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Pacific Islands herpetology No. II: Philippine Islands

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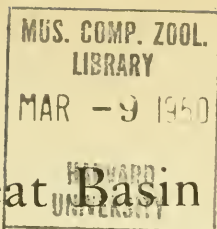
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PACIFIC ISLANDS HERPETOLOGY NO. 11

PHILIPPINE ISLANDS ⁽¹⁾

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In this second report on the Pacific Island Herpetology we are concerned with the Philippine Islands which lie almost due west from the Mariana Islands with which the first paper dealt. This group consists of hundreds of islands located between North Latitude 5° and 22°, and between East Longitude 117° and 127°. Specimens of amphibians and reptiles were collected on three of these islands namely, Luzon, Leyte, and Cebu. Luzon is the largest island in the Philippine group having a surface area of 40,814 square miles. Manila is the largest city in the Philippines and is situated on one of the excellent harbors of the Malay Archipelago. Leyte is the eighth island in size with an area of 2,799 square miles, Tacloban is the principal city. Cebu is next to Leyte in size being an elongated island of 1,695 square miles. Cebu City, the largest city of this island, and the first European settlement in the Philippines, is on a small natural harbor. Several of the collectors mentioned in the previous study shipped specimens from these islands to the writer at Brigham Young University.⁽²⁾ Ernest Reimschiessel made valuable collections at Tacloban and Manila; Herbert Frost, William Weston, and Cluff Hopla were stationed on Luzon Island. Doyle Taylor was attached to a hospital in Cebu City, this being the only island where he had an opportunity to collect.

The Spanish explorer Magellan discovered the Philippine Islands in 1521, and these remained under Spanish control until 1899, when by the Paris treaty they were put under the control of the United

(1) Contribution No. 116, Department of Zoology and Entomology.

(2) The Great Basin Naturalist, Vol. IX, No. 1-2, Dec. 30, 1948. Mariana Islands, pp. 1-20.

States. This control passed into the hands of the Filipinos in 1946 when they were given their independence and the Philippine Republic was established.

The climate of the Philippines, although tropical, is a pleasant one. The annual temperature averages about 79°. The cool breezes make the hottest months, April and May, very agreeable. The total area of this group of islands is 114,400 square miles, with a population in 1939 of 15,984,247. The chief exports are sugar, hemp, coconut oil, copra, tobacco, lumber, and embroideries.

DERIVATION OF THE HERPETOLOGICAL FAUNA OF THE PHILIPPINE ISLANDS

Much has been written on the cryptic subject of the origin and distribution of the cold-blooded vertebrates, but very little dependable information has been brought forth. One who seriously studies the animal life of the Philippines, Moluccas, New Guinea, and the Solomon Islands is at once confronted with the problem of geographical distribution. Such students of this subject as: Wallace, 1881; Beddard, 1895; Barbour, 1912; Taylor, 1922; Schultze, 1929; Matthew, 1939; Myers, 1943; and Darlington, 1948, while not in agreement, yet, they have arrived at some conclusions that are fairly well supported by present-day knowledge of reptile distribution.

In order that the thinking of some of the above authorities on this subject may be brought to the attention of the reader excerpts directed to an understanding of the geographical distribution of animal life on the Philippines are included in this paper.

From Thomas Barbour's notable "Contribution to the Zoogeography of the East Indian Islands" we extract the following:

"The relation of the Philippines to Halmahera is a question which still awaits solution. It seems possible to project the line of recent volcanoes through Halmahera up to Mindanao; in which case land may well have existed along a similar line. Lines of recent extensive faulting often give rise to volcanoes, and this may have been the case here. Such a connection, however, can hardly be urged as a substitute for the Celebes-Halmahera Bridge. The types which suggest immigration from Celebes do not occur among the southern Philippines, except for some on Palawan. The relation of Mindoro to Celebes, suggested at once by the distribution of the pigmy buffaloes, is, according to Bartsch, also evident from a study of the land-snails. Mindanao, with a fauna different from that of Celebes and Mindoro, must needs be of more recent origin. It has probably replaced, by having been lifted again from the sea, some of the land which became submarine between Celebes and Mindoro; and, joining with other islands, re-

ceived a typical Malayan fauna from Borneo, and some Celebesian types from small islands that may have represented unsubmerged mountain peaks of the older land mass and that supported some of the types common to Mindoro and Celebes. The Papuan element in the amphibian fauna of Borneo may be a true relic fauna; for the engystomatids, which exhibit such a very noteworthy elaboration in Papua, may have come from Borneo to Halmahera through the southern Philippines. Mindanao and Halmahera both support a number of engystomatid genera; but these forms are not abundant in Celebes, nor, as far as we know, in the Lesser Sunda chain, where we would expect to find more of them if they got to Papua by this route. The few occurring there represent probably what is really a back-flow from Halmahera. Borneo is well known herpetologically; but these small, inconspicuous frogs are very difficult to collect, and many may yet remain undiscovered both here and in the southern Philippines."

Concerning the faunal relations and distribution of Philippine snakes E. H. Taylor has reported as follows:

"The herpetological faunas of the Philippines, particularly the ophidian fauna, are derived from a variety of sources, but undoubtedly their greatest affinity is with Borneo. A casual glance at a map shows the Philippines joined to surrounding land bodies by a series of island chains, five or six in number.

To the north there is but a single chain comprised of the Babuyan and Batan Islands. This chain reaches nearly to Formosa, which in turn is joined with Japan through the Riu Kie Island group. To the south and southwest there are no less than three island chains that connect with Borneo. The most important of these three is the Palawan Island group, including the Calamianes, the Cuyo Islands, Palaway, and Balabac. The second chain, not so clearly defined as the former, comprises the Cagayan Islands, the Cagayan Sulu. The third chain which approaches more nearly to the mainland is the Sulu Archipelago, which includes a number of island groups, and the larger islands Basilan, Jolo, Tawitawi, with numerous small islands. As might be suspected the Philippines have far more genera and species in common with Borneo than with any other land body. To the south there is a second chain which divides, one branch connecting with Celebes through the Sanghir Islands, and the other with Gilolo, and the Moluccas, through Talaor, and Morotei.

There are thirty-three recognized genera of land snakes known to occur in the Philippines, and five of these are endemic. They are *Oxyrhabdium*, *Cyclocorus*, *Haplonodon*, *Typhlogeophis*, and *Hologerrhum*. The first genus has two known species; each of the other four is represented by a single species."

Dr. Myers' observations on the probable origin of the Philippine discoglossid frog, *Barbourula busuangensis* are of interest at this point. We quote the following:

"Superficial examination seems to confirm Taylor and Noble's suggestion that the closest known relative of *Barbourula* is *Bombina* of the Eurasian mainlands. *Barbourula* shows no sign of the gay belly marbling of *Bombina* (bright red in *B. bombina* and *B. orientalis*, bright yellow in *B. variegata* and *B. maxima*), and it is very different in many other ways. Its geographical situation alone shows that *Barbourula* must have been widely separated from its relatives on the Asiatic mainland for a long time. Geographically, *Bombina maxima* (of Yunnan and the highlands of Tonkin) is the closest species, but whatever migration route was followed by *Barbourula* was much longer than its present air-line distance from Tonkin. The Calamianes and Palawan have had, in my opinion, no direct dry land connection with the other Philippine islands to the north and east, or with Indo-China. They are related zoogeographically only to Borneo, of which they form a northward continental extension, and they have been cut off from Borneo by the sea only in relatively recent geological times. The ancestors of *Barbourula* must have arrived via the main Malay Archipelago at a time when Sundaland was upraised, and the present absence of Discoglossidae in Borneo and the Sunda chain, as well as in the Malay Peninsula, Siam, and most of Indo-China, indicates that *Barbourula* is an exceedingly isolate relict."

The origin of the Philippine fauna may be more clearly understood if information on the geographic distribution of other animal species than the amphibians and reptiles is considered. W. Schultze, a noted student of the Curculionidae, has dealt with the distribution problem from the point of view of the pachyrrhynchids, a group of weevils.

The family Curculionidae, to which the pachyrrhynchids belong, is the largest family of Coleoptera, and are world wide in their distribution. In the Philippine Islands between eight and nine hundred species of weevils have been described of which about 37 per cent are pachyrrhynchids. This peculiar and unique group of weevils, that are so limited in their distribution, are represented by 14 genera and 344 species; 11 genera and 309 species are restricted to the Philippines of which 9 genera are endemic to the Archipelago and 5 genera endemic to Luzon.

Schultze's conclusions are as follows:

"The Philippines were connected with the mainland of Asia (possibly through Formosa, possibly through a now completely obliterated formation) at a very early period. During this time indigenous species now found in the uplands entered Luzon. Then a separation occurred, between Luzon and the land north of it at least. After the first break the Philippine Islands still were connected with each other, with the exception of Palawan. The Philippine Islands, through the eastern chain by way of Mindanao, were connected with the Moluccas, Celebes, and probably New Guinea and some of its nearby islands. During the

same period the invasion and distribution of Papuan-Malaysian elements, such as the ancestral derivative forms of Lepidoptera and pachyrrhynchids, as mentioned before took place. This invasion must have extended over a long period of time during which some of the Papuan forms reached as far as northern Luzon, the Riu Kius being at that time, together with the Babuyanes, probably connected with Luzon. After that long period of stability the Philippines were the first to be separated from the rest of the Malay region, the break occurring at the junction near the Moluccas. At that time also it seems that the Philippine Islands became isolated from one another and assumed practically the island character of to-day. At the period when the Philippines were isolated from the rest of the Malay region, probably Celebes, Java, Sumatra, Borneo, and Palawan were still connected with each other. During the last period the various endemic genera developed, particularly in the pachyrrhynchids."

An analysis of the weevil fauna of the Mariana Islands to the east of the Philippines reveals a fauna at present of 49 species; 73 per cent of which are endemic. According to E. C. Zimmerman, 1942, this fauna had its origin from ancestral stocks derived from the Solomons, New Guinea, and the Philippines. The sub-families Cossoninae, Cryptorhynchinae, and Otiorrhynchinae common throughout oecania are the predominant ones in the Marianas. The reptiles reported as occurring on Guam by Van Denburgh, 1917, are common species in the Philippines, Moluccas, and the Solomons. How these fauna were once connected is not now known.

As to the center of origin and dispersal of the cold-blooded vertebrates, Darlington, 1948, page 105, takes issue with Matthew's contention that this took place in the north temperate zone. Darlington believes:

"Fresh-water fishes, amphibians and reptiles seem all to have dispersed from the tropics into the north temperate zone, more than the reverse. Some of them that have been in the north have withdrawn from there, but that does not mean that they originated there. Failure to distinguish evidence of withdrawal from evidence of origin and spreading is a basic error. The north temperate zone, especially its colder parts, is apparently not a great center of evolution or cold-blooded vertebrate life, but a marginal area where such life is limited."

The point of view of Darlington seems to especially apply to the cold-blooded vertebrates, and it is this belief which I have adopted in this study.

In the light of the above opinions we may, therefore, be justified in concluding that the herpetological stock from which the present species were derived came from the south tropical zone northward over preexistent land connections. There were, on the other hand no doubt,

southward withdrawals during the past. This transgressive and regressive movement of the fauna has left relic species strewn throughout the present island groups. From the early Tertiary times, during the Eocene to the middle of the Miocene, geological evidence points to land connection of the Philippines with island groups to the south.

According to Smith, 1910, no sedimentary formations have been found that are older than the Eocene. From Smith's summary of the geological history of the Philippines we extract the following from Mr. George F. Becker's remarks:

"From early Paleozoic times onward an archipelago has usually marked the position of these islands. Prior to the Eocene nothing definite is known of them . . . After the Cebuan lignitic epoch a great uplift and folding took place, and this may have been a detail of the late Eocene movement which so profoundly modified Asia and Europe. It must have brought about temporary continuity of land area between Borneo and Luzon."

Smith also pointed out in 1907, that the Pleistocene sediments of northern Luzon show no evidence of glaciation.

The fact that many endemic cold-blooded vertebrates, as well as weevils, are found in the Philippines suggests a rather old and isolated fauna; one that has been isolated since Oligocene or Pliocene times.

At present the Philippine reptiles affinity is southern more than northern. It is a fauna in which there are large generic affinities with Southern Island species.

It is of interest to note that in this issue a species of *Pseudogecko* from Gaudalcanal, Solomon Islands is described as new. This is the second known species of this genus to be discovered and since its habitat is tropical, but south of the equator, it suggests a connection of these areas at some time in the recent past.

LIST OF PHILIPPINE AMPHIBIANS AND REPTILES CONSIDERED IN THIS STUDY

The Philippine Islands have a large and interesting herpetological fauna. Several hundred species have been recorded as occurring in these islands. The species reported here are, in the main, common ones. My major purpose in preparing this report is to make known the following Philippine species as occurring in the Brigham Young University Herpetological Collection. A large portion of the preserved collections in the Bureau of Science at Manila was destroyed in the recent war. Now that the Filipinos have charge of the research and

educational programs in the Islands, zoological materials may not be studied as systematically as during the past fifty years. It therefore seems to be desirable to know the location of Philippine and Oceanic herpetological specimens.

AMPHIBIANS

Family RANIDAE

OXYGLOSSUS LAEVIS GUNTHER

Gunther, Cat. Batr. Sal. Brit. Mus. 7, 1858, pl. 1, fig. A.

BYU 7932-36 Manila, Luzon (E. Reimschiissel) May, 1945

Remarks: This species was well described by Dr. Taylor, 1920, p. 230. The five specimens are from 23 mm. to 35 mm. in body length; color above brownish with small elongate tubercles on posterior back and outer tibia; under surface of throat and legs mottled with brownish spots; no yellow stripe present in any specimens before me. This wide spread species was common around Manila. Mr. Reimschiissel found this frog rather difficult to collect because of its illisiveness.

RANA VITTIGERA WIEGMANN

Wiegmann, Nova Acta Ac. Leop.-Carol., 1836, p. 225, pl. 21, fig. 1

BYU 7944	Manila, Luzon	(E. Reimschiissel)	June, Aug., 1945
BYU 7965-66	Manila, Luzon	(E. Reimschiissel)	June, Aug., 1945
BYU 7973-75	Manila, Luzon	(E. Reimschiissel)	June, Aug., 1945
BYU 7976	Manila, Luzon	(E. Reimschiissel)	June, Aug., 1945
BYU 7979	Manila, Luzon	(E. Reimschiissel)	June, Aug., 1945
BYU 7982-83	Manila, Luzon	(E. Reimschiissel)	June, Aug., 1945
BYU 7985	Manila, Luzon	(E. Reimschiissel)	June, Aug., 1945
BYU 7987	Manila, Luzon	(E. Reimschiissel)	June, Aug., 1945
BYU 7989-93	Manila, Luzon	(E. Reimschiissel)	June, Aug., 1945
BYU 8375	Manila, Luzon	(E. Reimschiissel)	June, Aug., 1945
Many untagged immature specimens and tadpoles.			

Remarks: The adults vary in length from 28 mm. to 78 mm. Specimen No. 7966 is 78 mm. in length; head length 28 mm. and head width 29 mm. The dorsal surface color is brownish with black spots to almost a black background, and with many parallel elongate ridges. Under surface white bordered with gray spots. This species was common around Manila during July and August, according to Mr. Reimschiissel. It was breeding in the drain ditches and water holes around the city. A careful study has been made of these specimens to determine if *R. moodici* Taylor was among them. I am unable to find any specimens with "a flap of skin on the outer side of the fifth toe and metatarsal." a feature which is found in *moodici* but not in *R. vittigera*.

A further study of some of these specimens should be made in connection with Taylor's type which is in the Carnegie Museum at Pittsburgh.

Mr. Reimschiissel collected more than a hundred immature specimens representing most of the developmental stages of this species. He reports that the adults were in the pools along with the larval forms when he collected them. An examination of the mouth structures of several of the tadpoles reveals the following: Papillae on the marginal third of the upper and all of the lower labia; teeth 2/3; beak horny and well developed; total body and tail length 30 mm.

RANA LEYTENSIS BOETTGER

Boettger, Zool. Anz. 16, 1893, p. 365

BYU 7919-20 Tacloban, Leyte Island (E. Reimschiissel) March, 1945

Remarks: Two well preserved specimens with body lengths of 39 mm. and 31 mm. were taken near Tacloban in March, 1945.

RHACOPHORUS LEUCOMYSTAX (KUHLE)

(Kuhle), Gravenhorst, Deliciae Mus. Zool. Vratislav., Fasc. I, Lipsiae, 1829, p. 26

BYU 7922 Manila, Luzon (E. Reimschiissel) May, 1945

BYU 7981 Manila, Luzon (E. Reimschiissel) May, 1945

BYU 7996 Manila, Luzon (Wm. Weston) Oct., 1945

Remarks: Common throughout the Archipelago. Mr. Weston suspected that this species was breeding in October.

Family ENGYSTOMIDAE

KALOULA PICTA (BIBRON)

Bibron, in Eydoux and Souleyet, Voy. Bonite, Rept. pl. 9, fig. 2

BYU 7978 Manila, Luzon (E. Reimschiissel) July, 1945

Remarks: A distinctive species, head broad and short, body heavy set, legs short and spindly. This frog is common during the breeding season on the islands of Luzon, Negros and Mindoro.

KALOPHRYNUS STELLATUS STEJNEGER

Stejneger, Proc. U. S. Nat. Mus. 33, 1908, p. 575

BYU 7910 South of Tacloban near Dulag, Leyte (E. Reimschiissel) Mar. 3, 1945

BYU 7912 South of Tacloban near Dulag, Leyte (E. Reimschiissel) Mar. 3, 1945

BYU 7916 South of Tacloban near Dulag, Leyte (E. Reimschiissel) Mar. 3, 1945

Remarks: There are three well preserved specimens, 35 mm. to 40 mm. in body length with a distinctly inverted V terminating in two black dots in the groin, in the collection. Common in the swampy forests of Mindanao. Taylor does not report this species as occurring in Leyte Island. Stejneger's specimen came from Basilan.

LIZARDS

Family GECKONIDAE

HEMIDACTYLUS FRENATUS DUN. AND BIBR.

Dum. and Bibr. Erp. Gen. III, 1836, p. 366

BYU 7363	Manila, Luzon	(E. Reimschiissel)	June, 1945
BYU 7923-27	Manila, Luzon	(E. Reimschiissel)	June, 1945
BYU 7950	Manila, Luzon	(E. Reimschiissel)	June, 1945
BYU 7952	Manila, Luzon	(E. Reimschiissel)	June, 1945
BYU 7954	Manila, Luzon	(E. Reimschiissel)	June, 1945
BYU 7958-61	Manila, Luzon	(E. Reimschiissel)	June, 1945
BYU 7963-64	Manila, Luzon	(E. Reimschiissel)	June, 1945
BYU 7957-69	Manila, Luzon	(E. Reimschiissel)	June, 1945
BYU 7971-72	Manila, Luzon	(E. Reimschiissel)	June, 1945
BYU 7984	Manila, Luzon	(E. Reimschiissel)	June, 1945
BYU 8376	Manila, Luzon	(E. Reimschiissel)	June, 1945

Remarks: Mr. Reimschiissel's field notes indicate that this lizard is common in the houses and tents around Manila.

GECKO MUTILATA (WIEGMANN)

Wiegmann, Nova. Acta. Ac. Leop. Carol, XVII, 1836, p. 238

BYU 7962 Manila, Luzon (E. Reimschiissel) June, 1945

Remarks: This specimen was taken along with specimens of *H. frenatus*. It is widely distributed throughout the Philippine Islands.

GECKO GECKO (LINNAEUS)

Linnaeus, Syst. Nat. Ed. 10, 1, 1758, p. 205

BYU 8030 59th Station Hospital, Cebu Island (Doyle Taylor) Oct., 1945

Remarks: Mr. Taylor found it difficult to capture this specimen, but reports that the species is common around the hospital. The specimen has a body length of 85 mm., tail length of 94 mm., and 15 pre-anal pores.

Family AGAMIDAE

DRACO BIMACULATUS (GUNTHER)

Gunther, Rept. British India, 1864, p. 127

- BYU 7915 Tacloban, Leyte Island (E. Reimschiüssel) Mar. 10, 1945
 BYU 9717 Tacloban, Leyte Island (E. Reimschiüssel) Mar. 10, 1945

Remarks: According to Mr. Reimschiüssel these lizards, *D. bimaculatus* and *D. spilopterus*, were difficult to capture. They would run up the trunks of coconut palms, and by keeping on the opposite side of the tree from the pursuer, were able to hide.

Flying lizards, belonging to the genus *Draco*, are found in Indo-China, the Philippine Islands, and the East Indian Archipelago. There are about forty species known, of which about a dozen are found in the Philippines. These lizards are not able to really fly, but only glide from one vantage point to another. A male and female are said by Smith, 1935, to stay together during the breeding season. The gular pouch of the male is a most interesting structure; during courtship it is greatly distended. The wings are extensions of the body walls supported by five or six patagial ribs. The tail is long and slender.

Specimen BYU 7915 has a total length of 95 mm.; the length from head to anus is 33 mm. The width of body and wings is 17 mm. The color is bluish with white mottling. Specimen BYU 7917 has a length of 50 mm. from head to anus. The tail is broken off from this specimen. Width of body and wings 36 mm. There are 9-10 lower labials and 9-9 upper labials.

DRACO SPILOPTERUS (WIEGMANN)

Wiegmann, Nova Acata Ac. Caes.-Leop. 1, 17, 1835, p. 216, pl. 15

- BYU 7911 Tacloban, Leyte (E. Reimschiüssel) Mar. 8, 1945
 BYU 7916 Tacloban, Leyte (E. Reimschiüssel) Mar. 8, 1945

Remarks: Two well preserved specimens are in the collection.

Family SCINCIDAE

MABUYIA MULTIFASCIATA MULTIFASCIATA (KUHL)

Kuhl. Beitr. Zool. und Vergl. Anst. 1820, p. 126

- BYU 7928-31 Manila, Luzon (E. Reimschiüssel) May, 1945
 BYU 7943 Manila, Luzon (E. Reimschiüssel) May, 1945
 BYU 7945-49 Manila, Luzon (E. Reimschiüssel) May, 1945
 BYU 7951 Manila, Luzon (E. Reimschiüssel) May, 1945
 BYU 7953 Manila, Luzon (E. Reimschiüssel) May, 1945
 BYU 7955-57 Manila, Luzon (E. Reimschiüssel) May, 1945
 BYU 7988 Manila, Luzon (E. Reimschiüssel) May, 1945
 BYU 7995 Manila, Luzon (E. Reimschiüssel) May, 1945

Remarks: From Mr. Reimschiüssel's field notes we learn that this species is common in the grassy semi-swampy areas around Manila. One specimen, No. 7946, has two well-developed tails.

DASIA SMARAGDINUM (LESSON)

Lesson, Voy. Coquilla, Zool. 2, 1830, p. 43, pl. 3, fig. 1

BYU 7909	Tacloban, Leyte Island	(E. Reimschiissel)	March, 1945
BYU 7913	Tacloban, Leyte Island	(E. Reimschiissel)	March, 1945
BYU 8004	Tacloban, Leyte Island	(E. Reimschiissel)	March, 1945
BYU 8006-07	Cebu City, Cebu Island	(Doyle Taylor)	August, 1945

Remarks: The following is from E. Reimschiissel's field notes No. 187: "This lizard (No. BYU 7913) was taken on a coconut tree. It is very nimble and appears like those taken on the Admiralty Islands, but not so stocky. The forepart is green shading to a grey at the hind legs where a number of black dots appear on the legs and slides."

LYGOSOMA JAGORII PALUSTRIS (TAYLOR)

Taylor, Philip. Jour. Sci. D 10, 1915, p. 102 (Sphenomorphus)

BYU 7914	Tacloban, Leyte Island	(E. Reimschiissel)	March, 1945
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Remarks: A single specimen of *Lygosoma* (*Hinulia*) was collected at Tacloban. It was found on the ground; color brown with light cross bars over the back and anterior portion of the tail.

BRACHYMELES SP.

BYU 9577	Tacloban, Leyte Island	(E. Reimschiissel)	March, 1945
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Remarks: A single specimen of this species collected by Mr. Reimschiissel is now in the collection. A portion of the tail has been broken off and lost, the body has been flattened by being run over by a vehicle. The head, legs, and body scales are well preserved. In the Taylor key, 1922, p. 245, this specimen runs to *B. burski* or *B. bonitac*. It differs from both of these species as follows: Twenty-two scale rows; front legs 20 times in body length between front and hind legs; upper labials 6; lower labials 6; 22 teeth on the left lower jaw; mental broader than high and in contact with the first lower labial and first chin scale; fronto-basal in contact with the rostral, supranasal, post-nasal, prefrontal, and frontal; rostral broad and clearly seen from above; four supraoculars; second to fourth in contact with the marginal quadrant of the frontal; legs stump-like with three fairly transparent short diget-like projections.

This genus of scincid lizards, consisting of ten known species is confined to the Philippine Islands. I can find no reference to species of this genus having been collected on Leyte Island. Additional well preserved specimens from this area would be of interest in a future study of this endemic Philippine genus.

SNAKES

Family TYPHOLOPIDAE

TYPHLOPS BRAMINUS (DAUDIN)

Daudin, Hist. Rept. VII, 1803, p. 279

BYU 7980 Manila, Luzon (E. Reimschiissel) July, 1945

Remarks: This specimen was reported in my previous paper.⁽³⁾

Family COLUBRIDAE

ACROCHORDUS GRANULATUS (SCHNEIDER)

Hist. Amph. 1, (1799), p. 243. *Hydrus*

BYU 7997 Manila, Luzon (Herbert Frost) June, 1945

BYU 7998 Manila, Luzon (Herbert Frost) June, 1945

Remarks: This harmless snake lives in the sea and fresh water. The narrow head, small eyes, and one hundred or more body scales make it rather distinctive. It feeds on small fish. Smith, 1943, does not consider *Chersydrus* as distinct from *Acrochordus*.

LYCODON AULICUS (LINN.)

Linnaeus, Mus. Ad. Frid. I, 1754, p. 29, pl. III, fig. 2

BYU 7942 Manila (E. Reimschiissel) July, 1945

BYU 7977 Manila (E. Reimschiissel) July, 1945

BYU 8000 Los Banos, Luzon (Herbert Frost) July, 1945

BYU 8001 Los Banos, Luzon (Herbert Frost) July, 1945

BYU 8005 Cebu City, Cebu Island (Doyle Taylor) August, 1945

BYU 8099 Margeritta, Assam, India (James Bee) April 18, 1945

Remarks: This nocturnal egg-laying colubrid is widely distributed through the Malayan area. Around Manila it is common. Specimen BYU 7977 has 17 rows of body scales; also BYU 7942 has 17 rows of scales, 62 urosteges and a divided anal.

NATRIX SPILOGASTER (BOIE)

Boie, Isis, 1827, p. 535

BYU 7940 Manila (E. Reimschiissel) June 5, 1945

BYU 7941 Manila (E. Reimschiissel) June 5, 1945

BYU 7999 Manila (Herbert Frost) October, 1945

Remarks: Mr. Frost informed me that this snake was common around Manila and Los Banos. Mr. Reimschiissel reports in his field

(3) Op. Cit.

notes that the specimens he collected were grey in color with two tan lines running lengthwise with the body. He also reports that the specimen No. 7940 bit a frog, killing it within a few minutes. All these specimens are well preserved.

ELAPHE ERYTHRURA (DUMERIL AND BIBRON)

Dumeril and Bibron, Erp. Gen. 7, 1854, p. 175

BYU 7994 Manila (Wm. Weston) October, 1945
 BYU 8002 Cebu City, Cebu Island (Doyle Taylor) October, 1945
 BYU 8008 Cebu City, Cebu Island (Doyle Taylor) October, 1945

Remarks: Three well preserved specimens. The Manila specimen No. 7994 is 1221 mm. in total length.

CALAMARIA GERVAISII GERVAISII (DUMERIL AND BIBRON)

Dumeril and Bibron, Erp. Gen. 7, 1854, p. 76

BYU 7986 Manila (E. Reimschuessel) August 19, 1945

Remarks: One small well preserved specimen. Color and marking agree well with Taylor's description, 1922, p. 187.

CHRYSOPELEA ORNATA (SHAW)

Shaw, Zool. 3, 1802, p. 477

BYU 7918 Leyte Island (E. Reimschuessel) March, 1945

Remarks: This specimen was damaged some when it was killed, since it was thought to be poisonous. Color of ventral scales is deep blue-black. Total length 750 mm., tail slender and pointed.

Family ELAPHIDAE

NAJA NAJA SAMARENSIS (PETERS)

Peters, Mon. Berl. Ak., 1861, p. 690

BYU 7902 Near Tacloban, Leyte Island (E. Reimschuessel) March 8, 1945

Remarks: Mr. Reimschuessel recovered this specimen which had been killed by several of the Army boys when they found it in a "fox-hole." The head had been cut off, but neither it or the body were damaged. The specimen has a length of thirty-two inches; the back is black and the venter yellow. The specimen is fat, it had eaten four mice which were removed when it was killed. This snake is greatly feared by the native Filipinos.

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