

## First report on the herpetofauna of the Oecusse District, an exclave of Timor-Leste

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**Abstract.** During July 2010 we conducted what appears to be the first herpetofaunal survey in the Oecusse District, Timor-Leste. The amphibian fauna was characterized by the presence of rice paddy frogs (genus *Fejervarya*) and treefrogs (*Polypedates* cf. *leucomystax*), but the recently introduced Asian toad (*Duttaphrynus melanostictus*) was found to occur in large numbers in the paddy fields near the district's main town, Pante Macassar. The observed lizard fauna was more diverse, with four species of geckos (*Hemidactylus frenatus*, *H. cf. tenkatei*, *Gekko gecko*, *Cyrtodactylus* sp.) and three species of skinks (*Carlia* sp., *Eutropis* cf. *multifasciata*, *Lamprolepis* cf. *smaragdina*). We confirmed two species of snakes (*Broghammerus reticulatus*, *Laticauda colubrina*) and present anecdotal evidence of two others. With the exception of *Cyrtodactylus*, which most likely represents an undescribed species, the herpetofauna of Oecusse District identified so far appears to be a less diverse subset of species found in the other twelve, contiguous districts of mainland Timor-Leste.

**Keywords.** Herpetofauna, Oecusse District, Timor-Leste, *Cyrtodactylus*.

### Introduction.

Timor-Leste (also known as East Timor) became independent in 2002 after nearly 500 years as a Portuguese colony and 24 violent years of Indonesian occupation. The Oecusse District (Figs. 1–3) is a small exclave (area 815 km<sup>2</sup>) bordered to the south, west, and east by the West Timor region of Indonesia's Nusa Tenggara Timur province, and to the north by the Savu Sea. The district is a geopolitical anomaly, created by the historical, sometimes tumultuous, relationship between the Dutch and Portuguese colonial powers. Oecusse is separated from the westernmost point of mainland Timor-Leste by 58 km straight land distance (just over 70

km road distance between Batugade, Bobonaro District and Sakato, Oecusse District; Fig. 1) and constitutes the westernmost extension of sovereign Timor-Leste. As with most of Timor-Leste, the topography of Oecusse is generally steeply mountainous. Mountain peaks reach elevations in excess of 1200 m (Mt. Sapu, 1251 m, NE corner of Pante Macassar subdistrict; Mt. Manoleu, 1171 m, NW corner of Nitibe subdistrict; Mt. Puas, 1121 m, S corner of Passabe subdistrict) and form a water catchment creating the tributaries of the Tono River. The district has experienced significant levels of environmental degradation, beginning with extensive harvesting of native white sandalwood (*Santalum album*) by Chinese traders, as early as the 1400s and certainly well before the arrival of Portuguese colonists in 1515 (e.g., Wright, 2004), and continuing right through the Indonesian occupation. Habitat loss continues to be a significant environmental challenge throughout Timor-Leste, compounded by the need for subsistence agriculture plots and concomitant slash-and-burn activities and the wanton destruction in Oecusse during the retreat of Indonesian troops and pro-Indonesian militias on the eve of independence. As a consequence, little pristine habitat remains and is mostly restricted to the steepest, most mountainous parts of the district.

No focused investigations into the herpetofauna of Timor-Leste, the most remote colony of the Portuguese colonial empire, were conducted by the colonial power, and only towards the end of the 19<sup>th</sup> century did two brief reports of the colony's herpetofauna appear (Bethencourt

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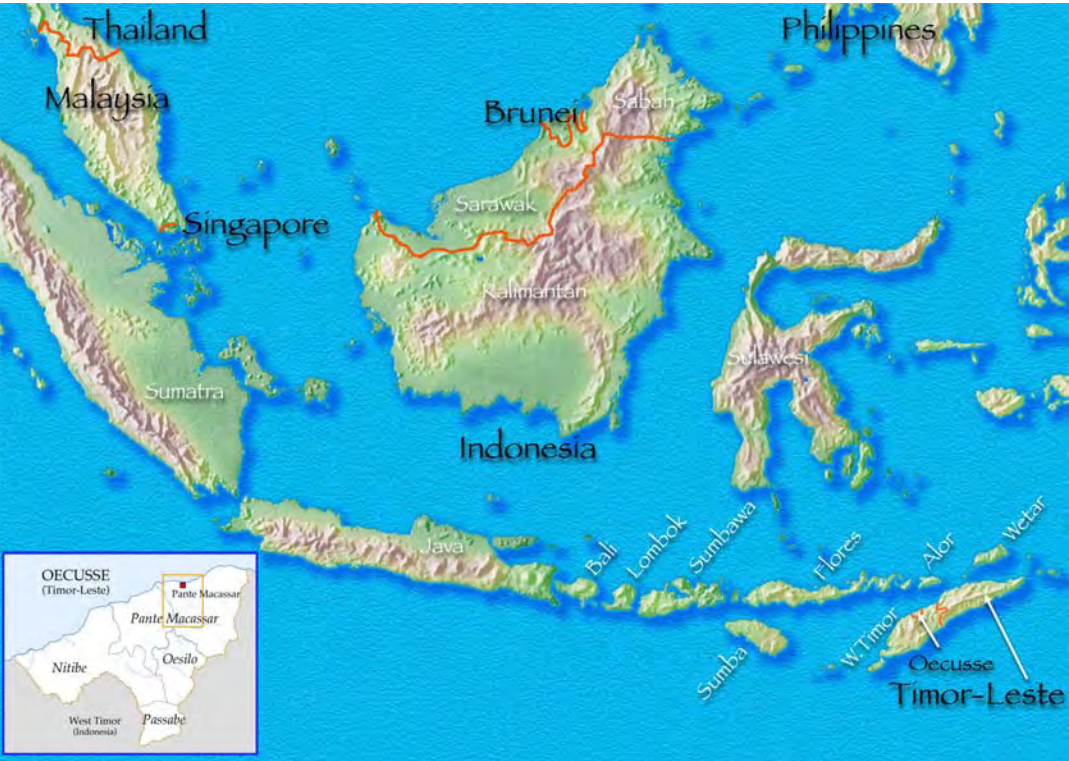
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**Table 1.** Localities surveyed in the Oecusse District, Timor-Leste from 2–6 July 2010.

Locality	Description	GPS Coordinates	Elevation (m)
1	Hotel Rao, Pante Macassar	9.204° S, 124.369° E	13
2	Rice paddy, Pante Macassar	9.203° S, 124.366° E	7
3	Esplanade, Pante Macassar	9.198° S, 124.371° E	8
4	Santa Rosa Swamp, Pante Macassar	9.198° S, 124.372° E	9
5	Old military wharf, E Pante Macassar	9.187° S, 124.393° E	3
6	Cutete Aldeia, ca. 7 km S Pante Macassar	9.254° S, 124.385° E	479
7	Abanat River cliff, ca. 10 km S Pante Macassar	9.282° S, 124.376° E	81

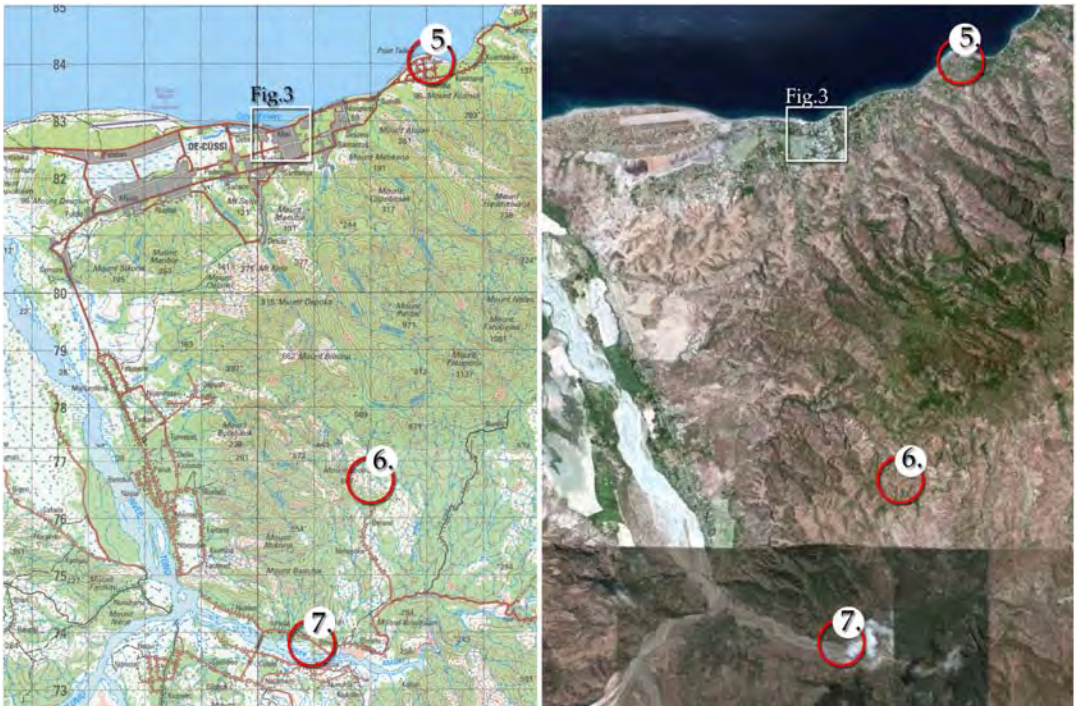
Ferreira, 1897, 1898). Portuguese researchers published only three additional short papers during Portuguese colonial times (Manaças, 1956, 1972; Themido, 1941). Much greater efforts were made in West Timor, a colony serviced initially by the Dutch East India Company before becoming incorporated into The Netherlands,

and several Dutch and French expeditions collected material in the area of the main port of Kupang and in the surrounding area of central West Timor during colonial times (see Kaiser *et al.*, 2011 for a review). Beginning with war in the Pacific Theatre in 1941, and later with the Indonesian annexation of East Timor in 1975,



**Figure 1.** Location of Timor-Leste and the Oecusse exclave in the Indo-Australian region. Timor Island is at the southeastern extreme of the Lesser Sunda Archipelago, whose main islands are labeled. The Oecusse District (inset) comprises four subdistricts (Nitibe, Oesilo, Pante Macassar, Passabe). To give an idea of scale, aerial distance from the northwestern to the southeastern coastal border is just over 51 km. Maps by Mark O’Shea.





**Figure 2.** Topographic map (left) and satellite image (right) of the areas we surveyed in the Oecusse District, Timor-Leste as part of this study. Individual localities are labeled with numbered circles corresponding to the locality data in Table 1. Figure 3 provides a close-up of the framed area in Pante Macassar. Maps by Mark O'Shea.



**Figure 3.** Topographic (top) and satellite (bottom) close-ups of the localities surveyed in Pante Macassar, Oecusse District, Timor-Leste. Numbers correspond to the locality data in Table 1. Maps by Mark O'Shea.

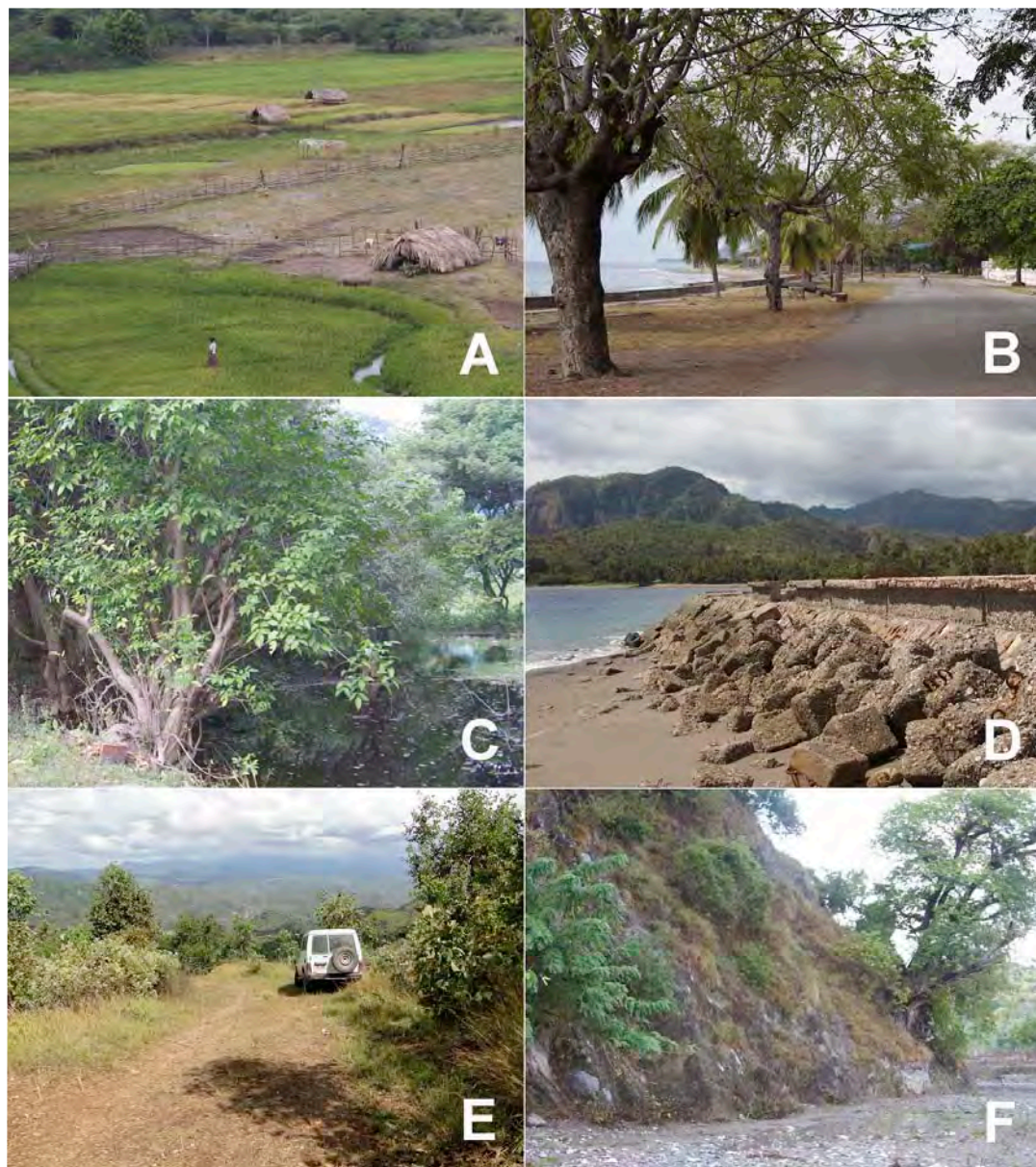
fieldwork in what is now Timor-Leste became fraught with danger and essentially ceased. Throughout the rather turbulent colonial history of the Oecusse District there has never been, to the best of our knowledge, a survey of its amphibian and reptile diversity. This report constitutes the first such assessment based on a limited survey in July 2010.

### Materials and Methods.

**Localities.** We surveyed for amphibians and reptiles at five localities in the northeastern part of Oecusse District from 2–6 July 2010 (Table 1; Figs. 2–4). Survey localities were selected to permit easy road access, and our visit itself was a pilot project to determine the feasibility of more comprehensive future surveys.

**Specimen collection.** We actively surveyed by night and during the day in all habitat types at each locality, including roadsides, paths, and streambeds, and supplemented these efforts by captures at our hotel, by observations of a captive python, and by collecting anecdotal information. During the day we searched at ground level, on tree trunks, and in the foliage of trees and shrubs, and caught specimens by hand. Lizards out of reach in the trees were stunned using 6-foot (183 cm) blowguns and plastic plugs (Blowguns Northwest, [blowgunsnw.com](http://blowgunsnw.com)). We also searched under bark on rotten logs, which were turned over using stump rippers (Midwest Tongs, [tongs.com](http://tongs.com)) and surveyed boulders, rock faces, rock piles, and other possible refugia. Habitat components were replaced in their original position as much as possible to





**Figure 4.** Habitat types surveyed in the Oecusse District, Timor-Leste, in July 2010. Localities are listed by the numbers provided in Table 1. (A) Rice paddy farming is a very prominent component of agricultural activity in Oecusse; the inundated paddies are ideal anuran breeding grounds, frequented particularly by the introduced toad *Duttaphrynus melanostictus* and rice paddy frogs (genus *Fejervarya*). (B) The seaside esplanade in Pante Macassar (Locality 3) has many individual, mature trees that serve as perches for both flying lizards (*Draco timoriensis*) and emerald tree skinks (*Lamprolepis* cf. *smaragdina*). (C) The swampy area (Locality 4) served as a refugium central to Pante Macassar for all of the anurans found in Oecusse as well as for several lizard species. It was also the locality where the python was captured. (D) The abandoned military wharf (Locality 5) is an excellent habitat for *Laticauda colubrina*. (E) View towards the west into the mountainous region of central Oecusse from the Cutete Aldeia (Locality 6), which we nicknamed “Carlialand”. (F) This cliff face along the Abanat River (Locality 7) is the location where we made our collection of *Cyrtodactylus*. Photos by Mark O’Shea (A–D, F) and Hinrich Kaiser (E).



**Figure 5.** Adult *Duttaphrynus melanostictus* from a paddy field near Pante Macassar. Photo by Mark O'Shea.



**Figure 6.** Three color morphs of rice paddy frogs, genus *Fejervarya*. As in the contiguous twelve districts of mainland Timor-Leste, the taxonomy of these specimens has yet to be resolved. Photos by Mark O'Shea.

avoid permanent disruption of hiding places. At night we searched horizontal and vertical substrates, the edges of aquatic habitats, and the vegetation using flashlights. We discovered a captive python in the town of Pante Macassar and requested to examine and measure it. Date, time, altitude, circumstances of capture, and GPS coordinates (conforming to WGS-84) for each locality were routinely recorded using a Garmin Oregon 400t handheld global positioning system (Garmin International Inc., garmin.com).

**Processing.** At least one individual of each captured species from each locality was set up and photographed on a natural set constructed in a 90-cm Cubelite (Lastolite Ltd., lastolite.com) to capture morphological detail, to record color patterns in life, and to provide images for future reports and presentations. Specimens were then euthanized following standard animal care protocols (ASIH, 2004). Tissue samples (liver when possible) were taken and preserved in 95% non-denatured ethanol. External and internal parasites were collected when discovered during processing. Snout-vent length (SVL) and total length (TL) were measured for all freshly killed reptiles and for the captive python, which was not sacrificed. Voucher specimens were also photographed in dorsal and ventral views with field numbers visible to complement the more natural photographs obtained. We attempted to sex specimens, after euthanasia but before preservation, by evert ing hemipenes via formalin injection or by checking for the presence of yolked eggs. Specimens were positioned and fixed using 10% formalin. Species accounts use the accepted scientific name of each species as of 15 September 2011. However, in cases where there exists any taxonomic uncertainty we did not assign species names to a population, but used only the generic designation or made use of the term "cf." to indicate our doubts. Scientific names are listed with common names in English (E), Timor-Leste's official language Tetun (T), and the native language of Oecusse, Baiqueno (B). English common names have been taken from, or modeled to, usage by professional herpetologists. Tetun names with asterisks ("T") are newly minted and designed to correlate with English names. Spelling of Tetun names follows Hull (2001). For basic morphological information to allow field identification of the species listed herein, the reader is referred to the extensive descriptions provided in Kaiser et al. (2011), a report suitable for use as companion document to this report. Voucher specimens have been deposited in the Division of Amphibians and Reptiles, National Museum of Natural History, Smithsonian Institution, Washington DC, USA (USNM).

## Species Accounts

### FROGS AND TOADS

#### Bufonidae

*Duttaphrynus melanostictus* (Fig. 5). (E) Black-spined Toad, Common Asian Toad. (T) Manduku Interfet (manduku = frog, INTERFET = International Force for East Timor). (B) Beso Korea. Referred to as "manduku INTERFET" throughout the contiguous districts of Timor-Leste where it occurs, the term Beso Korea used in Oecusse stems from the belief that the



specific INTERFET unit, with whose deployment in Oecusse the arrival of these toads coincided, came from South Korea. Even though it is nearly impossible to verify this introduction over a decade later, it appears that the spread of these toads may be related to the activities of international peacekeepers in Timor-Leste.

This toad is one of the most abundant amphibians where it occurs. Toads of sizes ranging from juveniles to adults were found hiding under a wide array of objects during the day and were observed while active in disturbed places (e.g., towns, roadsides), cultivated habitats (e.g., rice paddies), and some pristine habitats (e.g., dry riverbeds) at night. We collected one voucher specimen (USNM 578927) at night in an inundated rice paddy (Locality 2, Table 1), captured among a throng of vocalizing conspecifics. Toads were also observed vocalizing among rice paddy frogs (genus *Fejervarya*; see below). We noted the presence of the species in a dry riverbed (Locality 7, Table 1) and disturbed areas elsewhere in Oecusse but did not collect additional specimens.

### Dicroglossidae

**Genus *Fejervarya* (Fig. 6).** (E) Rice Paddy Frog. (T) Manduku natar (manduku = frog, natar = rice paddy). (B) Beso aenóek (pronounced ai- as in my, -nock as in lock).

Rice paddy frogs were the most commonly encountered amphibians in areas with rice agriculture. These frogs were found in all areas of planted and unplanted rice paddies: in the water surrounding rice plants, in inundated paddies without rice plants, on the narrow dykes and pathways making up the perimeter of the paddies, at the base of these dykes, and in grassy areas between rice paddies. Some were also located on the dirt road passing through the paddy fields. Individuals of *Fejervarya* and *D. melanostictus* were observed vocalizing at the same time in the same habitat. Sixteen voucher specimens (USNM 579019–34) were collected at night from adjacent rice paddies just west of Pante Macassar (Locality 2, Table 1). In this survey, we documented a single species of rice paddy frog in Oecusse. Because the taxonomy of this genus in the Lesser Sunda archipelago in general, and for Timor Island in particular, is still unresolved (see Kaiser *et al.*, 2011), it is not possible to assign a species name to this population at this point.



**Figure 7.** Adult *Polypedates* cf. *leucomystax* from a swamp locality. Photo by Mark O'Shea.

### Rhacophoridae

***Polypedates* cf. *leucomystax* (Fig. 7).** (E) Striped Treefrog. (T) Manduku ai-riskadu (manduku = frog, ai = tree, riskadu = striped), or Manduku loron (manduku = frog, loron = sunlight). (B) Beso funan.

Four adults (USNM 579954–57) were collected and vouchered at night from the grassy edge of a pond and in a swampy area in Pante Macassar, Oecusse's main town (Locality 4, Table 1).

### LIZARDS

#### Agamidae

***Draco timoriensis* (Fig. 8).** (E) Timor Flying Dragon. (T) Teki liras (teki = small lizard, liras = winged). (B) Taepsusu aplelet.

Four Timor flying dragons (USNM 579040–43; two females, one male, one juvenile) were blowpiped from the trees in the Santa Rosa area of Pante Macassar (Locality 3, Table 1). Each individual was seen during the daytime on the trunk or one of the larger branches of a mature tree.

#### Gekkonidae

**Genus *Cyrtodactylus* (Fig. 9).** (E) Bent-toed Gecko. (T) Teki ain-fuan kleuk (teki = small lizard, kleuk = bent, ain-fuan = toe). (B) Biklut nilo.

We found a total of seven individuals (USNM 579047–53) of an undescribed bent-toed gecko, including males, females, and a juvenile. In the initial encounter, a solitary adult individual was seen at night clinging to a large rock face along the embankment of a dry riverbed (Locality 7, Table 1). Two additional specimens were found after more intensive searching in the vicinity of the first. These two were placed in the same plastic



**Figure 8.** Adult male (top panel) and adult female (bottom panels) *Draco timoriensis* from Pante Macassar. Photos by Mark O'Shea.





**Figure 9.** Adult male *Cyrtodactylus* sp. from a rock face along the Abanat River. Photos by Mark O’Shea.



**Figure 10.** Subadult *Gekko gecko* in defensive posture. Photo by Mark O’Shea.

collection bag, where they copulated and remained linked during transport and photography (ca. 3 h). The following evening additional specimens were collected at dusk in the same general locality, from a rock face nearby, and from tree stumps in a small wooded plot that had been cut during that day.

***Gekko gecko* (Fig. 10).** (E) Tokay Gecko. (T) Toke (toke = large gecko). (B) Teke.

Generally referred to as to the “tokay gecko,” this species is easily identified by its distinctive appearance and vocalization. Commonly found in and around populated areas, tokay geckos can often be found hiding in rafters and other sheltered places of man-made structures. The distinctive vocalization (“to-kay”) was heard in the evenings and at night from our hotel in Pante

Macassar. We collected one subadult specimen (USNM 579059) in the same locality as the *Cyrtodactylus* (Locality 7, Table 1).

***Hemidactylus frenatus* (Fig. 11).** (E) Common House Gecko. (\*T) Teki uma baibain (teki = small lizard, uma = house, baibain = common). (B) Biklut ume.

This nocturnal perianthropic species was found on the walls and ceilings of almost every building, both indoors and outdoors. It is widely distributed throughout different altitudes and habitats in Oecusse. At the Hotel Rao in Pante Macassar (Locality 1, Table 1), *H. frenatus* was commonly observed preying on insects attracted to artificial light sources. We collected eight voucher specimens from our hotel walls (USNM 579095–102), one from a swamp area at Santa Rosa on the east side of





**Figure 11.** Common house gecko (*Hemidactylus frenatus*) living syntopically with individuals of *H. cf. tenkatei* in the grounds of the Hotel Rao. Photos by Mark O'Shea.

Pante Macassar (Locality 3, Table 1; USNM 579103), and a single specimen (USNM 579104) from the same locality as the *Cyrtodactylus*, 10 km to the south of Pante Macassar (Locality 7, Table 1).

***Hemidactylus platyurus* (Fig. 12).** (E) Flat-tailed Gecko. (\*T) Teki ikun belar (teki = small lizard, belar = flat, ikun = tail). (B) Biklut ióbená.

Two individuals of this species were collected, in Santa Rosa (Locality 3, Table 1) near Pante Macassar (USNM 579114–15). Both were found during the day on roadside trees.

***Hemidactylus cf. tenkatei* (Fig. 13).** (E) Roti House Gecko. (B) Biklut.

We collected two voucher specimens (USNM 579065–66) at night from the walls of the Hotel Rao in Pante Macassar (Locality 1, Table 1). Both individuals were quite aggressive towards their captors, and vigorously attempted to bite. At this locality, we observed individuals of both *H. frenatus* and *H. tenkatei* in syntopy, dividing various types of man-made structures among them as perches. We did not observe any aggressive interspecific interactions.

The taxonomy of the *H. brookii* group, of which *H. tenkatei* is a member, has experienced two recent revisions (Rösler and Glaw 2010, Mahony 2011), resulting in the removal of *H. tenkatei* from the synonymy of *H. brookii*. However, the data set for neither publication included the type material of *H. tenkatei*. Considering that the type locality for this species is Roti Island and not Timor Island (van Lidth de Jeude 1895), this leaves a seed of doubt over whether the taxonomic status of *H. tenkatei* is unequivocally resolved. Consequently, we here err on the side of caution and use the name *H. cf. tenkatei*.

## Scincidae

**Genus *Carlia* (Fig. 14).** (E) Four-fingered Skink. (\*T) Mamór liman-fuan haat (mamór = skink, haat = four, liman fuan = finger). (B) Taepsus nimfua há.

Skinks of the genus *Carlia* were encountered in high-altitude habitats (elevation > 500 m, Locality 6, Table 1) on the slopes of Mount Cutete and in the same locality as the new species of *Cyrtodactylus* (Locality 7, Table 1). At higher elevations, skinks were observed in grassy roadside vegetation and leaf litter along a steep mountainous road, as well as in the crevices of man-made rock walls. Where encountered, these skinks were abundant and easily spotted at first encounter. However, their fast speeds and cryptic dorsal patterning when moving through the leaf litter made capture difficult. Ten voucher specimens were collected in this area (USNM 579134, 579158–66). At the second, lowland site we only encountered a single specimen (USNM 579157).

***Eutropis cf. multifasciata* (Fig. 15).** (E) Common Sun Skink. (\*T) Mamór loro (mamór = skink, loro = sun). (B) Taepsus hauno'o.

We encountered two individuals (USNM 579210–11) during daylight hours while basking in sunspots of a swampy area at the Santa Rosa locality (Locality 3, Table 1) of Pante Macassar. They were stunned by blowpiping to allow hand capture.

***Lamprolepis cf. smaragdina* (Fig. 16).** (E) Emerald Tree Skink. (\*T) Mamór modok (mamór = skink, modok = green). (B) Taepsus matel.

We captured two individuals, seen during the daytime on the trunks of tall trees in the Santa Rosa swamp area (Locality 3, Table 1). In both cases, they were seen > 5 m above the ground and apprehended by blowpiping.

## SNAKES

### Elapidae

***Laticauda colubrina* (Fig. 17).** (E) Yellow-lipped Sea Krait, Colubrine Sea Krait. (\*T) Samea-tasi kor kadeli (samea-tasi = sea snake, kor = color, kadeli = ring). (B) Loftasi.



**Figure 12.** Flat-tailed gecko (*Hemidactylus platyurus*) from a tree in Pante Macassar. Photo by Mark O’Shea.



**Figure 13.** Male specimen of a population of Roti house geckos (*Hemidactylus* cf. *tenkatei*) from the grounds of the Hotel Rao. Photos by Mark O’Shea.

We encountered a single yellow-lipped sea krait (USNM 579241) at night as it moved towards the sea across broken concrete fragments of an old military wharf on the Savu Sea. Local divers had directed us to the area with accounts of “seasnakes”, which based on the descriptions most likely referred to *Laticauda colubrina*.

**Pythonidae**

*Broghammerus reticulatus* (**Fig. 18**). (E) Reticulated Python. (T) Fohorai-boot. (B) Leuk sael. (Note: The Baiqueno name for the reticulated python simply means “big snake” without further differentiation.)

As our survey efforts became known among the local population, we were informed by local villagers

that they were keeping a reticulated python as a “pet”. The python had originally been collected from a small pond in the village (the same pond where individuals of *Polypedates* cf. *leucomystax* were caught; Locality 4, Table 1).

Upon arrival at the owner’s home, we found the snake in a rudimentary cage constructed from metal sheeting, chicken wire, and strips of wood, unsuitable and unsafe for both snake and household members. The family explained that taking care of their “pet” was limited to occasionally feeding it a live chick. The snake was never handled for fear of injury, nor was it involved in any social occasions in the household. The family allowed us to photograph and measure the snake, and we were able to take scale counts and a tissue sample (scale snip).





**Figure 14.** A specimen of *Carlia* from the Cutete Aldeia (Locality 6, Table 1). Photos by Mark O'Shea.



**Figure 15.** Two adult specimens of *Eutropis* cf. *multifasciata* from Pante Macassar, illustrating two color morphs. Photos by Mark O'Shea.



**Figure 16.** Adult male *Lamprolepis* cf. *smaragdina* from Locality 3 (Table 1) in Pante Macassar. Photos by Mark O'Shea.

Based on our discomfort with the predicament of the snake and the owner's reluctance to release it, we spoke to the villagers at length in an attempt to educate them about the natural history of reticulated pythons and their requirements. As it was obvious that the presence of the snake was a cause of considerable pride in the family, we encouraged touching and handling of the snake and the construction of more suitable housing. By the end of our visit, members of the family were correctly handling the snake and a new, more adequate cage had been built. Photographs and the tissue sample act as a voucher for this species from Oecusse.

**Unconfirmed Observations**

In discussions with His Excellency Secretary of State for Oecusse Jorge Teme, we learned of the presence of two additional snake species in the district. The first is without doubt the venomous Lesser Sunda pitviper,

*Trimeresurus* (*Trimeresurus*) *insularis*<sup>1</sup>, whose unique morphology and medical importance make it easily recognizable. The second was described as a dark green snake of medium length and girth, commonly seen in rice paddies. Based on these characteristics as well as on a comparison of snake photographs, we consider it very likely that this description refers to Macklot's water python (*Liasis mackloti*). During future survey work in Oecusse, we will pay particular attention to these species.

**Discussion.**

The observed herpetofaunal diversity at the localities we surveyed in Oecusse proves to be a subset of that recorded for the contiguous twelve districts of mainland

<sup>1</sup> We here use the subgeneric designation in parentheses to retain topological information about the group of green pitvipers of the genus *Trimeresurus*, following the recommendations of David et al. (2011).



**Figure 17.** Close-up of a specimen of yellow-lipped sea krait (*Laticauda colubrina*) from an abandoned military wharf. Photo by Mark O'Shea.



**Figure 18.** Close-up of a captive specimen of reticulated python (*Broghammerus reticulatus*) kept as a pet in Pante Macassar. Photo by Mark O'Shea.



Timor-Leste (Kaiser et al., 2011). With the exception of two taxa, the undescribed *Cyrtodactylus* and *Laticauda colubrina*, each member of the documented fauna in Oecusse is also known from one or more of the other twelve districts. Our first report (Kaiser et al., 2011) confirmed the presence of the genus *Cyrtodactylus* on Timor Island (and for Timor-Leste), since the single specimen described as *C. timorensis* described by Duméril and Bibron (1836) appears to be both geographically and taxonomically misplaced (Lee Grismer, in prep.). Populations of *Hemidactylus* on Timor Island require further investigation, particularly those in the *H. brookii* complex, to which the specimens of *H. cf. tenkatei* belong. Not only is it necessary to study the type specimens of *H. tenkatei*, specimens of *H. brookii* group populations were also unavailable for the recent re-evaluation of that species complex using molecular data. An investigation is now being undertaken (Aaron Bauer, in litt.) to ascertain the status of Timor Island populations related to *H. brookii*, for which the name *H. tenkatei* may or may not be appropriate. Lastly, anecdotal evidence exists to suggest the presence of *L. colubrina* in north shore coastal habitats of mainland Timor-Leste, more specifically in Dili and Manatuto Districts. However, sightings have yet to be confirmed with specimen vouchers. Our fieldwork in the Oecusse District is far from complete, since in particular the mountainous, more densely forested western areas of the district along the border with Indonesian West Timor may yet hold some surprises.

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## References

- American Society of Ichthyologists and Herpetologists (ASIH) (2004): Guidelines for the Use of Live Amphibians and Reptiles in Field and Laboratory Research. Second Edition. Animal Care Committee, ASIH, Athens, Georgia, USA.
- Bethencourt Ferreira, J. (1897): Sobre alguns reptis ultimamente enviados á Secção Zoológica do Museu de Lisboa. *Jornal de Sciencias, Mathematicas, Physicas e Naturaes, Academia Real das Sciencias de Lisboa, Segunda Série* 5(18): 111–116.
- Bethencourt Ferreira, J. (1898): Reptis de Timôr no Museu de Lisboa. *Jornal de Sciencias, Mathematicas, Physicas e Naturaes, Academia Real das Sciencias de Lisboa, Segunda Série* 5(19): 151–156.
- David, P., Vogel, G., Dubois, A. (2011): On the need to follow rigorously the Rules of the *Code* for the subsequent designation of a nucleospecies (type species) for a nominal genus which lacked one: the case of the nominal genus *Trimeresurus* Lacépède, 1804 (Reptilia: Squamata: Viperidae). *Zootaxa* 2992: 1–51.
- Duméril, A.M.C., Bibron, G. (1836): *Erpétologie Générale ou Histoire Naturelle Complete des Reptiles*. Volume 3. Librairie Encyclopédique Roret, Paris, France, 517 pp.
- Hull, G. (2001): *Standard Tetum-English Dictionary*. Second Edition. Allen & Unwin in association with the University of New South Wales, Crows Nest, Australia.
- Kaiser, H., Lopes Carvalho, V., Ceballos, J., Freed, P., Heacox, S., Lester, B., Richards, S.J., Trainor, C.R., Sanchez, C., O’Shea, M. (2011): The herpetofauna of Timor-Leste: a first report. *Zookeys* 109: 19–86.
- Mahony, S. (2011): Taxonomic revision of *Hemidactylus brokii* Gray: a re-examination of the type series and some Asian synonyms, and a discussion of the obscure species *Hemidactylus subtriedrus* Jerdon (Reptilia: Gekkonidae). *Zootaxa* 3042: 37–67.
- Manaças, S. (1956): Dois sáurios de Timor Português. *Anais da Junta de Investigações do Ultramar, Lisboa* 11(3): 271–277.
- Manaças, S. (1972): Estudo de alguns répteis de Dili (Timor Português). *Garcia de Orta, Série de Zoologia, Lisboa* 1(1): 1–4.
- Rösler, R., Glaw, F. (2010): Morphological variation and taxonomy of *Hemidactylus brookii* Gray, 1845, *Hemidactylus angulatus* Hallowell, 1854, and similar taxa (Squamata, Sauria, Gekkonidae). *Spixiana* 33(1): 139–160.
- Themido, A.A. (1941): Répteis e Batráquios das Colónias Portuguesas (Catálogo das colecções do Museu de Zoologia). *Memórias e Estudos do Museu Zoológico da Universidade de Coimbra, Série 1*, 119: 1–28.
- van Lidth de Jeude, T.W. (1895): Reptiles from Timor and neighboring islands. *Notes from the Leiden Museum* 16: 119–127.
- Wright, W.L. (2004): Sandalwood and environmental law in East Timor. *East Timor Law Journal* (accessed on 10 Nov 2010 at [http://www.easttimorlawjournal.org/ARTICLES/2004/sandalwood\\_environmental\\_law\\_east\\_timor\\_wright.html](http://www.easttimorlawjournal.org/ARTICLES/2004/sandalwood_environmental_law_east_timor_wright.html)).