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**HERPETOFAUNA**

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**Adjustment of tree-hole frog (*Metaphrynella sundana*) calling characteristics in relation to tree-hole properties in the field****Abstract**

Previous studies have indicated that male Bornean tree-hole frogs (*Metaphrynella sundana*) change their call frequencies to tune in to the resonant frequency of their cavity under laboratory conditions. We carried out a field study at Danum Valley Field Centre, Sabah, Borneo to investigate the correlation between call frequency and volume of water in natural tree cavities under field conditions. We recorded the calls of 19 frogs before and after adjusting the water volume in steps of 5 and 10 ml in the cavity. We found a significant relationship between the mean call frequency and air column volume. Continuous recording of an individual frog over a 32 minute period, as we added water, also showed an increase in frequency with increasing air column volume. Call frequency in response to changes in volume varied among individual frogs in cavities with different resonance properties. Although the laboratory evidence could not directly be translated into the field, we demonstrate that tree hole cavities influence the ability of *M. sundana* to vary its call.

Björn Johansson, Linköping University, Sweden

Stephen Hyland, National University of Ireland, Galway, Ireland

2009

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**Microhabitats of co-occurring tree frogs (*Polypedates* and *Rhacophorus*) around ponds of Danum Valley Field Centre, Sabah, Malaysia****Abstract**

Six tree frog species, *Polypedates leucomystax*, *P. macrotis*, *P. otilophus*, *Rhacophorus appendiculatus*, *R. pardalis* and *R. dulitensis* were observed to use the same ponds for breeding in around the Danum Valley Field Centre (Sabah). We investigated whether these six species shared the same ecological niche, or whether different microhabitats could be defined. For one week, the location of every individual encountered around three ponds was recorded every night. We found that the frog species occurred at different heights; *P. leucomystax* was different from all other species by occurring close to the ground at a maximum of 1 m. Seventy percent of all individuals were located within 0.50 meters from the water. *Rhacophorus pardalis* and *R. dulitensis* showed a preference for herbs over trees. All species were distributed randomly around the ponds. *R. dulitensis* was the main species in the temporary pond after heavy rain, which is an indication of a difference in breeding pattern.

Lieneke Bakker, Wageningen University, The Netherlands

Cheryl Cheah, Universiti Putra Malaysia, Malaysia

2009

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**Tree hole frog (Microhylidae: *Metaphrynella sundana* Peters): habitat utilisation and density****Abstract**

We investigated patterns of habitat use and density in the tree hole frog *Metaphrynella sundana* in the Danum Valley Conservation Area, Sabah Malaysia. We recorded a total of 46 calling sites in five 10 x 100 m transects. When calling from tree holes, *M. sundana* showed no preferences for specific tree diameter at breast height (dbh), tree height, canopy cover, litter depth or slope. Tree hole diameter and hole height (a preference for small holes close to the ground), as well as the height of trees (frogs preferred smaller trees compared to reference samples) affected the frog's occurrence. The density of calling males was lower after heavy rainfall, and there is strong evidence

that frogs regularly move between tree holes. Our result suggests that the density of *M. sundana* populations vary temporally and spatially, meaning that environmental heterogeneity is important for conservation management and should not be overlooked.

Phuong Thi Thanh Sam, Nature and People Reconciliation, Hanoi, Vietnam

Robin Lim, Danum Valley Field Centre, Sabah, Malaysia

2009

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### **Interactions between males of tree hole frogs (*Metaphrynella sundana*) in Danum Valley Field Centre area**

#### **Abstract**

Males of tree hole frogs (*Metaphrynella sundana*) produce sounds to advertise their presence both to females and to the rival males. The rate of calls of the male frogs might be a good indicator to investigate how the males compete with each other and attract females. This study investigates whether the density of tree hole frogs influences the rate of calls a male makes and whether the distance to the nearest neighbour influences the male calling rate. We show that males in plots with only one individual had a significantly lower calling rate than males in plots with two individuals. These data were corroborated by our playback experiment which shows that the calling rate of males increases after a recording of a different is played. There is no correlation between distance and the rate of calls. For conclusion, our work shows that rate of male calls depends on presence of another calling male, but distance between them does not influence it.

Piotr Kuterba, Jagiellonian University, Poland

Rizka Apriani Putri, Universitas Gadjah Mada, Indonesia

2010

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### **Species richness and microhabitat preferences of frog species in Danum Valley Conservation Area**

#### **Abstract**

Resource partitioning allows the co-existence of various species as it reduces competition. Our aim was to find out if there is habitat and microhabitat partitioning among frog species in Danum Valley. Two artificial ponds, two natural ponds, and one stream section were sampled. Our results show that species richness in the stream is higher than in the ponds. Frog species have certain microhabitat preferences but they also occur in less preferred microhabitats. The same microhabitat can support more than one species. Thus, we concluded that the main factor allowing the presence of different species in the same place is the ability of sharing the microhabitat.

Ninda Lara Baptista, University of Lisbon, Portugal

Nurul Silva Lestari, Dipterocarps Research Centre, Indonesia

2010

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