AMPHIBIANS

Management

Do anuran species show preference for certain sites in the Amani pond?

Abstract

The aim of the project was to determine whether different species of anuran show a preference for particular sites in the Amani pond. Data collection was carried out by means of visual identification surveys at night. For each individual encountered we recorded the species, their length, height above water level and the species of plant on which they were found. Results showed that there is very little preference for specific heights, except for the largest species which was always at water level. Preference for plant species has been found for *Hyperolius pusillus* alone. Possible consequences of species being in close proximity are discussed with reference to their evolution and behavioural ecology.

Anna Durrans, University of Liverpool, UK

Natalia Giorgini Riva, University of Siena, Italy

1998

The effect of harvesting of water weed (*Myriophyllum*) on the frogs and other fauna of Amani pond, Tanzania

Abstract

Amani pond is an artificial pond located in Amani Nature Reserve, East Usambara Mountains, Tanzania. It contains a high diversity and abundance of frogs, and is almost completely covered in water weed of the genus *Myriophyllum*, which the local people harvest on a regular basis. The aim of our study was to investigate whether this harvesting has an effect on the frogs and other selected inhabitants of the pond. This question was addressed by comparing random samples of harvested and unharvested areas of the pond and by conducting an experimental harvest of the weed. We were unable to conclude whether the harvesting was having an effect and further work is necessary before any management recommendations can be made, although it is

tentatively suggested that the biotic diversity of the pond could be enhanced by actively managing the vegetation.

Elizabeth Akinyi Odhiambo, National Museums of Kenya, Kenya
Ben Dixon, University of Cambridge, UK
2000

Vegetation and height preference of juvenile frogs (*Hyperolius*) in the Amani pond, Amani Nature Reserve, Tanzania

Abstract

Like other amphibians, anurans (frogs and toads) are usually restricted to moist or humid areas. *Hyperoliidae*, a common frog family of East Africa needs emergent vegetation as well. In this study the frog abundance on vegetation in Amani pond, situated in Amani Nature Reserve was investigated. Transects were analysed and two cage set-ups were build in the Amani pond. It was found that a high diversity of plants, increased frog abundance. Another finding was that *Myriophyllum aquaticum*, an invasive water weed can become a problem, since it reduces habitat for the juvenile frogs.

Josephine Scott-Manga, University of Sierra Leone, Sierra Leone
Jacob Beeuwkes, Wageningen University, The Netherlands
2005

Behaviour

Spacing between calling males of the African Reed Frog, *Hyperolius puncticulatus* (Pfeffer, 1893) in Amani pond

Abstract

Intermale spacing in calling males of the African reed frog, *Hyperolius puncticulatus* (Pfeffer, 1893), was investigated in Amani pond. Call amplitude, frequency, and rate were investigated for the possible effects they might have on male spacing. The study showed that there is definite spacing of calling males in the pond, as determined by nearest calling neighbour distance. This distance could however not be explained by any

of the call parameters investigated in the study. The distance between nearest calling neighbours range between 36cm and 332cm. Most calling males (62% of individuals counted in the first period) exhibited fidelity to call site in the study.

Viviane V. Hoveka, Desert Research Foundation, Namibia
Robstein L. Chidavaenzi, Natural History Museum, Zimbabwe
2000

Spacing and calling patterns among males of *Hyperolius puncticulatus* and *Hyperolius mitchelli*

Abstract

Two different morphs of *Hyperolius* frogs (*H. puncticulatus* and *H.mitchelli*) were studied at Amani Pond to determine the factors that influence their calling behaviour. Several individuals were located in different areas of the pond and their calling patterns were described recording frequency, intensity and choice of the calling sites. No correlation was found between the measured parameters and the spacing, suggesting that there are particular behaviours influencing the distance between calling males which still need investigation. Size showed no correlation with any of the other variables. Differences between the two morphs were also investigated to find out whether they belong to different species. Size and calling intensity were very similar whereas frequency and the choice of calling site showed some variation. The variations notwithstanding, we believe that the two morphs could be two different colour forms of the same species.

Andrea Benocci, University of Siena, Italy
Juliet Nansikombi, Makerere University, Kampala, Uganda
Peter C. K. Atuora, University of Ghana
2000

Does the puddle frog, *Phrynobatrachus krefftii,* return to the same place every night?

Abstract

Mark-recapture technique was used to answer the question whether *Phrynobatrachus krefftii*, Boulenger, 1909 (Ranidae) return to the same resting place night after night. *P. krefftii* spends the day on ground and the night on plant leaves. The study was carried out in two different localities in the Amani Nature Reserve over a period of seven nights. In total 82 individuals were marked and 158 recaptures were recorded. *P. krefftii* showed a high tendency of returning to the same place. Seventy-five percent of the recaptured frogs had moved less than one meter within the period of five days. Only eight frogs (9 %) had moved a distance of two meter or more, no frogs had moved more than six meters. We noticed a significant difference in the height of the resting places between the two localities.

Markus Franzén. Swedish University of Agricultural science, Uppsala, Sweden

Walter Hirschmann. University of Vienna, Austria

2001

Abundance

Is there a relationship between leaf litter habitat and *Arthroleptis* frog abundance in Amani Botanical Garden?

Abstract

Five sites with *Arthroleptis* frogs were studied in Amani Botanical Gardens. Sixty-seven frogs were observed from four different species belonging to this genus. Site A was found to have the highest mean number of *Arthroleptis*. This is thought to be partly because of ground-dwelling termites in the area, giving a plentiful food supply. No significant correlation was found to exist between the number of *Arthroleptis* found and the leaf litter variables studied. It was found that the numbers of frogs appeared to be higher where canopy cover was denser.

Elizabeth Carabine, University College London, UK

Rita McGrath, National University of Ireland, Ireland

2002

Factors determining the diversity and abundance of hyperolid frogs in the emergent vegetation in Amani pond, Tanzania

Abstract

Amphibians have diverse habitats and are universally threatened as a result of human activities. This study was carried out on the emergent Cyperacean reeds in the Amani pond. The main objective was to investigate the factors which could determine the diversity and abundance of hyperolid frogs in the pond. Investigations revealed that cutting of the Cyperaceans resulted in a complete absence of frogs. Density of the Cyperaceans, water depth, height and time (day or night) were found to have a positive correlation with the abundance and diversity of the hyperolid frogs. Our results also showed an invasion of the Cyperaceans by *H. spinigularis* during the second week of the study.

Victoria Nneoma Ujoh, University of Benin, Nigeria

Geert van de Wiel, Wageningen University and Research Centre, The Netherlands

2003

Diversity and abundance variations of anurans with habitat strata across Amani swamp, East Usambara Mountains, Tanzania

Abstract

A comparative study to investigate diversity and abundance of anurans in habitat strata was conducted from 16–27 September, 2005 at Amani swamp within the Amani Nature Reserve. Anurans were studied in three habitat types using both acoustic and visual 50m × 10m strip transects. Habitat types were classified according to the vegetation types. Anuran assemblages were highest in fern complex, followed by *Cyperus* reeds, while Myriophyllum ranked last. The Shannon Wiener index strikingly showed that species diversity was higher in Cyperus reed (*H*'= 1.25) than in Myriophyllum (*H*'= 1.20) and in the fern complex (*H*'= 1.05).

Stephen Mahinya, Sokoine University, Tanzania

Gilbert Razafimanjato, The Peregrine Fund, Madagascar

2005

Predation

Differential tadpole response to pond and stream predators

Abstract

Tadpoles have adopted different strategies to escape predators. In this study we examine tadpole response to predators. *Hyperolius spinigularis* was found in a pond and *Rana angolensis* and *Bufo brauni* were collected from a stream. All tadpoles were exposed to a pond predator (water scorpion) and a stream and pond predator (dragonfly larvae). *H. spinigularis* reacted to the water scorpion by lowering its activity level whereas *B. brauni* reacted by raising its activity level. *R. angolensis* did not respond to the water scorpion.

H. spinigularis and *B. brauni* are both found in ponds with water scorpions and it is therefore no surprise that both species react to this predator. *R. angolensis* is never found in ponds and has no adaptations to the predator. No tadpoles changed their activity level in the presence of the dragonfly larvae. It is possible that dragonflies are too common or to rare for the tadpoles to evolve any specific adaptation to this predator.

Jennifer Sun, University of California Los Angeles, USA

Nina Kirkegaard, University of Aarhus, Denmark

2005