

**REPORT ON A FIELDTRIP TO THE CENTRAL PART
OF THE UZUNGWA SCARP CATCHMENT FOREST
RESERVE, 11 – 15 MAY 2004**

DAVID C. MOYER & ELIA A. MULUNGU

**WILDLIFE CONSERVATION SOCIETY TANZANIA PROGRAM
P. O. BOX 936
IRINGA
TEL: +255 744 287 266
WCS@WCS.OR.TZ**



CONTENTS

INTRODUCTION.....	1
STUDY AREA.....	1
METHODS AND RESULTS	2
DISCUSSION.....	3
CONCLUSION.....	4

INTRODUCTION

Amphibian declines in several locations around the globe are associated with infection by a chytrid fungus, *Batrachochytrium dendrobatidis*. It remains unclear whether this chytrid represents an emerging disease or an organism that commonly co-occurs benignly with amphibians but becomes pathogenic when environmental perturbations increase susceptibility of individuals. However, chytridiomycosis is, at minimum, proximately responsible for rapid extirpations of entire populations. Furthermore, pathogenic infection of frogs by chytrids are leading to massive die-offs in relatively pristine habitats suggesting that chytridiomycosis may indeed be emerging as a disease epidemic ultimately responsible for species extinctions in several areas of the world. Thus, there is a clear and present need to expedite investigations into chytridiomycosis outbreaks when and where they occur. Epidemiological data from such rapid response studies are crucial to identifying species in imminent risk of extinction and developing appropriate countermeasures to stave off further amphibian losses.

We are currently facing a chytridiomycosis outbreak in the Udzungwas Mountains in Tanzania. Recent reports have identified pathogenic chytrid infection in the critically endangered Kihansi spray toad (*Nectophrynoides asperginis*). Chytridiomycosis poses a grave threat to this species because it exists as a single population that has already lost greater than 90% of its habitat following construction of the Lower Kihansi Dam that began in 1999. Mitigation projects have been implemented, including establishment of captive assurance colonies, for the Kihansi spray toad. However, the recent advent of disease outbreak in this species raises the specter that other amphibians endemic to the Udzungwas may also be threatened by chytridiomycosis. The amphibian chytrid fungus shows no host specificity and is likely to infect any amphibian. Of particular concern are 18 of the 40 Eastern Arc frog endemics found in the Udzungwas. Twelve of these 18 frogs are listed as threatened by IUCN's Species Survival Commission. Aside from the Kihansi spray toad, sub-clinical amphibian chytrid infections have been found at a high level of incidence in *Ptychadena aequiplicata* and the endemic *Arthroleptides yakusini*. Nothing is known about which other frog species have chytrids or other pathogenic infections associated with them and how population integrity is affected. Hence, there is an urgent need to evaluate the extent of chytrid occurrence among different frog taxa as well as across the distributions of these species in the Udzungwas. This evaluation is necessary to determine which species are in immediate risk of extinction and what steps need to be taken to divert their loss.

In this context a coordinated team of herpetologists, highly experienced in field, laboratory, and analytical methods, have begun to taxonomically and geographically survey the Udzungwas for chytrid distribution and pathogenicity. The results of this work will provide the conservation community with the first assessment ever of the status of an on-going epidemic in a particular region, the state of infection and status of key populations, and finally lay the foundation for the development of a clear and focused strategy for addressing this emerging disaster. This work has been commissioned by the National Environment Management Council and is supported by a grant from the Critical Ecosystems Partnership Fund (CEPF).

STUDY AREA

From 11 to 15 May 2004 we visited the Kihanga stream area of Uzungwa Scarp Catchment Forest Reserve, Kilolo District, Tanzania. We entered the forest reserve on the main foot path from Masisiwe Village on the Udzungwa Plateau to Ikule in the Kilombero Valley. This path traverses a series of steep forest and bamboo (*Sinarundinaria alpinum*) covered ridges to the southeast of Masisiwe. The Kihanga Stream camp is 11.2 linear km from Masisiwe. However, due to the convoluted nature

of the topography and the trail, the actual distance from Masisiwe Village is closer to 20 km.

The habitat around Kihanga Stream is a mosaic of upper montane forest, bamboo clumps, thicket along streams and in forest gaps (figure 1). There are clear perennial streams in nearly all of the valley bottoms fringed by *Psychotria* sp. and *Tabernamontana* spp. (figure 2).

A number of scientific studies have been carried out in this area and preliminary surveys of spiders, plants, birds, amphibians and reptiles have been compiled. A new species of reed frog, *Hyperolius kihangensis*, and several new plant species were found during these surveys.

Many of the endemic bird species of the Eastern Arc Mountains are found here, including Dappled Mountain Robin, Spot-throat, Swynnerton's Robin, Iringa Akalat, and Rufous-winged Sunbird. To date the strict endemic Udzungwa Partridge has not been found in the forest of the Uzungwa Scarp Catchment Forest Reserve.

Mammals found around Kihanga include 5 forest primate species: Iringa Red Colobus, Sanje Mangebey, Black & White Colobus, Sykes Monkey and Mountain Galago. Large game animals are generally absent and buffalo, elephant and lion have been extirpated. Leopard, Palm Civet, Lowe's Servaline Genet, and several species of mongoose are present, as are a number of smaller animals including, Chequered Elephant Shrew, Giant Pouched Rat, Eastern Tree Hyrax, Cape Clawless Otter, Abbott's Duiker, Red Duiker, Livingstone's Suni, Blue Duiker, and bushbuck.

METHODS AND RESULTS

Amphibian collection

The weather during our visit was dry and cold with no significant precipitation recorded. Mornings were generally cloudy becoming clear by early afternoon. Evenings were clear and cold with temperatures down to 13°C.

Because of the dry condition of the forest, searches for amphibians were carried out only along streams at night using a headlamp and Maglite flashlight. Amphibians encountered were caught by hand and placed in plastic bags to await photographing and processing the following day. A total of 57 specimens were captured along the Kihanga and Mapimbili streams and their tributaries during the survey (Table 1). These were euthanized and preserved in 70% methanol.

Nearly all of the specimens captured were found perched on green vegetation above water. Surprisingly, this was also the case with nearly every single *Afrana angolensis* specimen encountered. This was by far the most common observed species at this site but only a handful were found in the stream and on sand bars along the stream. The rest had climbed into vegetation up to 2 m above the water (Figure 3).

Discovery of high levels of poaching

On the walk through the forest to Kihanga stream we were struck by the fact that the minor forest trails were very well used and that there were signs of a high level of human impact on the forest. These were in the form of blazes on tree bark, cut trees and poles.

On further investigation, we discovered a very high level of poaching was going on. Although both authors have been visiting this site for over 8 years, we had never seen this level and intensity of poaching here. Three permanent poaching camps with well constructed shelters and meat drying racks were found. All were within 400 m of the main path just north of the path on the Kihanga and Mapimbili streams. There was no

attempt to conceal the illegal activities going on. Groups of hunters were encountered on the main trail by our colleagues, Dr. Don Church and Dr. Wes Sechrest. In spite of the fact that they were armed and carrying sacks of meat, they were not in the least alarmed by our presence in the forest.

Hunting was focused on primates, Eastern Tree Hyrax and small forest antelope. However, we found evidence of snaring for Chequered Elephant Shrew and Giant Pouched Rat. Blue Duiker, Livingstone’s Suni, Red and Abbott’s duiker’s were being snared and hunted with dogs. Monkeys (Iringa Red and Angolan Black & White Colobus and Sykes Monkeys) were being treed and the trees cut down, whereupon, they were killed by dogs or spears. There was also one individual with a gun and this was being used very effectively to bring down treed primates.

Eastern Tree Hyrax were being smoked out of hollow trees. In a number of cases, den trees were simply cut down and the animals extracted with long poles (Figure 4). The density of calling tree hyrax was noticeably lower since our last visit to this area,

although this was not quantified. Only a few individuals were heard, rather than the usual loud chorus in the evening and throughout the night.

Species	No:
Afrana angolensis	23
Arthroleptides yakusini	1
Arthroleptis spp.	23
Leptopelis parkeri	4
Nectophrynoides viviparus	2
Nectophrynoides spp.	4
Total	57

All troops of monkeys encountered were very skittish and made off as quickly as possible when they detected our presence. The usual morning and evening chorus of colobus monkey calls were not heard during our stay there. Furthermore, we did not have one single sighting of small forest antelope during surveys in the forest. This is very unusual for the forests around Kihanga. It would appear that the density of small forest antelope has declined dramatically in this area.

All of the camps we found were active and snares, spears, personal items, cooking pots and pans, food items, smoked meat, tobacco, and clothing were seen (Figure 5). Also, there was a lot of cutting of smaller forest trees to make implement handles and bundles of forest vines for binding on roofing and other items were seen.

In one instance, one of us (EAM) came across the freshly killed carcasses of a Sykes Monkey and a Blue Duiker. These had been hung on a branch by a hunter for later collection (Figure 6), while he was checking the remaining snares that he had set out.

DISCUSSION

Results for the amphibian survey were relatively positive. No animals were collected that were visibly sick. Some of the individuals had swellings on their limbs or were missing digits. However, this could have been from old injuries and other causes. Many of the species know from this locality were not in evidence because of the cold and dry weather. One specimen of the strict endemic, *Hyperolius kihangensis*, was seen but was not caught. It will be necessary to visit this site again during the main breeding season after the rains have begun again to complete sampling.

The high level of poaching in the Uzungwa Scarp Catchment Forest Reserve was very disturbing and this was reported to the village Chairman and Executive Officer at

Masisiwe. All of the individuals involved in illegal hunting at Kihanga come from Masisiwe Village and are well know to us. We refused to pay the village levy of 2500 shillings per person per night as this money is supposed to be used to stop illegal activities in the forest. The poaching going on was so blatant that there is no way village leadership could be ignorant of this. Also, there were some doubts as to whether this fee was legitimate as Masisiwe is not one of the villages participating in the Joint Forest Management project (MEMA) under the Iringa District Council. There are no mechanisms or checks currently in place to assure the appropriate use of these funds for the benefit of Masisiwe Village once they have been collected.

Some of the individuals that were hired as porters stayed on in the hunting camps in the forest during our time there. Normally, porters return to the village and come back to carry the loads out of the forest on the appointed day. On the trek back to the village, these individuals openly shared smoked bush meat with the other porters.

As we left our camp we gave the porters all of the remaining vegetables. These were hidden in the forest by one individual and, when we confronted him about it later, he admitted that he intended to return and take the food to one of the hunting camps.

CONCLUSION

Amphibian sampling for the Udzungwa Mountains got off to a good start. However, as the rains have now stopped, this work will not be resumed until November of this year when the main breeding season kicks off. It may be necessary to extend the period for fieldwork through the end of January 2005 in order to complete this project as planned. This is due to delays in starting up the project during the first part of 2004 and in obtaining permits.

The unexpected finding that poaching is totally out of control in the Uzungwa Scarp Catchment Forest Reserve is very disturbing and, unless decisive action is taken, the future of mammal populations in this forest is seriously in doubt. WCS intends to follow up on this issue in close collaboration with the Forestry and Bee-Keeping Division, local government and the Zonal Antipoaching Unit of the Wildlife Division.

We are planning to develop a program that will use the extensive experience and knowledge of the local hunters for surveys and research in the forest. We hope that we can develop a mechanism to employ these individuals to assist with conservation and education efforts in this area and, thereby, bring poaching under control or eradicate it altogether. Inevitably, this will be a long-term project and will involve aspects of alternative livelihoods and issues of food security.



Figure 1.
Habitat mosaic in the Uzungwa Scarp Catchment Forest Reserve.

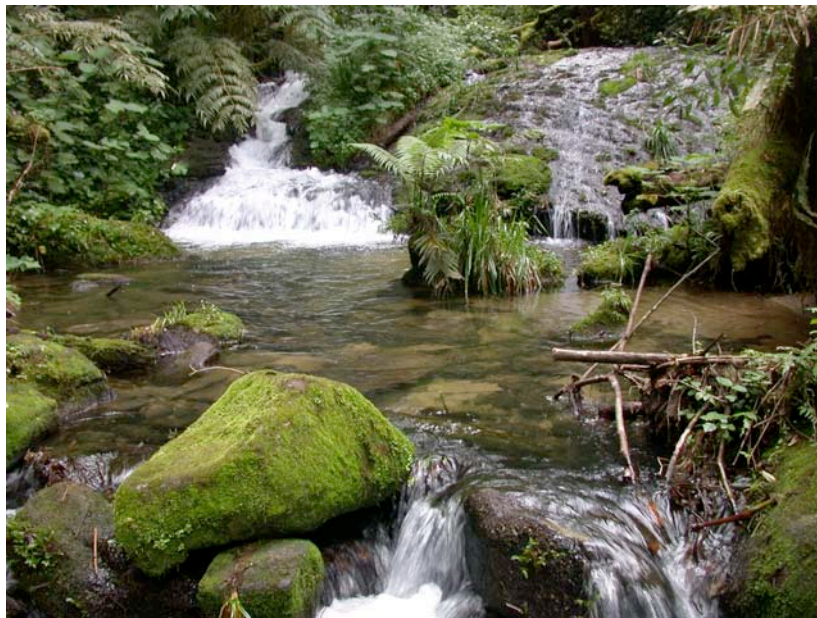


Figure 2.
Stream habitats sampled for amphibians in the Uzungwa Scarp Catchment Forest Reserve.



Figure 3.
Afrana angolensis perched on a mossy branch 2 m above a stream.



Figure 4.
Large den tree of Eastern Tree Hyrax cut down along the main path through the forest from Masisiwe to Ikule.



Figure 5.
Poachers shelter in the Uzungwa Scarp Catchment Forest Reserve. Note the pile of dried meat covered with a sack on the drying rack.



Figure 6.
Sykes Monkey and Blue Duiker killed by poachers in the Uzungwa Scarp Catchment Forest Reserve