

GLASGOW/ABERDEEN UNIVERSITIES ZAMBIA EXPEDITION, 2008



GAUZE08 expedition team with colleagues of the Kasanka National Park and University of Zambia.

The GAUZE08 expedition returned to Scotland in September 2008 after three months in Zambia collecting extensive ecological data within the Kasanka National Park, surrounding Kafinda Game Management Area, and nearby Bangweulu wetlands. This expedition proved extremely successful and all research themes were investigated as planned. With the support of organisations and individuals both in Scotland and the host country, a total of £16,050 was raised.

The varied nature of the research ensured that a wide range of topics were addressed within the framework of the expedition's assessment of biodiversity and ecological habitat condition in the region. Substantial data sets were collected during the expedition and although much of the analysis remains to be completed (in both Glasgow and Aberdeen) our research is already showing promising results. Further detail will be made available in the coming months as analysis is completed and conclusions are drawn.

Five research themes were undertaken during the expedition field period, all considering aspects of biodiversity and sustainability in the region:

1. Biodiversity, parasitic burden and habitat ecology of dry season bats in Kasanka National Park and its surrounding Game Management Area (A. Pridmore)
2. Freshwater ecology of waterbodies in Kasanka National Park and adjacent areas of northern Zambia (J. T. Grimaldo)
3. Aquatic plants of the South Bangweulu Basin, Zambia by (K. J. Murphy *et al*)
4. A sitatunga antelope behavioural study (E. Benzies)
5. Environmental drivers of algal biodiversity in major catchments of the upper Congo River basin, Northern Zambia (P. Lang)



Fig 1. Frank Willems, park ecologist, preparing equipment for an iBats survey.

In addition to the primary research undertaken, the expedition team also introduced the UK-based iBats programme (www.ibats.org.uk) to Kasanka National Park to facilitate the launch of an ongoing bat monitoring scheme in the area (Fig. 1). Two locales – one for use in the dry season and one with year-round access – were identified in collaboration with park staff and trial surveys conducted successfully. The continuation of the scheme is currently under discussion and all parties involved are keen to ensure the success of the programme in the park.

Finally, it was our pleasure to deliver a sizeable package of school supplies to local primary schools located in the vicinity of Kasanka National Park (Fig. 2). The lack of such resources in the area is widely recognised and the donation was gratefully received. Without the aid of our supporters the expedition would not have been possible and we remain very grateful for all contributions.

Further queries are welcomed by the expedition team and may be directed to Alexis Pridmore (a.pridmore.05@aberdeen.ac.uk).



Fig 2. A class at Kapepa Community School.

Biodiversity, parasitic burden and habitat ecology of dry season bats in Kasanka National Park and its surrounding Game Management Area.

This project, generously funded by the Alice McCosh Trust, was one of the five research themes undertaken during the GAUZE08 expedition. The two key aims were as follows:

1. To assess the presence of blood-borne trypanosome parasites and ectoparasites in the dry season bat population of Kasanka National Park and surrounding Kafinda Game Management Area (GMA), thus potentially identifying a role of bats as a wildlife reservoir of the deadly human disease trypanosomiasis, and determining the extent of parasitic burden on the bat population.
2. To conduct a preliminary assessment of the bat biodiversity and their habitat ecology within the protected national park and developed, agricultural land in the surrounding Kafinda Game Management Area.

In order to achieve these aims, mist nets were erected for six hours a night, for 25 nights, to capture active bats. Altogether, 130 bats were netted during this period. Six sites were attended across three habitat categories: riparian (swamp) forest, dry miombo woodland and developed agricultural land. Each bat was measured for weight, forearm length, sex, species, ear width, head length, tail length, upper palate configuration, foot length, half wingspan, age category and reproductive status before release (Fig. 3).



Fig 3. Feeding captured bats prior to release.

In order to assess the bat for blood-borne parasites, blood samples were also taken and later analysed in the laboratory using genetic analysis techniques to identify whether any bats captured were infected with trypanosomes (Fig. 4). Visible ectoparasites were removed for later identification. Due to the considerable difficulties associated with identifying some species in the field, wing punches were also collected from a small number of bats and submitted to the University of Aberdeen's School of Biological Sciences for subsequent analysis.



Fig 4. Collection of blood samples in the field, with Alexis Pridmore and Rachael Boden-Hall in action.

The analysis of the collected blood samples is currently underway. Similarly, statistical analysis of the bat and vegetation biodiversity observed is also currently being undertaken and more information on any findings will be available in 2009. It is hoped that our findings may prove useful in developing appropriate management plans to support dry season bat populations and may also have implications in the management of trypanosomiasis in the region.

Additional Research Aims

In addition to the above project supported by the Alice McCosh Trust, the expedition successfully considered all four other research themes. These included:

i) Freshwater ecology of waterbodies in Kasanka National Park and adjacent areas of northern Zambia (J. T. Grimaldo) (Fig. 5): This study aimed to describe benthic organism assemblages (emphasizing macrophytes) and a way to use them as indicators of freshwater environmental impacts in Kasanka National Park and adjacent areas of northern Zambia; and to create a baseline of knowledge for further studies in the region.



Fig 5. *Nymphaea nouchali* var. *caerulea*

ii) Aquatic plants of the South Bangweulu Basin, Zambia by (K. J. Murphy *et al*): The aim was to produce an illustrated identification guide (with sample locations in the area, identified using GPS) to the c. 65 macrophyte species encountered during field work at Kasanka, Shoebill and other sites in the South Bangweulu Basin, building further on previous expedition fieldwork conducted in 2006.

iii) A sitatunga antelope behavioural study (E. Benzies) (Fig. 6): The aim of this study was to continue an observational study of Sitatunga antelope (*Tragelaphus spekei*) behaviour, including their movements across the feeding area and interactions between individuals and groups, utilising the same methods and observational area used by a previous Scottish student expedition to the area (ECCO ZAMBIA 07). This will provide additional data, over a second season, to confirm or modify conclusions drawn in 2007.



Fig 6. A sitatunga antelope in Kasanka NP [photo courtesy of J. Burgon].

iv) Environmental drivers of algal biodiversity in major catchments of the upper Congo River basin, Northern Zambia (P. Lang): This study aimed to characterize the environmental habitat conditions driving freshwater diatom biodiversity and community composition between two major sub-catchments, Kasanka and Bangweulu, of the Upper Congo basin in Northern Zambia.

Further information on all projects is readily available and all enquiries may be directed to Alexis Pridmore (a.pridmore.05@aberdeen.ac.uk).