

## Preliminary notes on the amphibian fauna of Tanjung Puting National Park, central Kalimantan, Indonesian Borneo

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**D**URING 2002 and 2004, while involved in volunteer work for Orang utan Foundation International at Camp Leakey, Tanjung Puting National Park, Central Kalimantan, Indonesian Borneo, I conducted surveys of amphibians over one (2002) and four (2004) nights respectively. Camp Leakey study Area, originally set up as a research station for study of the Orang utan (*Pongo pygmaeus*), is located on a tributary of the Sekonyer river, which forms part of the north-west boundary of the National Park (2°35'–3°35' S, 111°45'–112°15'E). The study area consists of approximately 50 km<sup>2</sup> tropical heath forest and ombrogenous peat swamp forest within an elevational range of 0–30 metres (Galdikas & Shapiro, 1994). Searching took place during 19:00–21:00 hrs., with anurans located via torching for 'eye shine'. Frogs were then photographed, in situ where possible, and SVL measurements were taken. All were then released. With the exception of that on 5<sup>th</sup> October 2002, all surveys were taken after periods of rainfall during the day (local rainy season October to April). I will return to the area in 2005 as part of the Project Kodok initiative (Edinburgh University and IUCN DAPTF) for the initial phase of a 5-year amphibian survey of the National Park.

### Species Accounts

#### Family Microhylidae

*Kalophrynus pleurostigma* Tschudi, 1838

Rufous-sided sticky frog (Figure 1).

(22/10/04) Single female, 46 mm SVL. Found in leaf litter on peat swamp forest floor (see Fig. 1). Absence of spines on the upper surface indicated a female. A black spot was present in front of the left leg only. Malkmus *et. al.* (2002) and Inger &

Stuebing (1997) state that a spot is present at each groin, but these can vary in number from 1 to 3 (Djoko T. Iskandar, pers. comm.). The throat and chest area were bright red.

#### Family Ranidae

*Fejervarya limnocharis*\*

Field / Grass frog (Figure 2).

(20/10/04) 1 male, 62 mm SVL, 1 female, 49 mm SVL, 1 juvenile 26mm SVL. Found in mud and grass areas on the bank of the Sekonyer Kanan river, next to a jetty that marks the entrance to Camp Leakey. The male, although larger than the female, was distinguished via a black band across the throat. This species, while superficially similar to *F. cancrivora*, was distinguished from the latter by less extensive webbing on the hind-feet. Other individuals were seen.

The genus *Fejervarya*, originally placed as a subgenus of *Limnonectes* (Dubois, 1992), was resurrected to genus rank by Dubois & Ohler (2000), after molecular work by Emerson *et. al.* (2000) indicated that neither *F. cancrivora* nor *F. limnocharis* represented the sister group to *Limnonectes*. Recognising *Fejervarya* as a distinct genus (e.g. Iskandar, 1998) renders it monophyletic (Frost, 2004).

\*Note: some authors (e.g. Lim & Lim, 1992:33) cite 'Boie, in Wiegmann, 1835' and 'Boie' (Inger, 1966:205; Inger & Stuebing, 1997:144-45) as the original author of this species. Malkmus *et. al.* (2002) use both '(Wiegmann, 1835)' (Table 12, p. 134) and '(Gravenhorst, 1829)' (p. 135). Frost (2004) cites '(Gravenhorst, 1829)' with '*Rana limnocharis* Wiegmann 1834' as a synonym. Here I use '(Gravenhorst, 1829)' as this has priority over junior dates – see Dubois & Ohler, 2000.

*Limnonectes malesianus* (Kiew, 1984)

Peat swamp frog (Figure 3).

(22/10/04) 1 male, 102 mm SVL. Found in peat swamp forest; in leaf litter (See fig. 1). Diagnostic features are its size, a fine white line running down the centre of the dorsum from the tip of the snout, and also on the upper surface of the lower leg (tarsal area). Fangs (odontoid processes on the lower jaw in males) were present. This species is one of the *blythii* group that form part of a monophyletic clade of fanged frogs of southeast Asia. Bornean species of the genus *Fejervarya* were originally placed in this genus, but did not form part of the clade, thus rendering *Limnonectes* paraphyletic. They were subsequently treated as a separate genus (see \*Note above).

## Family Rhacophoridae

*Polypedates colletti* (Boulenger, 1890)

Collett's tree frog, Hourglass tree frog.

(05/10/02). 1 female, 73 mm SVL. Found on forest floor, amongst leaf litter, peat swamp forest. Sexed by size and identified by characteristic dark hour-glass shaped marking on the dorsum, and pointed snout. This individual had probably descended to the forest floor to breed after rain, although little rain had fallen previously and forest pools were still dry. During handling, the main colour changed from dark to light tan. This represents the first distributional record for this species from Kalimantan, Indonesian Borneo. Previously only known from Sabah and Sarawak, Malaysian Borneo, this is a significant range extension for the species. Voucher photographs were taken and although not of publishable standard are available from the author on request.

*Polypedates macrotis* (Boulenger, 1891)

Dark-eared tree frog (Figures 7, 8)

21/10/04. 1 male, 51 mm SVL. Found calling in shrubs and trees 1–3 metres above ground after around 30 min. of rain during the day. This species was common in foliage around human habitation in Camp Leakey, and was also seen on buildings. Identified from paired dark stripes on the dorsum, and dark brown band covering the eardrum. The call was recorded.

*Rhacophorus appendiculatus* (Gunther, 1859)

Frilled tree frog (Figure 4).

21/10/04. 2 males, 36 mm and 37 mm SVL. Seen



**Figure 1.** *Kalophrynus pleurostigma*, female, 46 mm SVL. (All photographs by author).



**Figure 2.** *Fejervarya limnocharis* (male, 62 mm SVL).



**Figure 3.** *Limnonectes malesianus* (male, 102 mm SVL).

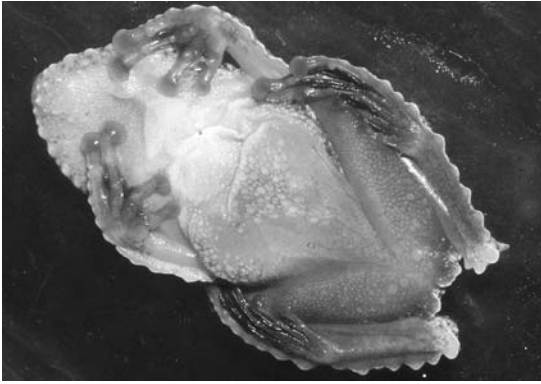


Figure 4. *Rhacophorus appendiculatus* (male, 37 mm SVL).

in the same locations as *P. macrotis* (above) and in some cases the same tree. However *R. appendiculatus* was also seen on the ground and was present in much greater numbers (see Fig. 1). Both species also called at the same time, but *P. macrotis* was much quieter. *Rhacophorus appendiculatus* is characterised by a wavy-edged fringe of skin on the outer edges of the forearm and lower leg. Inger & Stuebing (1997) report that some individuals have a pinkish tinge on the front of the thigh. Individuals from Camp Leakey seem to be slightly different in that the 'flash' markings are bright orange. The call also differs from that described in Inger & Stuebing (1997) and Malkmus *et. al.* (2002) as a series of soft clicking notes. Males produced both a series of soft notes and a series of low croaks interspersed with each other. Every 10–15 min. the males would perform a faster, louder series of croaks for about 30–60s. This species, with a widespread distribution from the Philippines through Borneo, Sumatra to peninsular Malaysia, could represent several different forms. Variation occurs in the extent of the toe webbing in specimens from Sabah and Sarawak, and the Philippines (Inger, 1966). Arm and leg fringes are wider in frogs from Sarawak, but absent in Philippine examples. One male was filmed using a digital camera, and the call was also recorded. Sarawak specimens also have significantly longer legs and there is a significant difference in size in males from across Borneo. Molecular analysis may prove useful in the further investigation of this widespread species. Morphometric analysis of Camp Leakey specimens is also desirable.

## ACKNOWLEDGEMENTS

Thanks are extended to Orang utan Foundation International for allowing me to undertake this survey in spare time, in particular Ashley Leiman and Stephen Brend for help and support. Also Cheryl Morley for help in the field, members of team 4, and camp staff.

## REFERENCES

- Dubois, A. (1992). Notes sur la Classification des Ranidae. *Bull. Mens. Soc. Linn. Lyon* **61**, 305–352.
- Dubois, A. & Ohler, A. (2000). Systematics of *Fejervarya limnocharis* (GRAVENHORST, 1829) (Amphibia, Anura, Ranidae) and related species. 1. Nomenclatural status and type specimens of the nominal species *Rana limnocharis* GRAVENHORST, 1829. *Alytes* **18**(1-2), 15–50.
- Emerson, S.B., Inger, R.F. & Iskandar, D.T. (2000). Molecular Systematics and biogeography of the fanged frogs of Southeast Asia. *Molec. Phylog. Evol.* **16**(1), 131–142.
- Frost, D.R. (2004). *Amphibian Species of the World: an Online Reference*. Version 3.0 (22<sup>nd</sup> August 2004). Electronic database accessible at <http://research.amnh.org/herpetology/amphibia/index.html>. American Museum of Natural History, New York, U.S.A.
- Galdikas, B.M.F. & Shapiro, G.L. (1994). *A Guidebook to Tanjung Puting National Park Kalimantan Tengah (Central Borneo), Indonesia*. Orang utan Foundation International.
- Inger, R.F. (1966). The systematics and zoogeography of the amphibia of Borneo. *Fieldiana (Zool)*. **52**, 1–402.
- Inger, R.F. & Stuebing, R.B. (1997). *A Field Guide to the Frogs of Borneo*. Kota Kinabalu: Natural History Publications.
- Iskandar, D.T. (1998). *The Amphibians of Java and Bali*. GEF Biodiversity Collections Project, LIPI – Seri Panduan Lapangan.
- Lim, K.K.P. & Lim, F.L.K. (1992). *A Guide to the Amphibians and Reptiles of Singapore*. Singapore Science Centre.
- Malkmus, R., Manthey, U., Vogel, G., Hoffmann, P. & Kosuch, J. (2002). *Amphibians and Reptiles of Mount Kinabalu*. Germany: Koeltz.

### *Correction*

A correction has been notified by the author of the following article published in *Herpetol. Bull.* 92 (Summer 2005): Preliminary notes on the amphibian fauna of Tanjung Puting National Park, central Kalimantan, Indonesian Borneo.

Page 2; instead of *Fejervarya limnocharis*:

#### *Limnonectes paramacrodon*

Lesser swamp frog (Figure 2)

(20/10/04) 1 male, 62 mm SVL, 1 female, 49 mm SVL, 1 juvenile, 26 mm SVL. Found in mud and grass areas on the bank of the Sekonyer kanan river, next to a jetty that marks the entrance to Camp Leakey. The male, larger than the female in this species, was distinguished via a black band across the throat. Other individuals, some larger than those caught, were seen. This species, along with *L. malesianus*, forms part of the monophyletic *Limnonectes* clade of Southeast Asian fanged frogs. Its relations within the group are unclear. Identification of *L. paramacrodon* was confirmed by Prof. Djoko Iskandar (Bandung, Indonesia).