
Curious Skink, Island Skink
(Fig. 20)

Synonyms: non *Carlia fusca* (Duméril & Bibron, 1839) *sensu* Zug (2004)
Diagnosis: About 4 to 6 cm SVL, 4 digits on the hands, 5 on the feet, juvenile and adults uniformly brown dorsally, grey ventrally, bronze iridescence in adult males.
Biology: Can be very abundant in forests, gardens and near dwellings, forages during the day often in the sun, ground dwelling, a member of the "*fusca*" complex of

morphologically similar *Carlia* spp., a primary food item of the snake *Boiga irregularis* on Guam..

Range: Native range of *C. ailanpalai* is the Admiralty Islands. Introduced in the 1960s to Mariana Islands on Guam and now also common on Cocos, Tinian and Saipan.

Photo: Thomas H. Fritts (USGS), no locality data, no date, from Fritts et al. (no date), in the public domain as work prepared by an employee of the US government.

Lamprolepis smaragdina **(Lesson, 1830)**
Green Tree Skink, Emerald Tree Skink
(Fig. 21)

Synonyms: *Hinulia* (*Keneuxia*) *smaragdina* Lesson, 1830.

Diagnosis: Large, to 12 cm SVL, relatively large, sharp claws for climbing, distinctive bright iridescent green dorsally, yellow ventrally, sometimes scales of limbs and tail edged in black, juveniles greenish brown.

Biology: Inhabits forests and gardens with trees, arboreal, prefers trees with bare trunks and few epiphytes, foraging during the day.

Range: Native to New Guinea, Indonesia, Philippines, Taiwan and adjacent island groups. Introduced to the Mariana islands of Saipan and Tinian.

Photo: Mark O'Shea (www.markoshea.info), *L.* cf. *smaragdina*, male, Timor-Leste, 2011, from http://en.wikipedia.org/wiki/File:Lamprolepis_cf._smaragdina.jpg, licensed under the Creative Commons Attribution 3.0 Unported license.

Cryptoblepharis poecilopleurus **(Wiegmann, 1836)**
Snake-eyed Skink
(Fig. 22)

Synonyms: *Ablepharus poecilopleurus* Wiegmann, 1836

Diagnosis: Length, very slender body with small limbs, appears quadrate in cross section or flattened, eyelid scale fused over eye, two mid-dorsal rows of scales wider

than those of other dorsal scales, black spot in middle head behind eyes, brownish black with three longitudinal golden stripes dorsally, mottled laterally.

Biology: Found on rocks and tree trunks, but usually close to salt water, lays eggs, diurnality, genetic identity, etc.

Range: Native to northern New Guinea, Melanesia and Micronesia, including the Mariana Islands of Guam,, Rota, Aguihan, Tinian, Saipan, Anatahan, Sarigan, Guguan, Alamagan, Agrihan, Asuncion and Maug.

Photo: Thomas H. Fritts (USGS), no locality data, no date, from Fritts et al. (no date), in the public domain as work prepared by an employee of the US government.

Lipinia noctua **(Lesson, 1830)**

Moth Skink

(Fig. 23)

Synonyms: *Scincus noctua* Lesson, 1830

Diagnosis: Small, to 5.5 SVL, interparietal scale, lacks supranasal scales, black line running from snout through eyes and past neck, mid-dorsal scales not wider than other dorsal scales, characteristic yellow spot on top of head, sometimes contiguous with narrower yellow mid-dorsal stripe that fades before reaching the base of the tail, lips with alternating scales of black and white, belly yellow to orange, chin and ventral tail bluish green.

Biology: Ground dwelling, and low in trees, gives birth to live young.

Range: Native to northern New Guinea, Melanesia and Micronesia, including the Mariana Island of Guam, where it has not been seen since discovered in 1986.

Photo: Thomas H. Fritts (USGS), no locality data, no date, from Fritts et al. (no date), in the public domain as work prepared by an employee of the US government.

VARANIDAE

Varanus indicus **(Daudin, 1802)**

Hilitai, Guana, Pacific Monitor Lizard

(Fig. 24)

Synonyms: *Tupinambis indicus* Daudin, 1802

Diagnosis: Length, long sharp claws, possesses salt-excreting nasal glands for salt-water foraging, dorsally greenish black to black with yellow to white spots.

Biology: Wide variety of habitats having good cover, mangroves, forests to disturbed vegetation to beach scrub, can climb trees, can forage day or night, carnivorous, lays eggs.

Range: Native from Australia, New Guinea, Solomon Islands north to Micronesia, including the Mariana islands of Guam, Rota, Aguijan, Saipan, Anatahan, Sarigan, Pagan, and probably Alamagan and Agrihan (Fritts et al. no date). This species may be a prehistoric introduction to some of islands in the Marianas, other island records may represent secondary introductions.

Photo: Anaxibia (no affiliation), no locality data, no date, from http://en.wikipedia.org/wiki/File:Varanus_indicus.jpg, use covered under Creative Commons Attribution-Share Alike 3.0 Unported license.

SERPENTES

COLUBRIDAE

Boiga irregularis (Merrem, 1802)

Brown Tree Snake

(Fig. 25)

Synonyms: *Coluber irregularis* Merrem in Bechstein 1802

Diagnosis: To 3 m, but usually between 1 to 2 m in total length, slender, arboreal snake with large eyes, vertical pupil, triangular head, rear-fanged, a brownish-yellow, sometimes with faint darker blotches or banding, lacks the blue or red banding seen in Australian forms.

Biology: Occurs in forests, savannah, agricultural and residential areas., forages in trees and on ground, egg laying, nocturnally active, readily strikes when threatened, mildly venomous, bitten infants require medical attention.

Range: Native to Indonesia, New Guinea, Australia and Solomon Islands. Accidently introduced to the Mariana islands ca. 1945 to Guam where it is well established, but has been seen on Saipan and Tinian (Rodda et al. 1999).

Photo: Gordon H. Rodda (U.S. Geological Museum), no date, from www.issg.org/database/, public domain as work prepared by an employee of the US government.

ELAPIDAE

***Pelamis platura* (Linnaeus, 1766)**

Yellow-bellied Sea Snake

(Fig. 40)

Synonyms: *Anguis platura* Linnaeus, 1766; often incorrectly spelt *P. platurus*.

Diagnosis: Small, about 70 to 80 cm in total length, body subquadrangualar in cross section, tail laterally compressed and paddle-like, dorsoventrally flattened narrow head, nostrils valved and superior, smooth, small scales, colour somewhat variable, but diagnostic, generally dorsally dark brown, ventrally yellow, tail lighter with large dark spots.

Biology: Pelagic, open ocean, sometimes in large aggregations, ovoviviparous, birthing in open ocean or shallow pools. Venom neurotoxic, but seldom bites humans.

Range: Native range is tropical to temperate climes around the Pacific Rim and the Indian Ocean. Known from the Mariana Islands from a single record at Saipan (Eldredge 2003).

Photo: Aloaiza (no affiliation), Costa Rica, 2008, from http://en.wikipedia.org/wiki/File:Pelamis_Platurus_Costa_Rica.JPG, covered under the Attribution-NonCommercial-NoDerivs 3.0 Unported (CC BY-NC-ND 3.0) license.

TYPHLOPIDAE

***Ramphotyphlops braminus* (Daudin, 1803)**

Blind Snake, Worm Snake, Flower-Pot Snake

(Fig. 26)

Synonyms: *Eryx braminus* Daudin, 1803.

Diagnosis: Small, about 6 to 17 cm in length, cylindrical, blunt ended, resembling a worm, but scaled, reduced eyes, smooth, shiny, light pinkish brown to black, somewhat lighter below.

Biology: Found, in forested, agricultural and residential areas, lives underground in moist soil, often near ant or termite nests, found under debris, their primary prey, parthenogenic, egg laying, sometimes seen at night on sidewalks, may be a complex of similar geographically distinct species.

Range: Native range probably Asia, but now worldwide, including prehistorically, perhaps with humans, to Micronesia, including the Mariana islands of Guam, Rota, Tinian, Saipan, Anatahan, Agrigan, Alamagan, pagan and Agrihan and perhaps other islands (Fritts et al., undated).

Photo: Gary Nafis (CaliforniaHerps.com), Kauai, Hawaii, no date, from http://www.californiaherps.com/snakes/pages/r.braminus.html, covered under the Attribution-NonCommercial-NoDerivs 3.0 Unported (CC BY-NC-ND 3.0) license.

TESTUDINES

CHELYDRIDAE

Chelydra serpentina (Linnaeus, 1758)

Common Snapping Turtle

(Fig. 28)

Synonyms: *Genus species* Authority, Year.

Diagnosis: Adult length 20 to 47 cm, large head, skin with scattered bumps, hooked beak, tail long, carapace serrated posteriorly, dark grey, brown or black carapace, plastron tan or yellow, Juveniles with three prominent serrated ridges on carapace.

Biology: Aquatic, in ponds and slow-moving rivers, on Guam in southern rivers, reproduction, diurnally active, omnivorous, lays 20 to 40 eggs in soil, sometimes well away from water, will bite if threatened, often buries in mud.

Range: Native to North America. Introduced to Mariana islands on Guam before 1997 and since established (Leberer 2003).

Photo: Gary Nafis (CaliforniaHerps.com), Kauai, Hawaii, no date, from http://www.californiaherps.com/turtles/pages/c.s.serpentina.html, covered under the Attribution-NonCommercial-NoDerivs 3.0 Unported (CC BY-NC-ND 3.0) license.

GEOMYDIDAE

Chinemys reevesii (Gray, 1831)

Reeves' Terrapin, Chinese Three-keeled Pond Turtle

(Fig. 27)

Synonyms: *Genus species* Gray, 1831.

Diagnosis: Adult about 12 cm in length, carapace with three longitudinal dorsal ridges, dark brown above, plastron yellowish brown, yellow stripes on side of neck.

Biology: Aquatic, in ponds and slow-moving rivers, often on land, lays 4 to 7 eggs about three times a year in shaded soil, active day and night, omnivorous, etc.

Range: Native to China, and perhaps Korea and Japan. In the Mariana Islands, known from a single individual seen on Guam, hence likely not established (Leberer 2003).

Photo: Sigma64 (no affiliation), Hong Kong, 2008, from http://commons.wikimedia.org/wiki/File:Chinemys_reevesii_01.jpg, use covered under Creative Commons Attribution-Share Alike 3.0 Unported license.

Mauremys sinensis (Gray, 1834)

Chinese Striped Turtle, Chinese Stripe-necked Turtle

(Fig. 29)

Synonyms: *Ocadia sinensis* (Gray, 1834); *Emys sinensis* Gray, 1834.

Diagnosis: Usually about 15 to 25 cm in length, carapace domed, smooth, ridges indistinct or absent, carapace and head greenish brown to black, plastron yellow with black blotch on each scute, neck and legs with many fine lateral yellow lines.

Biology: Aquatic, in ponds and slow-moving rivers, lays eggs, omnivorous.

Range: Native to south-eastern China, Taiwan and northern Vietnam. Introduced, perhaps as pet releases to Mariana islands on Guam and may be established there (Leberer 2003).

Photo: Secundum naturam (no affiliation), no locality data, ca. 2009, from http://commons.wikimedia.org/wiki/File:Ocadia_sinensis_02.JPG, released into public domain by author.

TRIONYCHIDAE

***Pelodiscus sinensis* (Wiegmann, 1835)**

Chinese Soft-shell Turtle

(Fig. 30)

Synonyms: *Genus species* Authority, Year.

Diagnosis: Adult length averages 33 cm, shell is leathery and compressed, plastron light grey, nostril elongate, flexible and snout-like, webbed toes, three toes per foot, plastron light grey, body and carapace olive, sometimes fine lines along neck behind the eyes.

Biology: Fully aquatic, but can walk on land, inhabits, ponds and slow-moving rivers, readily bites when threatened, carnivorous, nocturnal, breathes by only exposing nostrils above water, lays eggs in mud near water, a food item in Asia.

Range: Native to southern China, Korea, Taiwan, Japan, Vietnam. Introduced to Thailand and the USA. Accidental introduction to the Mariana islands about 1987on Guam, where a small population may be established (Leberer 2003).

Photo: Vmenkov (no affiliation), street market, Seoul, ca. 2009, from http://commons.wikimedia.org/wiki/File:E8976-Namdaemun-Turtles-sold-in-ginseng-shop.jpg, covered under Attribution-NonCommercial-NoDerivs 3.0 Unported (CC BY-NC-ND 3.0) license.

EMYDIDAE

***Terrapene carolina triunguis* (Agassiz, 1857)**

Three-toed box Turtle

(Fig. 31)

Synonyms: *Testudo carolina* Linnaeus, 1758; *Cistudo triunguis* Agassiz, 1857

Diagnosis: Adult carapace length 10 to 12 cm, 3 toes on rear feet, high domed carapace, tan dorsally, yellowish beneath.

Biology: In the Marianas, probably can inhabit forests, field edges, disturbed areas, omnivorous, lays 1 to 7 eggs in nest in soil.

Range: Native the southeastern USA. Accidentally introduced, probably as a pet release or escape, to the Mariana islands on Guam before 1992 (Leberer 2003).

Photo: Carnopod (no affiliation), no locality data, 2005, released into public domain by author, from http://en.wikipedia.org/wiki/File:Three-toed_Box_Turtle.jpg,.

***Trachemys scripta elegans* (Wied, 1838)**

Red-eared Slider, Yellow-bellied Slider

(Fig. 32)

Synonyms: *Chrysemys scripta* (Schoepff, 1792); *Emys elegans* Wied, 1839; OK this is problematic.

Diagnosis: Adults usually to 28 cm CL, weakly keeled oval carapace, carapace and body olive, brown or black, red streak behind eye characteristic, but occasionally missing, many fine yellowish stripes on neck and limbs, juveniles green with many yellow streaks.

Biology: Prefers ponds and slow-moving streams with abundant vegetation, omnivorous, lays in the soil about 25 eggs in open unshaded spot, forages diurnally.

Range: Native the southeastern USA. Introduced to Europe and Asia. Accidentally introduced, probably as released or escaped pets to the Mariana islands on Guam in the 1970s (Leberer 2003).

Photo: Gary Nafis (californiaherps.com), San Fransisco, California, no date, from www.californiaherps.com, covered under Attribution-NonCommercial-NoDerivs 3.0 Unported (CC BY-NC-ND 3.0) license.

CHELONIIDAE

Chelonia mydas (Linnaeus, 1758)

Haggan, Green Sea Turtle

(Fig. 33)

Synonyms: *Testudo mydas* Linnaeus, 1758

Diagnosis: Shell length of adults 75 to 150 cm, broad, low, smooth, heart-shaped, unserrated carapace with 4 costal shields on each side, males with prehensile tail with flat tip and enlarged claw on front flipper, carapace greenish, brown, gray to black, with mottled or radiating patterns, especially in younger turtles.

Biology: Pelagic, lays about 100 eggs at communal beach nesting site, forages during day, omnivorous, global population has declined ca. 90% in last 50 years, endangered.

Range: Worldwide in tropics, invading temperate waters in summer. Nests in Mariana Islands.

Photo: Andy Bruckner, (NOAA), no locality, no date, from http://www.nmfs.noaa.gov, in the public domain as work prepared by an employee of the US government.

Eretmochelys imbricata (Linnaeus, 1766)

Haggan, Hawksbill Turtle

(Fig. 34)

Synonyms: *Testudo imbricata* Linnaeus, 1766

Diagnosis: Length of adults 46 to 91 cm, elongate, paddle-like flippers, heart-shaped carapace, long, hawk-like snout, overlapping scales and serrated carapace margin, except in largest animals, dark green-brown, marbled, underside yellowish, whitish in juveniles.

Biology: Inhabits shallow coastal waters, occasionally pelagic, feeds on sponges, lays 50 to 200 eggs in individual beach nests, diurnal foraging, omnivorous, critically endangered.

Range: Worldwide distribution in warm waters. Nests in Mariana Islands.

Photo: Caroline Rogers (USGS), Caribbean Sea, no date, from http://www.nmfs.noaa.gov, in the public domain as work prepared by an employee of the US government.

Lepidochelys olivacea (Eschscholtz, 1829)
Haggan, Olive Ridley turtle, Pacific Ridley turtle
(Fig. 35)

Synonyms: *Chelonia olivacea* Eschscholtz, 1829

Diagnosis: Adult carapace length 51 to 74 cm, carapace rounded in outline, relatively flat, head large and triangular, males with recurved claws on fore flippers, skin grey, plastron light greenish yellow.

Biology: Pelagic, mostly carnivorous, communal nester, diurnal forager, vulnerable to extinction.

Range: Circumtropical, mostly coastal in the tropical Indo-Pacific. Transient in the Mariana Islands.

Photo: Gary Nafis (californiaherps.com), captive adult in aquarium, California, no date, from www.californiaherps.com, covered under Attribution-NonCommercial-NoDerivs 3.0 Unported (CC BY-NC-ND 3.0) license.

DERMOCHELYIDAE

Dermochelys coriacea (Vandelli, 1761)
Haggan, Leatherback turtle
(Fig. 36)

Synonyms: *Testudo coriacea* Vandelli, 1761

Diagnosis: Adult carapace length 1.2 to 2.4 m, smooth leathery skin, no scales or claws, elongate posteriorly pointed carapace, tail longer than hind flippers and concave plastron in males, young with high dorsal keels, a rudder-like tail and flippers and keels edged in white, adults uniformly dark brown, grey or almost black, occasional blotches.

Biology: Pelagic and coastal, carnivorous, lays 100 eggs in individual beach nests, critically endangered

Range: Worldwide in distribution, from equatorial to temperate latitudes. Transient in the Mariana Islands.

Photo: No author (http://www.theleatherbackturtle.com), no locality data, no date, no copyright information.

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Plate I

Fig. 1 *Hylarana guentheri* (Boulenger, 1882) RANIDAE

Fig. 2 *Polypedates megacephalus* Hallowell, 1860 RHACOPHORIDAE

Fig. 3 *Eleutherodactylus planirostris* (Cope, 1862) ELEUTHERODACTYLIDAE

Fig. 4 *Fejervarya limnocharis* sensu lato (Gravenhorst, 1829) RANIDAE

Fig. 5 *Microhyla pulchra* Hallowell, 1861 MICROHYLIDAE

Fig. 6 *Rhinella marina* (Linnaeus, 1758) BUFONIDAE


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Plate II

Fig. 7 *Eleutherodactylus coqui* Thomas, 1966 ELEUTHERODACTYLIDAE

Fig. 8 *Litoria fallax* (Peters, 1880) HYLIDAE

Fig. 9 *Anolis carolinensis* (Voight, 1832) POLYCHROTIDAE

Fig. 10 *Gehyra mutilata* (Wiegmann, 1834) GEKKONIDAE

Fig. 11 *Gehyra oceanica* (Lesson, 1830) GEKKONIDAE

Fig. 12 *Perochirus ateles* (Duméril, 1856) GEKKONIDAE


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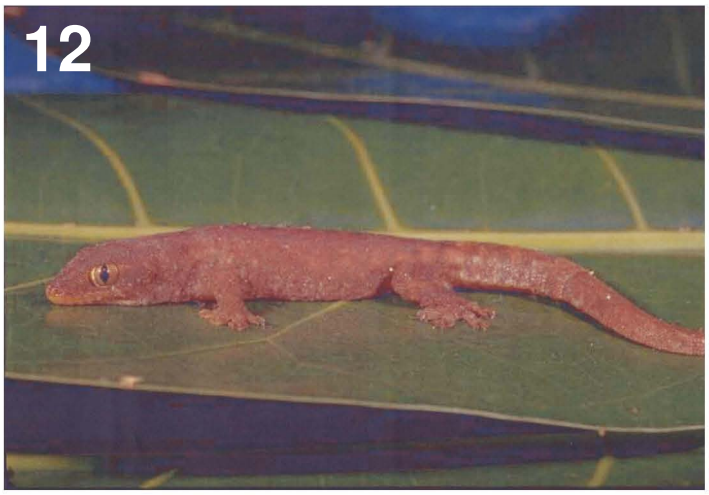
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Plate III

Fig. 13 *Nactus pelagicus* (Girard, 1858) GEKKONIDAE

Fig. 14 *Hemidactylus frenatus* Schlegel in Duméril and Bibron, 1836 GEKKONIDAE

Inset showing typical appearance at night.

Fig. 15 *Lepidodactylus lugubris* (Duméril & Bibron, 1836) GEKKONIDAE

Fig. 16 *Emoia atrocostata* (Lesson, 1830) SCINCIDAE

Fig. 17 *Emoia caeruleocauda* de Vis, 1892 SCINCIDAE

Fig. 18 *Emoia cyanura* (Lesson, 1830) SCINCIDAE


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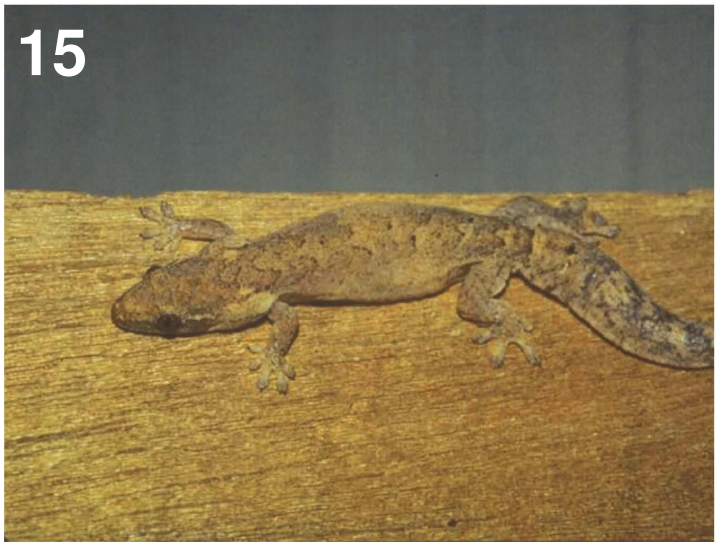
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Plate IV

Fig. 19 *Emoia slevini* Brown & Falanruw, 1972 SCINCIDAE

Fig. 20 *Carlia ailanpalai* Zug, 2004 SCINCIDAE

Fig. 21 *Lamprolepis smaragdina* (Lesson, 1830) SCINCIDAE

Fig. 22 *Cryptoblepharis poecilopleurus* (Wiegmann, 1836) SCINCIDAE

Fig. 23 *Lipinia noctua* (Lesson, 1830) SCINCIDAE

Fig. 24 *Varanus indicus* (Daudin, 1802) VARANIDAE


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Plate V

Fig. 25 *Boiga irregularis* (Merrem, 1802) COLUBRIDAE

Fig. 26 *Ramphotyphlops braminus* (Daudin, 1803) TYPHLOPIDAE

Fig. 27 *Chinemys reevesii* (Gray, 1831) GEOMYDIDAE

Fig. 28 *Chelydra serpentina* (Linnaeus, 1758) CHELYDRIDAE

Fig. 29 *Mauremys sinensis* (Gray, 1834) GEOMYDIDAE

Fig. 30 *Pelodiscus sinensis* (Wiegmann, 1835) TRIONYCHIDAE


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Plate VI

Fig. 31 *Terrapene carolina triunguis* (Agassiz, 1857) EMYDIDAE

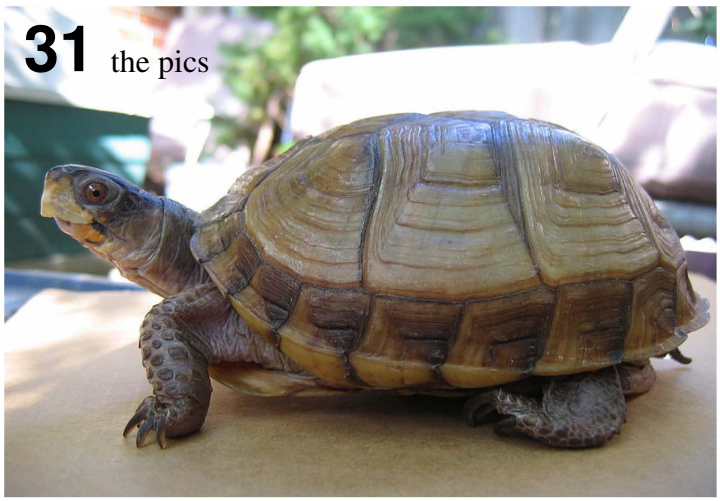
Fig. 32 *Trachemys scripta elegans* (Wied, 1838) EMYDIDAE

Fig. 33 *Chelonia mydas* (Linnaeus, 1758) CHELONIIDAE

Fig. 34 *Eretmochelys imbricata* (Linnaeus, 1766) CHELONIIDAE

Fig. 35 *Lepidochelys olivacea* (Eschscholtz, 1829) CHELONIIDAE

Fig. 36 *Dermochelys coriacea* (Vandelli, 1761) DERMOCHELYIDAE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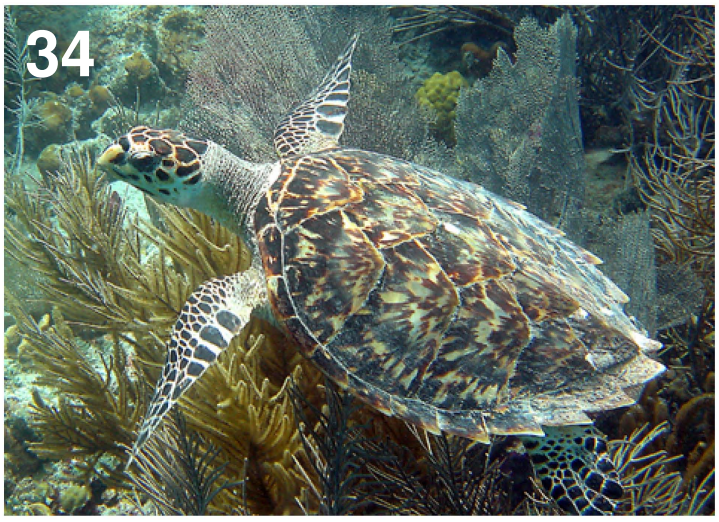
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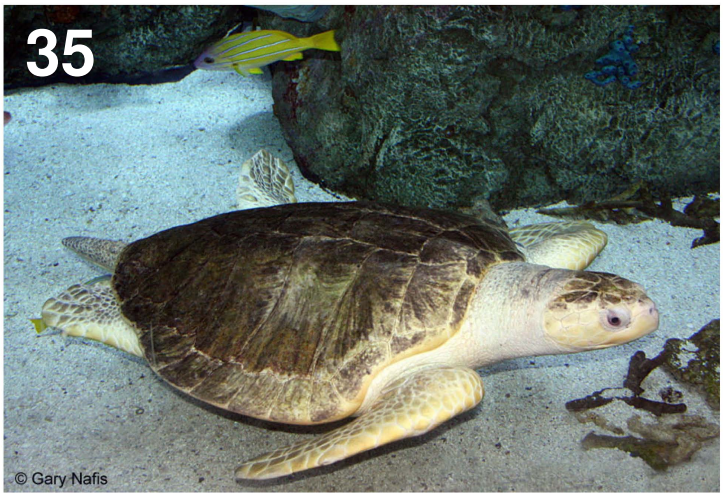
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Plate VII

Fig. 37 *Fejervarya* cancrivora (Gravenhorst, 1829) RANIDAE

Fig. 38 *Anolis sagrei* Duméril & Bibron, 1837 POLYCHROTIDAE

Fig. 39 *Iguana iguana* (Linnaeus, 1758) IGUANIDAE

Fig. 40 *Pelamis platura* (Linnaeus, 1766) ELAPIDAE


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