

THE BUTTERFLIES AND LAND SNAILS OF NDERE ISLAND NATIONAL PARK, KENYA

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ABSTRACT

After a survey of Ndere Island National Park between October and November 2004, we recorded 18 species of butterflies and 3 species of land snails. *Eurema brigitta brigitta* was the most abundant butterfly whereas *Thapsia karamwegasensis* was the most abundant land snail. Majority of the butterfly species are found in open formations and about 50 % of them have a widespread distribution in Africa, while the land snails were forest species known only from Eastern Africa. Ndere island appears to support low levels of biodiversity although further monitoring is necessary.

INTRODUCTION

Ndere Island National Park is an island measuring about 4.2 km² located on the Winam Gulf (Kavirondo Gulf) of Lake Victoria about 42 km from Kisumu town (Kuria *et al.*, 2005). The island, originally owned by the Luo community, was gazetted a national park in 1986 to promote conservation of regional biodiversity under the management of Kenya Wildlife Service (www.kws.org/Ndere). Since its gazettelement, no biodiversity inventory has ever been carried out and therefore an integrated flora and fauna biodiversity assessment was carried out between October and November 2004. Here we report on butterflies and land snails. The results of the integrated floral investigations will be given in another paper.

MATERIALS AND METHODS

To collect butterflies we used canopy bait traps and timed sweep netting. Traps were baited with pineapple and inspected in the evenings around 18:00 h and in the morning at 8:00 h for three days at each of the two main habitats on the island, notably the forest and grassland. Sweep netting was done once for one hour by two individuals in ten plots measuring about 300 m by 300 m selected from each of the island two main habitats over a ten days period. Trapped butterflies were collected in butterfly envelopes and kept for identification at the National Museums of Kenya.

To collect land snails we used timed direct search and litter sample methods. Two snail searches lasting one hour each were done at each of the plots set for sweep netting over ten days. Snails were kept in labelled specimen vial and taken to the National Museums of Kenya for identification. At each plot, four bags of about four litres of forest floor litter were collected. The litter was later air dried at the campsite, sieved using stacked sieves and snails sorted from the dried litter.

Taxonomy of butterflies followed Larsen (1996) and reference collection at the Department of Invertebrate Zoology (NMK) whereas snail taxonomy mainly followed the reference collection at the Department of Invertebrate Zoology, NMK

RESULTS

Table 1 provides the list of species recorded during the entire study. A total of 18 species of butterflies belonging to four families and three species of land snails belonging to three families were collected. Among the butterflies, the species *Eurema brigitta brigitta* was the most common with 17 specimens. Out of 18 species of butterfly, eight species were collected only once. Among the land snails, *Thapsia karamwegasensis* was the most abundant with 53 specimens that comprised about 80% of the total snail specimens recorded. Half of the butterflies (9) are widespread in Africa with one *Colotis hetaera ankolensis* currently known only from Kenya, Tanzania, Uganda and Zaire (Ackery *et al.*, 1995; Larsen, 1996). Of the land snails, two are restricted to Eastern Africa while *Thapsia karamwegasensis* is only known from Kenya (Verdcourt, 1981). Only two butterfly species (*Amauris tartarea*, *Leptosia alcesta inalcesta*) are forest species, *Belenois subeida sylvander* occurs in forest and denser woodland while the other 13 of the identified species prefer open habitats (Larsen, 1996). Among the land snails, *Limicolaria martensiana* is a common savannah species (Verdcourt, 1981).

DISCUSSION

The present study found a low butterfly and land snail diversity on Ndere Island as compared to other regional ecosystems in western Kenya, such as Kakamega forest and Mount Elgon, both much larger and diverse in habitats than Ndere, which is only 4.2 km². In Kakamega forest for instance, probably some 400 species of butterflies could be found (Larsen, 1996) and over 60 species of land snails have been reported (Lange & Maes, 2001). On Mount Elgon, over 150 species of butterflies and 50 species of land snails are known to occur (Verdcourt, 1981; Lange & Kisakye, 2005). The present checklist is unlikely to be complete and might expand substantially when sampling is done during other times of the year since

invertebrates' distributions and abundance can vary substantially with seasons (Samways, 1994). Thus further monitoring is necessary to document more of the island butterflies and land snails.

Table 1. Species list of butterflies and land snails recorded at Ndere Island National Park.

Lepidoptera	
Pieridae	
	<i>Belenois subeida sylvander</i> Grose-Smith
	<i>Belenois thysa</i> (Hopffer)
	<i>Catopsilia florella</i> (Fabricius)
	<i>Colotis eris</i> (Klug)
	<i>Colotis hetaera ankolensis</i> Stoneham
	<i>Colotis</i> Hubner sp.
	<i>Eurema brigitta brigitta</i> (Stoll)
	<i>Leptosia alcesta inalcesta</i> Bernardi
Nymphalidae	
	<i>Acraea alicia</i> (Sharpe)
	<i>Amauris tartarea tartarea</i> Mabille
	<i>Danaus chrysippus</i> (Linnaeus)
	<i>Junonia chorimene</i> (Guérin-Ménéville)
	<i>Junonia oenone oenone</i> (Linnaeus)
	<i>Neptis- penningtoni</i> van Son
Lycaenidae	
	<i>Azanus moriqua</i> (Wallengren)
	<i>Iolaus silanus silanus</i> Grose-Smith
	<i>Leptotes pirithous</i> (Linnaeus)
Hesperiidae	
	<i>Sarangesa</i> Moore sp..
Stylommtophara (Land snails)	
Achatinidae	
	<i>Limicolaria martensiana</i> (Smith)
Streptaxidae	
	<i>Streptostele</i> Emberton sp.
Urocyclidae	
	<i>Thapsia karamwegasensis</i> Germain

The relatively low butterfly and land snail diversity on the island does not mean that the habitat is of no conservation importance. The presence of both forest species and species of open formations suggest that the island might be a stepping stone for such species. This is important in facilitating dispersal of highly migratory species such as butterflies (Larsen, 1996). Moreover the mainland adjacent to Ndere is characterized by dense human settlement and intensive agriculture with hardly any conserved habitats.

The island is regularly burnt to manage the grass and perhaps to induce regeneration of more nutritious forage. As much as this may be useful for the few introduced impala (*Aepyceros melampus* (Lichtenstein)), it is likely detrimental to the less mobile invertebrates like land snails, among others. In the event that grass management is crucial, other approaches such as controlled harvesting by the local community, perhaps at a fee, may be more realistic. The practice is less destructive to nature and may bring the community closer to the park management thus easing human – biodiversity conservation conflict in addition to

generation of funds for running the park. Conservation of invertebrates will not only attract other biodiversity that use them as a food source *e.g.* for birds (Pakarinen, 1992; Bonham & Taylor, 1997) but also results in improved ecosystem services such as pollination of wild and agricultural plants (Frankie & Thorp, 2003).

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