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the EANHS BULLETIN

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A SENSE OF BALANCE

The EANHS is on the verge of celebrating its 90th anniversary. This may be more remarkable than it sounds—a thorough search so far has failed to turn up any similar society south of the Sahara that is nearly so venerable. Some might say that we've done quite well just to survive at all. Are there lessons in this that we can draw on, when planning for the future?

The Society has had its difficult moments. Finances have often been rocky, and at times it looked as though the whole venture might go under. That it hasn't is due to the remarkable commitment and energy of members over the years. Lots of volunteer input has allowed low overheads, a minuscule administration, and a flexible response in times of crisis.

Should we refrain from changing anything, in that case? Unfortunately, stasis may not be a sound long-term strategy. In August 1997, members of the Executive and various sub-committees gathered to look at our plans for the next five years—a first step towards planning for the next 90! A report on this Strategic Planning Workshop went out with the April newsletter, and I hope has brought everybody up to date. In this Bulletin you will find an analysis of the questionnaire that we sent out before the workshop to ask members their views on a broad range of issues. It won't surprise anyone to find out that members' views are extremely varied. Nonetheless, some themes did emerge from both the questionnaire answers and the discussions in the planning workshop, and need to be kept in mind.

As I see it, the Society has a series of balancing acts to perform, not all of them easy. We have to professionalise our operations and make our administration more effective, not least so that we can provide members with interesting talks, worthwhile excursions and regular publications. At the same time, we mustn't lose the volunteer ethos that is central to our way of working. Our image needs dusting-off and modernising, but not at the expense of our long history and established reputation. We have to make our voice heard for conservation, but not become bogged down in partisan politics. Subscription charges must remain affordable, but we also need to be financially self-sustaining. There is a real need to regionalise activities, but it would be unwise to cease co-ordination from the centre.

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87th Annual General Meeting

Can these challenges be met? Of course—but only with the active support and participation of the Society's members. All Annual General Meetings are important, but the 1998 one particularly so, as there will be a chance to discuss and vote on a number of crucial issues—including a new name for our Kenyan operations, a revised and streamlined constitution, and the outline strategic plan. Please attend, make your views known, and help take the Society forward into its next 90 years!

ARTICLES

FERNS IN EAST AFRICA: A NOTE ON THEIR BIOLOGY, DISTRIBUTION AND CONSERVATION

Introduction

This note is put together to give general naturalists some idea of the diversity of ferns in East Africa. Because many people are understandably vague about what a fern is and how it lives, we have had to make some basic explanations. We have also tried to describe the general ecology and distribution of the group to make field observations more meaningful. Two accounts of ferns have recently become available, those of Johns (1991) and Faden (1994), and many people will want some background information and generalisations about the Fern Flora of our region.

Pteridophytes are situated between the mosses (non-vascular plants) and the higher plants in the evolutionary hierarchy of the plant world. A distinctive anatomical feature of Pteridophytes which they share with higher plants—gymnosperms and angiosperms—is the presence of a water transport (vascular) system in the plant body, but Pteridophytes differ from the latter two divisions in lacking the seed habit: they reproduce by spores.

The Pteridophytes of East Africa are classified into four broad groups of spore-bearing plants that include whisk ferns (psilopsids), club mosses (lycopsids), horsetails (sphenopsids) and ferns (filicopsids). These groups are not related to each other, being distantly descended from a hypothetical ancestor of the land plants in general. The rare psilopsids have no true roots or leaves, and the bristle-like stems divide in two, repeatedly, bearing clusters of three spore-sacs. The club mosses have true roots and closely arranged scale-like leaves. Spore sacs are often crowded at the stem tips like cones. The horsetails have tiny leaves in whorls or frills around the stem and spore sacs in groups, like anthers, crowded

into a definite cone at the stem tips. The ferns are defined by having frond leaves that bear the spore sacs, usually on the lower side.

The Ferns

Life History

All the Pteridophytes have two phases of their life history: sexual and non-sexual. The sexual phase requires fertilisation of an egg by a swimming sperm and therefore needs free water at a critical time and this is a risky business. The egg and the sperm are called gametes and therefore the sexual plant is called a gametophyte and has one set (n) of chromosomes. Because it needs a water film the gametophyte of the ferns is usually a tiny thin green disk held close to damp ground, and has a short life during the rainy season, but there are interesting exceptions to this. The fusion of the gametes produces a cell with two sets of chromosomes ($n+n=2n$) called a zygote. This immediately grows into a fern plant. Every fern plant is non-sexual, bearing spores which need no fertilisation, and so are called sporophytes. The spores are the result of dividing the chromosomes into two similar sets ($2n=n+n$). The spores are dry and wind-borne over great distances so that dispersal to suitable sites is rapid. But they germinate and develop into the gametophyte with its chancy sexual reproduction and so few are successful in producing and fertilising an egg to grow into the next sporophyte germination (Raghavan, 1989). This process is called *the alternation of generations*. This introduction to the biology of ferns in East Africa discusses their ecological requirements and geographical distribution. Current changes in global and regional climates and habitats make their monitoring and conservation important.

Ecology

Ferns comprise a group of Pteridophytes of about

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12,000 species of plants widely distributed throughout the world in many habitats. Most are found in the southern hemisphere. It is believed they evolved in a world that was considerably wetter and warmer than the present, as a result of which they maintained a dependence on the water environment for their growth and reproduction (Rodger, 1974). In addition to high humidity, the ferns of the modern world thrive in shaded places especially under tree canopies or in rock crevices and stream banks. But they have other specialised features that make them competent to exploit various environments. We shall briefly describe some reproductive features and then adaptations for growth.

Reproduction

Most ferns need an extended period of surface water availability for spore germination, gametophyte growth and gametic transfer. The exceptions are those which have an underground gametophyte. Because the sexual process is so chancy, vegetative reproduction has been developed repeatedly. Some have small bulb-like lumps (called *gemmae*) on their fronds that can be brushed off by passing animals, others can root from frond tips. Many miss out the necessity for sex by producing asexual ($2n$) spores. Spores of primitive ferns are larger and their dispersal from spore sacs less efficient, therefore they are often found in open, windy places. Ferns growing in the water have developed separate male and female spores and gametophytes, which do not develop into autonomous plants. Possibly the reason for this is the rapidity with which water levels rise and fall, but it serves to show how adaptable the ferns are.

Growth

Ferns grow slowly compared with flowering plants and need special strategies to overcome this competitive disadvantage. They can grow where flowering plants find difficulty in totally covering wet soil, or where their light spores can beat a heavy seed in the race to a suitable temporary site. They are easily destroyed by breakage or grazing. Few are tough enough to withstand trampling but most are poisonous or glandular, and contain no starch in the leaves making them unattractive to herbivores. Ferns have apparently found it easy to become poikilohydric, that is, capable of drying without dying and there are more of such plants in East Africa than in wetter climates. They are found in places like walls and cliffs, which are usually dry but very wet after the slightest rain. Other adaptations to dry conditions are hairy coverings, and fronds that break up and fall when water becomes short. The form of the (sporophyte) plant is important. Tufted fronds around an upright stem (rosettes) are good at tapping light in shaded conditions, while spaced fronds along a creeping stem are good at invading grassland or

clinging to surfaces.

Habitat Conditions and adaptations

In these notes the reader is referred to Faden (1994) for descriptions of fern families and genera. There are no descriptions in Johns' (1991) check list.

Terrestrial Habitats

On the forest floor, most ferns are rosettes with small spores in efficient spore sacs for weak air streams. Flowering plants are unable to blanket the soil in these low light conditions. Common genera here include *Asplenium*, *Blottia*, *Dryopteris*, *Pteris*, but there are many others.

Rock crevices with protected bare soil and limited free water period are suitable habitat for other species, many of these having poikilohydric rosettes. Although rock crevices are often in full light they can resist invasion by flowering plants on the first-come-first-served principle. Cliffs may hold the only pteridophytes in dry country and genera common here are *Actinopteris* and *Pellaea*.

Stream-sides have bare soils through water erosion, quickly exploited by massive fern fronds. The tree ferns (*Cyathea* spp) and those with large spores (*Marattia* and the Thelypteridaceae) can grow here. In adjacent swamps competition from flowering plants is intense but can be overcome by creeping stems and large fronds.

Disturbed grasslands can contain conspicuous creeping ferns each plant of which covers a large area, attesting to the rarity of sexual reproduction. The bracken fern, *Pteridium aquilinum*, is a worldwide weed in such grazing land. *Hypolepis* is common in these habitats at higher altitudes. Alpine rocks are an important habitat for ferns, which are adapted to low temperatures, such as *Anogramma*, *Polystichum* and *Woodsia*.

Epiphytic habitats

The surface of branches and trunks of forest trees have limited free water availability but are open habitats with more light than on the soil. There is a wide range of microclimates so we find a mixture of rosettes and creepers, large and small spore bearers, water demanders and drought tolerators. Species of the family Polypodiaceae are major players in this habitat, including the Stag's Horn Fern, *Platynerium* which is uncommon in Kenya but often cultivated. It has stalkless, clasping leaves like elephant's ears, which gather soil against the tree trunk, and erect branched fronds bearing the massed spore sacs. *Asplenium* is a common epiphytic genus on moist forest trees. In the wettest forest, species of the delicate 'filmy ferns', *Hymenophyllum* and *Trichomanes*, are often found hanging from tree trunks or rocks by water.

Aquatic Habitats

Specialised ferns float or are submerged in water of ponds and shallow lakes and streams. They are invariably creeping and often successfully outgrow all other plants, such as the rafts of *Salvinia molesta* on Lake Naivasha and

elsewhere. The genus *Marsilea* is adapted to seasonal water bodies. Thus fern species can be used as indicators of habitat conditions. For instance, the bracken fern grows normally in forest edges and its presence below a tree canopy could be used as an indicator of past forest disturbance. Again the presence of filmy ferns is an indication of a wet humid undisturbed forest no matter how dry everything seems at the time. Many species of *Actinopteris* and *Pellaea* are indicators of dry areas while those of *Marsilea* (water-floating ferns) are indicators of seasonal pools and streams.

Diversity and biogeography

Johns lists 519 species from East Africa in his recent *Checklist of East African Pteridophytes*; information on the distribution was available for 434 of these. Table 1 lists the number of species present in Kenya, Tanzania and Uganda. Families with a high number of genera and species are Thelypteridaceae (13 genera, 33 species), Dryopteridaceae (11 genera, 59 species), Polypodiaceae (11 genera, 26 species), and Adiantaceae (10 genera, 57 species). Some families however, have very few genera (1 or 2) but a large number of species, e.g. Asplenaceae (2 genera). On the other hand monogeneric and monospecific families are also present in our region such as Marattiaceae, Osmundaceae and Davalliaceae.

The number of recorded species may increase when taxonomic research on each family has taken place although the overall species/genera ratio in Johns (1991) is 5.04, which is very high. Even without the 99 species of *Asplenium* in Johns' list, the ratio is 4.08. Faden (1994) gives a ratio of 2.82 for the area of Kenya above 1000 m altitude, which is much more reasonable for an ancient

Table 1. Number of species per family of Pteridophytes occurring in each of the East African countries: Uganda (U), Kenya (K) and Tanzania (T)

FAMILY	U	K	T
Actinopteridaceae	3	3	4
Adiantaceae	28	27	47
Asplenaceae	54	53	67
Azollaceae	2	1	2
Blechnaceae	2	8	8
Cyatheaceae	3	2	11
Davalliaceae	1	1	1
Dennstaedtiaceae	11	11	17
Dryopteridaceae	15	14	27
Gleicheniaceae	2	2	4
Grammitidaceae	1	4	16
Hymenophyllaceae	12	12	24
Lomanopsidaceae	10	13	23
Marattiaceae	1	1	1
Marsileaceae	2	7	9
Oleandraceae	7	6	10
Ophitoglossaceae	10	8	11
Osmundaceae	1	1	1
Parkeriaceae	1	1	1
Polypodiaceae	18	13	19
Pteridaceae	16	15	25
Sarimiaceae	0	2	2
Schizaeaceae	1	3	7
Thelypteridaceae	15	18	26
Vittariaceae	4	5	6
Woodsiaceae	4	7	15
Grand Total	222	236	386

group of plants, many of which are at the end of evolutionary lines. It is clear that the taxonomy of many groups is in a state of flux and that differences of opinion exist between experts. There are many specimens in the East African Herbarium that have not been properly identified due to lack of up to date literature and specialised botanists.

Figure 1 shows how species are shared between the three countries of East Africa. As with orchids (Vanden

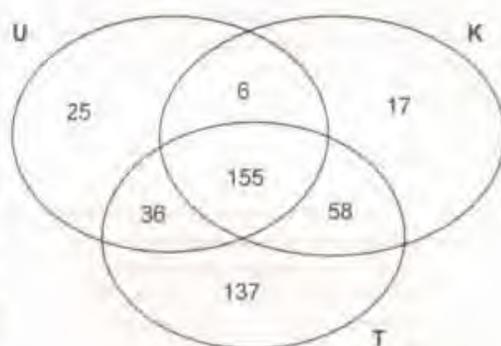


Figure 1: Number of fern species unique to each country, and shared between different combinations of countries

Berghe & Bytebier, 1995), the number of species occurring in Tanzania but not in either of the two other East African countries is considerably higher than the species unique to either Kenya or Uganda. For both animal groups for which a similar analysis was done, mammals (Gathua & Vanden Berghe, 1993) and Diptera (De Meyer *et al.*, 1994), Uganda scored highest. It would be interesting to subject more taxonomic groups to this analysis, to check whether a trend develops – four groups is not enough to draw definite conclusions. Fern distribution with respect to the botanical regions used in the Flora of Tropical East Africa (FTEA) is summarised in figure 2. A map of the floral regions, and a short discussion was given in a previous issue of the *Bulletin* (Vanden Berghe & Bytebier, 1995). Most ferns are found in U2 in Uganda; K4 in Kenya; and T2, T3 T6 and T7 in Tanzania. Of course species can occur in one or more botanical regions and therefore regional numbers of species are independent. The areas with most ferns include high altitudes such as Rwenzori Mountains (Uganda); Mts Kenya, Aberdares, Mau and Elgon (Kenya); and Mts Meru, Kilimanjaro, Pares, Usambaras and Ulugurus (Tanzania). High rainfall and cool mist-cloud climates occur in these greater altitudes which are ideal for the establishment of ferns.

Conservation Status

Unfortunately ideal fern habitats are also the best potential agricultural areas in East Africa. At the same time the population rate of increase in East Africa,

especially in Kenya, is one of the highest in the world. This has put much pressure on forests for conversion into agricultural, industrial and settlement land-use. Thus many of the fern habitats are decreasing daily with increase in human development activities. Forest fragmentation has been increasing especially from the

ex-situ conservation.

Cultivation of rare species needs expensive replication of their habitat requirements in controlled environments. Therefore protection of the habitats where they are naturally occurring is the cheapest way of ensuring their future survival and should be given priority.

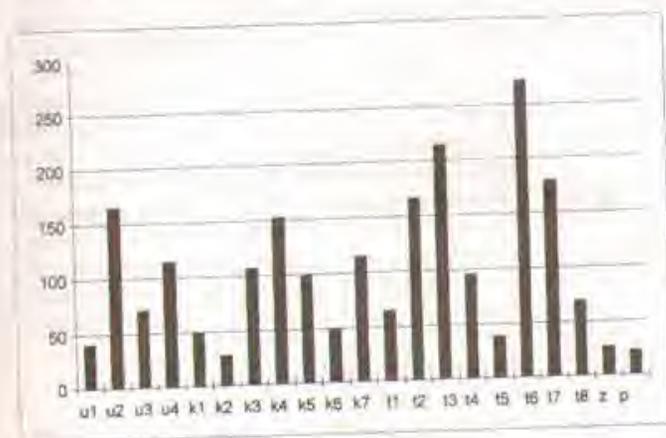


Figure 2: Number of fern species occurring in each of the floral regions

middle of this century when indigenous wet forests started to be cleared to give way to crop and exotic timber plantations. Continuing forest degradation is threatening the survival of ferns particularly due to the opening of the forest canopy by logging, which reduces the humidity. Besides degradation and reduction in habitat size, collection of ferns from the forest for commercial use has been found to be another destructive force that requires to be checked and closely monitored. It is time to take the advice of Budowski (1976) who asked for "a code of ethics for those who collect live plants, and a code of ethics for those who propagate them in controlled conditions", to ensure effective protection of these fragile plants.

Conservation policy in the three East African countries puts more emphasis on natural areas with high populations of wild animals as either National Reserves (with limited amount of protection) or National Parks (with total protection). Many forest habitats, however, do not fall under either of these two categories and their management is by the Forest Department, which allows multiple use of forest resources. It is therefore probable that most fern species are not protected and their survival is at risk. In recent years however, some Forest Departments have resolved the problem by scheduling areas of forest thought to be biologically important as Nature Reserves. This is common in many Forest Reserves in Kenya. There remain problems with resourcing the Nature Reserves and there are threatened species that are not inside the designated areas. In such situations, if *in situ* conservation is difficult, then the biology of such species need to be understood so that transfers of the species to a safe area can be made for

References

- Budowski, G. (1976). *The global problems of conservation and the potential role of living collections*. In Simmons, J.B., R.I. Beyer, P.E. Brandham, G.L. Lucas & T.H. Parry (eds) *Conservation of threatened Plants* 9-13. Plenum Press, London.
- De Meyer, M., E. Vanden Berghe, J. Kitiili & H. Liban (1994). The Diptera fauna of East Africa: a preliminary overview, *Bulletin EANHIS* 24(4): 55-59.
- Faden, R. (1994). *Ferns and Fern Allies in Agnew ADQ & Agnew S (eds) Flora of Upland Kenya, Second Edition*: 9-39. EANHIS, Nairobi.
- Gathua, M & E. Vanden Berghe (1993). Mammals of East Africa: preliminary statistics. *Bulletin EANHIS* 23(4): 72-74.
- Johns, R.J. (1991). *Pteridophytes of Tropical East Africa. A Preliminary Check-list of the species*. Royal Botanic Gardens, Kew, Richmond, London.
- Raghavan, V. (1989). *Developmental biology of fern gametophytes*. Cambridge University Press, Cambridge.
- Rodger, G. (1974). *Ferns*. Pelham Books, London.
- Vanden Berghe, E. & B. Bytebier (1995). Orchids of East Africa: some statistics on their distribution. *Bulletin EANHIS* 25(2): 20-23.

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Pellaea calomelanos



F

by Tim Campbell

IMPORTANT BIRD AREAS IN KENYA: PROGRESS AND PROSPECTS

Biological conservation takes many different forms. Efforts may focus on a single species that is considered important for one reason or another, like the Black Rhinoceros or African Elephant. At the other end of the scale are attempts to conserve an entire landscape, often one inhabited by people, by regulating the type and intensity of land uses. The vast majority of conservation work fits somewhere in between, and concentrates on particular chunks of land (or, indeed, water). This "protected areas" approach assumes that by conserving a site and the habitat on it, we protect the biodiversity that it contains.

Year by year, the human pressure on land grows inexorably more intense. Realistically, only a few of the many sites we would like to conserve can be marked out for long-term protection. Which should these be? In East Africa, and no doubt elsewhere in the world, there used to be three main reasons for choosing areas to be protected. Either no-one wanted to live there in the first place (they were too arid or inhospitable or swarming with tsetse fly); or they were chock-a-block with large mammals that might be hunted or photographed; or they protected a water catchment and contained valuable timber. These criteria are reasonable enough by their own lights, but unfortunately are quite hopeless when it comes to conserving biodiversity. Except by a happy chance, there is no reason that sites selected in this way should contain exceptionally rich or distinctive fauna and flora. If biodiversity is our real concern when making priorities for protection, we had better focus on it to begin with.

But how can this be done? We are woefully ignorant of our biodiversity, and making even the simplest inventory of species takes enormous time and effort. By the time we had finished a full description of just one site, all the others would probably long have been lost. The rate at which biodiversity is being eroded, already breath-taking, is speeding up constantly; time is very short; we have no choice but to make do as best we can with the information available. And for no major taxonomic group is more information available than for birds.

Important Bird Areas (IBAs) are places that are exceptionally important for bird conservation. Usually, therefore, they are also key sites for the conservation of biodiversity in general. Birds are far from a perfect indicator of biological value, but they are a good start — and the set of sites we identify for birds, with minimal effort, can be expanded as information on other groups becomes available.

The official aim of BirdLife International's IBA programme is "to identify and protect a network of sites, at a biogeographic scale, critical for the long-term viability of naturally occurring bird populations, across the range of those bird species for which a sites-based approach is appropriate." That includes most bird species that are not very thinly scattered over large areas. By protecting a large set of bird species,

conservation of an IBA network should ensure the survival of a correspondingly large number of other taxa. IBAs have been identified across Europe and the Middle East, and the programme is well advanced in Africa. A continental directory is due for publication in the year 2000.

IBAs are chosen using clear, quantitative and agreed criteria, which are outlined below. However, the network of sites is built up in a pragmatic fashion. All else being equal, existing protected areas are generally easier to conserve than non-protected areas, so the protected area system often forms the network's backbone. Bigger sites are usually better than smaller ones — ideally, each site should be large enough to support viable populations of the species for which it was identified. There can be difficulties in deciding the boundaries of sites, and how to classify clusters of small sites, but the over-riding criterion in all cases is common-sense. If they are to have any use, IBAs must be practical tools for conservation, so rules cannot be followed blindly.

IBA categories and criteria

There are four categories of IBAs, though a single site may qualify in two or more of these. Each category has its own criteria that set a minimal level for global recognition.

1. Globally-threatened birds. The site regularly holds significant numbers of a globally threatened or near-threatened species. These species are listed in the 1994 BirdLife International publication *Birds to Watch 2* by Nigel Collar and colleagues. Kenyan examples are birds such as Papyrus Yellow Warbler *Chloropeta gracillirostris* or East Coast Akalat *Sheppardia ginnangi*. In total, 23 Kenyan species (not all of which are recognised by the EANHS as full species) are listed as threatened in *Birds to watch 2*, together with 17 near-threatened species. The regional red-list exercise has added Sharpe's Longclaw *Macronyx sharpei* and Aberdare Cisticola *Cisticola aberdure* as provisionally threatened species; although not in *Birds to watch 2*, they are both globally Vulnerable according to the IUCN criteria.
2. Restricted-range birds. The site holds a significant component of a group of species whose breeding distributions define an Endemic Bird Area (EBA) or Secondary Area (SA). EBAs are places where two or more species of 'restricted range', i.e. with world distributions of less than 50,000 km², occur together. Globally, more than 70% of such species are also threatened. A Secondary Area (SA) also supports one or more restricted-range species, but has less than two species that are entirely confined to it. Restricted-range bird species, and the EBAs and SAs they occur in, are listed in the recently-launched BirdLife International publication, *Endemic Bird Areas of the World*, by Alison Stattersfield and colleagues.

Several EBAs and SAs occur in Kenya, but the

two most important are the Kenyan Mountains EBA and the East African Coastal Forests EBA. Kenya holds all the restricted-range species (nine and seven, respectively) in these EBAs. We also have smaller parts of the Tanzania-Malawi Mountains EBA (three out of 37 species, all in the Taita Hills), the Serengeti Plains EBA (two out of six species), and the Jubba & Shabeelle Valleys EBA (one out of five species — this EBA just creeps into the extreme north-eastern corner of the country). Secondary areas are the Kakamega and Nandi Forests (with Chapin's Flycatcher *Muscicapa lendu*), the North Kenyan Short-grass Plains (with Williams's Lark *Mirafra williamsi*) and Mt Kulal (with Kulal White-eye *Zosterops kulalensis*). Once again, not all the species recognised by BirdLife are considered full species by the EANHS — for example, the Kulal White-eye is normally considered a distinctive race of the Montane White-eye *Z. polioptera*.

3. Biome-restricted assemblages. The site holds a significant component of the group of bird species whose distributions are largely or wholly confined to one biome. A 'biome' is a major regional ecological community, characterised by distinctive life forms and principal plant species — and, in this case, by a group of bird species with largely shared distributions (of more than 50,000 km²). Kenya has substantial areas of the Somali-Masai biome (92/130 species), the East African Coast biome (30/36 species), the large Afrotropical Highlands biome (67/224 species) and the small Lake Victoria Basin biome (9/12 species). Kenya also holds the easternmost outliers of the Guinea-Congo Forests Biome (43/278 species) and the Sudan and Guinea Savannah Biome (13/54 species).
4. Congregations. Sites that regularly hold very large numbers of birds may qualify as IBAs. The criteria used are based, with slight modifications, on those of the Ramsar Convention. Thus, sites qualify under this category if they hold more than 1% of the biogeographic population of a waterbird, or more than 20,000 waterbirds in all. Sites that hold large numbers of congregatory seabirds or terrestrial species, or that form a migratory bottleneck, are also included.

IBAs in Kenya

Work to identify IBAs in Kenya began in January 1995. The programme is co-ordinated by the EANHS, with the Ornithology Department of the National Museums of Kenya doing most of the technical work. Financial support has been provided by the Royal Society for the Protection of Birds.

The initial step was to assess our present knowledge and identify gaps. An extensive set of surveys was then undertaken by the Ornithology Department to try and fill as many of these as possible. From 1995 to 1997, surveys were carried out in creeks, estuaries and beaches along the Kenya coast from the Tanzania border to Kiwayuu, all the major papyrus swamps along the

Lake Victoria shoreline in Kenya, the five large dams on the upper Tana river, South Nandi forest, forests on Mt Kenya and around Eldama Ravine, the Cherangani Hills, the Taita Hills, and moist grassland in Busia and Suba Districts.

Although 64 IBAs were initially listed, some adjacent sites have now been merged and the final list numbers 60 (see the map). There are IBAs identified in all provinces of the country except North-Eastern (Table 1). The lack of IBAs here reflects both a lack of knowledge and the rather uniform character of this province, which contains species characteristic of the Somali-Masai biome that are well-protected elsewhere. Malkanari National Reserve (within the Jubba-Shabeelle River Valleys Endemic Bird Area) is a potential IBA in this province that needs to be surveyed in the future.

Table 1. Numbers of IBAs per province (eight sites overlap provinces)

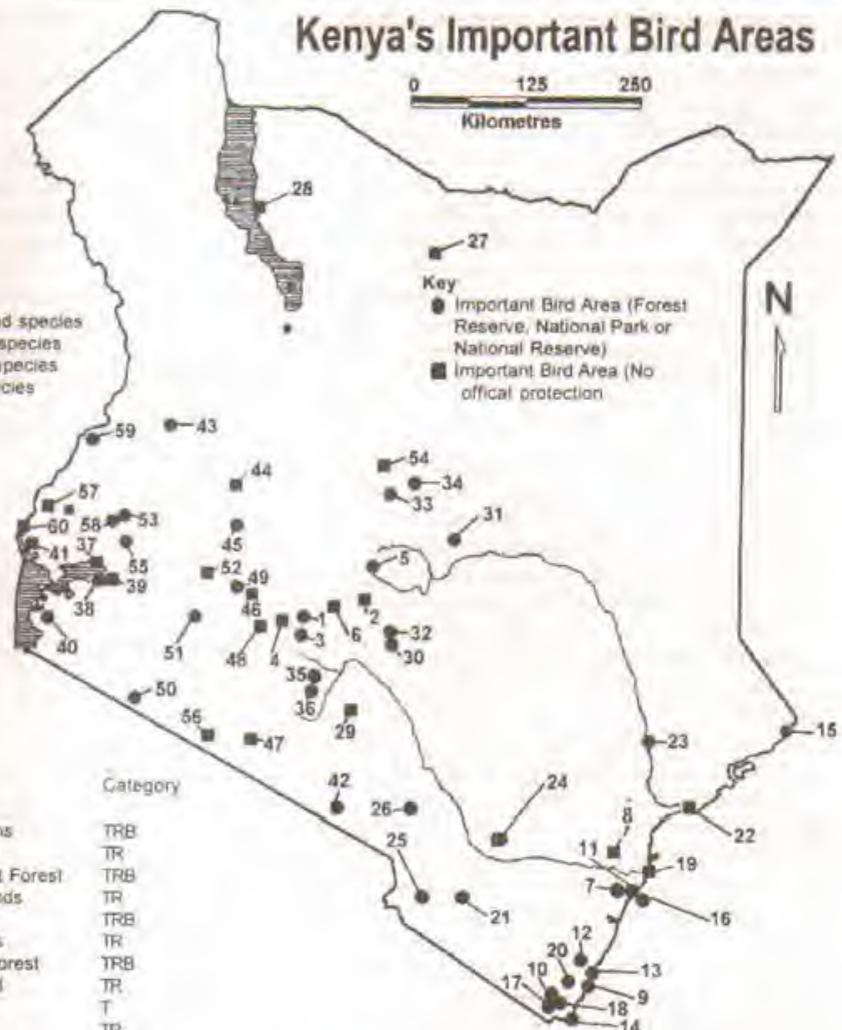
Province	Number of IBAs
Rift Valley	20
Coast	19
Eastern	11
Central	6
Nyanza	5
Western	5
Nairobi	2
North-eastern	0

The majority of IBAs fall into more than one category (Table 2). Overall, the globally-threatened species category contains the largest number of sites. Although 30 sites fall into the restricted-range species category, no site is listed exclusively on this basis. Eight sites are listed solely for the large congregations of birds they contain, and six solely for their biome-restricted species.

Most IBAs in Kenya are forests or wetlands (Table 3). There is a small number in the drier savanna or desert habitats and just five in moist grassland. Sites in other habitats, which are difficult to classify, include the Mukurweini and Kiinyaga Valleys (in heavily populated agricultural areas) and Ol Donyo Sabache, which contains forest and bushland but is listed mainly for its cliffs.

Most of the forest and savanna sites, but relatively few of those in other habitats, have some level of formal protection already. However, a classification of sites into two broad categories of threat (low/moderate versus high/very high) reveals the inadequacy of the present level of protection in the case of forests. Despite being Forest Reserves in most cases, almost all forest areas fall into the higher threat category. The same is true of almost all the moist grasslands, but just half the wetlands and a quarter of the savanna sites. The total area of forests, moist grassland and wetlands in Kenya is small, and these sites are often in densely populated areas with heavy and increasing human pressures. Unsurprisingly, the main threat to all these sites is habitat loss and degradation through human activities.

Kenya's Important Bird Areas



Categories

- T - Globally-threatened species
 R - Restricted-range species
 B - Biome-restricted species
 C - Congregatory species

Key

- Important Bird Area (Forest Reserve, National Park or National Reserve)
 ■ Important Bird Area (No official protection)

IBA no	IBA name	Category
1	Aberdare Mountains	TRB
2	Kianyaga Valleys	TR
3	Kikuyu Escarpment Forest	TRB
4	Kinangop Grasslands	TR
5	Mt Kenya	TRB
6	Mkunweini Valleys	TR
7	Arabuko-Sokoke Forest	TRB
8	Dakacha Woodland	TR
9	Diani Forest	T
10	Dzombo Forest	TR
11	Gede Ruins National Monument	T
12	Kaya Gandini	TR
13	Kaya Waa	T
14	Kiute Islands	C
15	Kiunga Marine National Reserve	C
16	Malindi/Watamu Coast	C
17	Mareni Forest	TRB
18	Mrima Hill Forest	TB
19	Sabaki River Mouth	C
20	Shimba Hills Forest	TRB
21	Taita Hills Forest	TRB
22	Tana River Delta	TBC
23	Tana River Forests	TRB
24	Tsavo East National Park	TB
25	Tsavo West National Park	TB
26	Chyulu Hills	TR
27	Oida Galgalu Desert	TRB
28	Lake Turkana	C
29	Machakos Valleys	TR
30	Masinga Reservoir	C
31	Meru National Park	B
32	Mwea National Reserve	T
33	Samburu and Buffalo Springs Game Reserves	B
34	Shaba National Reserve	TRB
35	Dandora Sewage Treatment Works	C
36	Nairobi National Park	TRB
37	Dunga Swamp	TB
38	Kogula Swamp	TB
39	Kusa Swamp	TB
40	Ruma National Park	T
41	Yala Swamp	TB
42	Amboseli National Park	B
43	Cherangani Hills	44
44	Lake Baringo	B
45	Lake Bogoria National Reserve	TC
46	Lake Elmenteita	TRC
47	Lake Magadi	C
48	Lake Naivasha	TRC
49	Lake Nakuru National Park	TRC
50	Masai Mara	TR
51	Mau Forest Complex	B
52	Mau Narok/Molo Grasslands	TR
53	North Nandi Forest	TRB
54	Oi Donyo Sabache	T
55	South Nandi Forest	TB
56	South Nguruman	TR
57	Busia Grasslands	TB
58	Kakamega Forest	TRB
59	Mt Elgon Forest	TRB
60	Sio Port Swamp	TB

Table 2. Number of IBAs in each category (24 IBAs are listed in two categories and 17 in three categories)

Category	Number of sites	Number of sites in this category alone
A1 Globally-threatened species	46	5
A2 Restricted-range species	30	0
A3 Biome-restricted assemblages	28	6
A4 Congregations	14	8

Table 3. Kenyan IBAs and their level of protection and threat by dominant habitat

Dominant habitat	Number of sites	Number protected	Number severely threatened
Forest	22	20 (91%)	21 (95%)
Wetland	18	5 (28%)	9 (50%)
Bushland, semi-desert or desert	12	8 (67%)	3 (25%)
Moist grassland	5	2 (40%)	4 (80%)
Other	3	0 (0%)	3 (100%)
Total	60	35 (58%)	40 (67%)

All IBAs must meet a minimum set of criteria for listing, but that does not mean that all IBAs are equal in importance. Among the Kenyan sites, some stand out because of their biological significance and the degree of threat. These sites include:

1. Kenya's unique highland grasslands on either side of the central Rift Valley, on the plateaux of Kinangop and Mau Narok. These are home to the endemic Sharpe's Longclaw *Macronyx sharpei* and Aberdare Cisticola *Cisticola aberdare*, among other specialised grassland species. These grasslands are being cleared and converted remarkably fast, and the grassland endemics are under very severe threat.
2. Moist grasslands around Busia. Often seasonally-flooded, these grassland patches house many special birds, notably the Blue Swallow *Hirundo atrocaerulea*. This threatened intra-African migrant uses the grasslands for feeding and roosting. As agriculture inevitably expands, these sites are on the brink of disappearing completely.
3. The papyrus swamps around Lake Victoria — Dunga, Kogufa, Kusa, Sio Port and especially Yala. These contain a unique set of papyrus endemic birds, including the globally threatened Papyrus Yellow Warbler *Chloropeta gracillirostris*. They are also of crucial ecological importance as water filters and fish nurseries and refuges. The recent infestation of the lake with Water Hyacinth prevents fishermen from fishing

and has dramatically increased human pressure on these swamps. They are being burned, harvested unsustainably and cleared and drained for cultivation.

4. River valleys around Kisnyaga and Mukurweini. These are the stronghold of the scarce and local Hinde's Babbler *Turdoides hindei*, a threatened Kenya endemic. The babbler is happy enough in cultivated areas, so long as it has a few thickets (in this case, of *Lantana*) to shelter and nest in. As less and less land is left fallow, and more and more valleys are intensively cultivated, the babbler's refuges are fast disappearing.
5. The tiny and fragmented forests of the Taita Hills, the northernmost part of the Eastern Arc mountains.



Sharp's Longclaw - A threatened Kenyan grassland endemic restricted to the Kenyan Mountains Endemic Bird Area



Amani Sunbird
E. Sclimpo '98

Amani Sunbird - A threatened species of the East African Coastal Forests EBA.

The Taita Hills forests shelter three endemic taxa of birds and many other scarce and distinctive animals and plants. The forests are so small that strict protection is required to prevent them from vanishing completely.

6. Arabuko-Sokoke Forest. This is the largest remnant of the fragmented coastal forests of East Africa and shelters six threatened species of birds, among many other important animals and plants. It is under threat from potential de-gazettement for settlement, tree poaching and unsustainable use of forest products.
7. Kakamega Forest. The easternmost remnant of the great Guinea-Congo forests, and biogeographically unique, Kakamega is home to the globally threatened Turner's Eremomela *Eremomela turneri* and Chapin's Flycatcher *Muscicapa tendu*, as well as many regionally threatened bird species and many birds found nowhere else in Kenya. Kakamega's distinctive fauna and flora make it a very important eco-tourist destination. The forest is already small and highly fragmented, and is being destroyed by rampant encroachment, poaching of trees, and grazing of livestock that prevents forest regeneration.
8. South Nandi Forest. Close to Kakamega, South Nandi shelters probably the world's largest population of the threatened and little-known Turner's Eremomela. Large areas of the forest have been encroached and destroyed for agriculture, and the remainder is being subjected to intensive mechanised logging that degrades the forest structure and removes the Eremomela's favoured trees.
9. Dian, Dzombo Hill, Kaya Gandini, Kaya Waa, Marenji Forest and Mrima Hill. These small forest remnants on the

south Kenya coast are important for threatened species. As well as birds, they contain many rare and valuable plants. All are under pressure from a combination of illegal land allocations, logging and removal of other forest products, and encroachment.

10. The forests of Mt Kenya. These magnificent forests, important for the threatened Abbott's Starling *Cinnyricinclus femoralis* and many Afrotropical Highland biome bird species, are being severely degraded by large-scale illegal logging and clearance for agriculture and *bhung* plantations.

What next?

The idea of the IBA work is not just to identify places that need attention, but to make sure that they are properly looked after. The IBA process can be thought of as having four stages. The first stage involves setting up the institutional framework — i.e., who will do what. In Kenya, the EANHS (as the BirdLife Partner) has co-ordinated, the National Museums has done most of the inventory work, and an IBA Advisory Council (made up of conservationists and planners from a range of mainly Government institutions) has steered the project. The second stage involves site identification and survey plus inventory compilation. This has been keeping us busy for the last three years. The Kenya IBA directory is about to go to press, and should be available within the next few months. This will provide information on all the sites and their key physical and biological features. The data are also stored in a custom-designed database so that they can be updated regularly.

Stage 2, then, is almost complete. Stage 3 involves setting priorities and implementing advocacy, monitoring and action for key sites, and Stage 4 establishing a "sustainable management cycle" (i.e. a



Hinde's Babbler
E. Sclimpo '98

Hinde's Babbler - A threatened, restricted-range Kenyan endemic confined to the Kenyan Mountains Endemic Bird Area.

self-perpetuating way of monitoring sites and taking action to correct problems).

Moving to Stage 3, and eventually Stage 4, requires extra resources. Support to take the IBA programme forward will come from the Global Environment Facility. Ten BirdLife Partners in Africa will be involved, in Burkina Faso, Cameroon, Ethiopia, Ghana, Sierra Leone, South Africa, Tanzania, Tunisia and Uganda (the EANHs again!) as well as Kenya. The project, 'African NGO-Government Partnerships for Sustainable Biodiversity Action', is the first major GEF grant given to a non-governmental grouping. As the project's title suggests, the BirdLife Partners will be working closely with Governments, but bringing in their special abilities in advocacy and grass-roots involvement to enhance existing conservation efforts.

In Kenya, the GEF project should work at two levels. Nationally, we will be advocating that IBAs be incorporated as a central plank in conservation planning (as they have been now across the European Union, for example). This will also involve expanding and formalising the IBA Advisory Council. Locally, we will be helping to establish site-support groups that can monitor IBAs and work with the district administration to conserve them. Many activities are enmeshed within these main themes, including deciding which sites are the highest priorities, drafting management plans and funding proposals, training the members of local groups and Government staff, and so on.

This will all be a great deal of work, and the Society has recruited two new staff to shoulder the bulk of it. As always, however, the hope is that EANHs members themselves will step in to assist. For any member wishing to make a tangible contribution to conservation, the IBA project provides the opportunity. There are several ways to become involved:

- * send in information on the status of particular IBAs that you visit or live near (for instance, conservation problems or improvements you have noticed, or interesting records of animals or plants)
- * if you live near an IBA, start, or involve yourself with, a site-support group affiliated to the EANHs. Site-support groups of one sort or another already exist for Arabuko-Sokoke Forest, Kakamega Forest, the Kinangop Grasslands and Lake Naivasha—eventually every IBA should have one.
- * if you have expertise in a particular area, volunteer a little time as a resource-person. The project is likely to involve a good deal of training at different levels and across a wide range of skills, from identifying plants, birds and butterflies to simple office administration and book-keeping.

If you are interested in being involved, and you live in Kenya, why not contact the EANHs office in Nairobi for more information. Similar work is beginning in Uganda and in Tanzania—members in those countries should contact the EANHs Uganda branch or the Wildlife Conservation Society of Tanzania, respectively.

Acknowledgements

The IBA programme in Kenya has been generously supported by the Royal Society for the Protection of Birds, the BirdLife International Partner in the United Kingdom.

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THREE BUTTERFLIES OF TAITA

Part II. *Papilio desmondii taita*

(Editor's note: The first part of this article appears in the *EANHs Bulletin* Vol. 21:2, p. 18. This part of the paper has been recovered from some files of our late Editor, Mrs Daphne Backhurst. Our apologies to the author for the long delay between parts.)

Introduction

While living in the Taita Hills I became interested in its butterflies and have described my findings on *Papilio nireus* in a previous bulletin. I had found *nireus* larvae when I had been looking for the Taita endemic *P. desmondii* (see page 39). Yet eventually I did find larvae different from *nireus*, which proved to be *P. desmondii*. In general *P. desmondii* is less abundant, and while it can overlap with *P. nireus*, only on one occasion have I found more eggs or larvae of *desmondii* than *nireus*. The overall discovery rates of *nireus*, for eggs and larvae together, were 6.0 and 2.5 per hour respectively for Mwambirwa and Choke Forests, but only 1.2 per hour for *desmondii* on Mwambirwa and even less on Choke. I have only ever found *desmondii* on *Toddalia asiatica*—and only once in Choke. So, the statistics for Mwambirwa forest are the ones which help analysis, although there are places on Choke area where adults can be seen regularly, indeed probably all the year round. The regular sighting of these feeding on *Stochytapheta* (and on *Citrus* higher up), is beautiful indeed. And the territorial features of some males could be observed; although I noted that the place was not in a westward facing position as previously reported by ICBP—rather, it was at the south end of a north/south ridge, only partly protected by trees.

Life History

This has been worked out, both from larval specimens and eggs found in the wild, and from the eggs laid when a captured adult was sleeved. It seems that there are four patterns of larval colouration, but I have been unable to see how this fits into 5 instars. Probably instars 2 and 3 are identical. The eggs took about a week to hatch, at an average temperature of 24.8°C and had been yellowish/green in colour, about 0.9–1.0 mm in diameter. The young larvae are between 3.5 and 5 mm in size, and different from *nireus*. *Nireus* caterpillars, freshly hatched, are brownish all over, but with bands of alternate orange or brown across the body, which are

apparent either through a hand lens, or as the larvae grow. The banding is in the body colour, whereas the hairs are all dark brown. *Desmondia* caterpillars are very dark brown—but with a white (slightly bluish) patch at the head and tail ends. The two species cannot be confused. Moreover, the *desmondia* caterpillars, at this stage and unlike *nireus*, prefer to be under the leaf, rather than on the upper side. It is not until sometime during the second instar that *desmondia* moves to the upper leaf surface—so the lower surface of leaves should always be searched, for larvae as much as for eggs. The second 'stage' still has the light segments at head and tail, but like *nireus*, now has some orangish colour on some of the middle segments. The third 'stage' has a much more ashy and dull green colour, unlike the leaf-green colour of *nireus*. The final 'stage' is uniform greenish all over—whereas *nireus* has a lighter shade of green between the 'V' pattern in the middle of the body segments. The *desmondia* final stage, also often has a very marked blue colour to the intersegmental membranes and, even in earlier stages, small paired appendages at head and tail end tend to be slightly bluish—rather than the whitish/yellowish version in *nireus*. And so to the pupa, which would be difficult to distinguish from the green form of *nireus*. I never found any brown pupae. The whole process as far as pupation, took from 38–48 days, depending on temperature and feeding conditions; and from 18–25 days for the pupal stage (not much different from *nireus*). In both species, the males are easily distinguished by the whitish line on the underside of the hind-wing and by a generally darker background colour. On the upper surface, the *desmondia* are best distinguished in that the blue stripe on the front wing is not only wider (especially in the males) but is also narrower towards the front, whereas in *nireus* the blue stripe has parallel sides. There is some variation in the width of blue in both species although the average *desmondia* width is typically twice as wide as *nireus*. You are more likely to be confused by the females in this regard than the males.

Seasonal Variations

The maximum rate of discovery was in June—a time when the presence of *nireus* is starting to decline with the colder weather. However, the sample sizes were very small, the June maximum for *desmondia* resulting from the discovery of three eggs—although in more than one area. After that, there was a decline in *desmondia* numbers—but not as steeply as for *nireus*. Only in November and December were no eggs found. None of the larvae showed any tendency to hibernate as *nireus* does. The result is that, although *desmondia* is affected by the weather, it is more of an 'all year-round' butterfly than *nireus*; and this is born out by observations of the adults. With this in mind, it is not surprising that there are even times when *desmondia* is more numerous (in the right sort of forest area) than *nireus*—as well as the reverse. I never had any that were parasitised by the wasps that affected *nireus* caterpillars, but my sample sizes were small.

Different preferences for laying eggs

It had been an early observation that the *desmondia* larvae discovered were always in shady areas of *Toddalia*. They were never discovered along paths which were effectively in the open, whereas *nireus* were commoner in open places. This may explain why *desmondia* is dependant on there being 'forest' nearby for it to breed successfully.

And do they lay eggs on other plants too? In the only experiment I did, three newly hatched larvae each were put on leaves of *Citrus*, *Clausena* and *Teclea*—as well as *Toddalia*. Possibly, there was a little growth on one specimen on *Clausena*, but even that one, as well as all the others, were dead within 6 days, if not earlier. In the same time, the 5 larvae on *Toddalia* had more than doubled their size. One example is insufficient proof—although an earlier larva, just hatched, was lost through its 'walking off' *Clausena*—which *nireus* would not have done. It has been reported that there are populations thriving on *Citrus* in the Mbololo area (Wild-Life Clubs—Mike Clifton). Obviously this is possible and to be welcomed; but at present, I would guess from the above that the majority of *desmondia* are still breeding on *Toddalia*. No other host plant is common enough in Taita, to support the existing numbers of *desmondia*. The Taita Hills survey (Nairobi Museum) had found that *Toddalia* is common or occasional in many forests—especially at the edges; whereas *Vespris* was only on Ngangao (and Sagalla), and *Teclea* mostly at Ngangao (although there was some *T. nobilis* at Mbololo). So, although van Someren (date) reports '*P. taita*' on *Teclea* and *Vespris*, I wonder whether these are the main food plants—at least today.

Future

Its future is probably safe! In places, *Toddalia* is abundant, and being tough, it grows again quickly whenever cut back. The fact that the host plant is growing under exotic trees, as opposed to natural forest, is no deterrent to *P. desmondia*; indeed, it may have even expanded its numbers in that cutting down older forests has actually increased the amounts of *Toddalia*! Not only is it present in places like Mbololo and Mwambirwa and Ngangao, but we have seen it at Choke—a relatively small piece of forest. The earlier report by ICBP, had guessed that there could be scattered small populations of *desmondia* and that guess seems correct. I have also seen an individual male at Shigharo, and another at Wesu; and that points probably to other centres—*Toddalia* being present in both of those places. It is pretty safe as a species for some time; indeed, it could be common and secure enough to become a test case for butterfly farming. It could give a chance to make some income from the males, and to help keep the stocks of wild females higher too. Of course more research is needed—for example, as to the optimum conditions for getting this delicate and more shade-loving species to lay eggs. But it is a colourful species worth conserving; and in so doing, the local people could be helped to

take a fresh interest and pride in their local insects and forests.

Rev. Tim Oakley, The Rectory, Beafrod, Winkleigh, Devon EX19 8NN, England.

EARTHWATCH

THE BLACK LEMUR FOREST PROJECT

'In the end, we conserve only what we love. We love only what we understand. We understand only what we are taught.' Babr Dioum Dioum, Senegalese Poet

The Black Lemur Forest Project gave me a wonderful opportunity to learn and take part in a conservation project of another country. I, like most naturalists visiting Madagascar, was amazed at its diversity and endemism. With a land area of only 2% it has more orchids and baobabs than all of mainland Africa. 80% of its plant species and 32 of its primate species (among which is the Black Lemur) occur only in Madagascar.

The project:

The Black Lemur Forest Project consists of four main parts:

- 1) Identification and study of Lemur groups.
- 2) Community relations and development.
- 3) Training of Malagasy students.
- 4) School education outreach.

Our Earthwatch expedition team was able to participate in the first two parts. The first part was identification and study of Lemurs, which involved watching and describing individual Lemurs and the behaviour of groups in primary and secondary forest and in situations where they rely on tourists to feed them. The second part of the expedition involved interaction with local villagers and tourists. In the long term, from data collected by Earthwatch groups, we should be better able to understand how well and for how long Lemurs can survive in the different situations.

The team.

The size of our Earthwatch team was good in that we all felt that our involvement and contribution was necessary and important. The team consisted of six Africans. Four were Kenyans; one who works for a non-governmental organisation (Friends of Conservation), and two others who work for the Kenya Wildlife Service, which is the government organisation entrusted with the protection and conservation of wildlife in Kenya. Also working with parks in their countries were two others from Rwanda and Zaïre. The other two members of the team were a Malagasy student from Antananarivo and a British student who had worked with Jersey Zoo, in the south of England.

It was a very exciting and special group as we all came from conservation backgrounds and quite predictably we talked conservation long into the night. Even with a language barrier I managed to find out what the other African countries were doing, especially with regard to the protection of elephants and lowland and mountain gorillas.

In an unexpected way we were able to contribute as a group towards conservation in that part of Madagascar. Our Principal Investigator has been requested to write a management plan for Lokobe Reserve which ANGAP hopes to open to tourism. She felt our visit was very fortunate as our talks helped her clarify some of her ideas, made her change her thought about some things and gave her new ideas.

The study sites:

- a. Lokobe Reserve, which consists of 740 hectares of primary forest. Opened only to researchers, we were unfortunately not able to study Lemurs here as the team had not been given clearance.
- b. Ampasipoye village, which is situated along the edge of the reserve and consists of secondary forest interspersed with crop farming.
- c. Marodoka, which is also a small village. Here we were able to carry out Lemur surveys and talk to local people.
- d. Nosy Komba, which is an island of secondary forest with a tourism 'park' (really a very small enclosure) established by the community. This was our main study site.
- e. Ampasidava, which is a small section of inhabited beach front land which borders the Lokobe Reserve. From here a night survey was carried out.

Identification and study of Lemur groups

The studies entailed a number of morning and afternoon sessions of Lemur watching with a partner. Our first task was to find our own group of Lemurs which at Nosy Komba took about five to twenty five minutes.

To watch Lemurs at Marodoka we walked (about 35 minutes) from Ampasidava where we spent a few days. When we found a group we took down the following details:

Date	
General Location	
Specific Location	
Weather	
Group Composition : Number of adult males	
	adult females
	subadult males
	subadult females
	infant males
	infant females
	Total

The next task was to find one Lemur in the group with distinguishing features. My focal animals included one female with no left ear and another female with a

stripe across the head and extraordinary red ear tufts. We would then watch and follow this focal animal for as long as possible noting down on a data sheet every five minutes the following details:

Time; location; behaviour; what tree is occupied (it was not possible for the team to learn the different plant species); where the lemur is situated: either in the canopy or under the canopy; what the lemur is doing; resting, grooming, feeding or travelling, and a final column for comments.

In the evenings we would compare our different lemur groups and discuss interesting observations. I noticed, for example, from my first group that one female seemed dominant and her movements from tree to tree were followed by the rest of the group. Although it is not confirmed, females do seem to dominate groups. It also seemed that the rearing of infants was a communal responsibility as the young lemurs would at times move to other females than the mother for short periods.

Something else of interest was the fighting that sometimes erupted. We learnt that small territorial skirmishes are common in wild groups but that very fierce fighting was confined to the lemurs at Nosy Komba where they rely on being feed by tourists.

I also found that Lemurs do not stay in the top canopy during the day, probably to avoid predators.

Community relations and development

At Nosy Komba (with the help of a translator) and at Marodoka (where, to our surprise, older people still remember Swahili) we were able to find out more on local perceptions towards tourism development in their area and preservation of the environment. Most interesting were our visits to Marodoka. Here the Black Lemur Forest Project has helped to put up a small community centre where at present the women are learning pattern making for souvenirs. This village was the first in Madagascar, settled by people originally from Tanzania who were trying to avoid the Arab slave traders. They built the first Malagasy mosque. The reception we received was very warm, the villagers being very excited to meet our team of all Africans with whom they could communicate. The President of the village invited us for a formal welcome where we were greeted with Franjapani necklaces and treated to local delicacies before settling down on floor mats to talk about their hopes and aspirations for development and their project. The people of Marodoka are very proud of Lokobe Reserve and because they have the forest with its flora and fauna and the village history they feel they have something to offer tourism. They would like to teach tourists about themselves and gain benefits from it so they will be better able to preserve their natural areas and keep the village from dying, because at present all the young people move away. They were very keen to hear what we had to offer by way of advice and experience.

We also met with other key players of conservation, development and tourism in this area. One of whom was the chief of the Lokobe reserve. The reserve is now

under the management of the National Association for the Management of Protected Areas (ANGAP). Another was the Swiss Foundation who have built a ecotourism hotel, the revenues from which will go to community projects.

We interviewed tourists to find out their job background, how they travelled—via an agent or as independent travellers—what souvenirs they bought and if they were aware of what souvenirs they should not buy, and their reasons for coming to Madagascar. I was able to carry out a hotel survey at Ampasipoye to find out the hotelier's feelings towards development and the environment. I found out details of number of rooms, type of facilities, cost of accommodation, building materials (local or imported), number of employees and if they were from the area, and what the hotel did for the community.

How did the experience benefit me?

Until now, my experience in biological monitoring has been confined to waterfowl counts on Rift Valley lakes and game counts in the Nairobi National Park. I have never before done a study on a single species working at identifying individuals and monitoring individual and social behaviour. I found it a stimulating experience which I value as having given me an invaluable insight into the logistics, the methodology, and the human endeavour that goes into this sort of research.

I work as the Office Manager of the East Africa Natural History Society, a scientific and environmental organisation established in 1909. The Society provides its members with a program of films, birdwalks, outings as well as free entry to the Museums of Kenya, and a library service. It publishes a scientific *Journal* and a *Bulletin* for general member reading. My Earthwatch experience has broadened my understanding and therefore my appreciation for scientific research.

Within the same organisation I have started a Special Project known as Friends of City Park. City Park consists of gardens and natural forest and is visited by hundreds of Nairobi residents each week. We hope to carry out environmental education programs from this site as well as improve on its facilities. From my visit to Madagascar I gained invaluable ideas which I can apply to the project:

1. An "adopt a tree" campaign. This will help us raise awareness and funds for the maintenance of the forest area of the park.
2. Our school outreach program can foster links between the schools in Nairobi and those in the Nosy Be area by way of the Black Lemur Forest Project's own school program.
3. The surveys that I carried out of tourists, hoteliers and local villagers are very useful in giving me experience and knowledge which I will rely on when carrying out similar surveys at City Park.
4. The Principal Investigator encouraged me to think of creating an Earthwatch program for the Park, in which volunteers like myself can take

part in a worthwhile park program while raising funds for that particular work. I look forward to sending enquiries to Earthwatch on this possibility.

Thoughts on the fellowship program.

'The first day or so we all pointed to our countries. The third or fourth day we were pointing to our continents. By the fifth day we were aware of only one earth.' Sultan Bin Salman al-Saud, Astronaut

The fellowship program is a great idea for people like myself who would not have the financial ability to make such a trip to expand on their horizons and gain strength in learning, experience and sharing.

Although two weeks is a substantial amount of time to visit a project, before any work can begin there is a lot of orientation. It would have been very nice to have more time to assimilate all the aspects of the work involved and to adjust to new conditions. The Principal Investigator was very approachable and the pace at which she took us through all the work necessary was very good. Although we did not follow the day to day program set out in the briefing she felt we had done sufficient work and covered areas not previously done by the other Earthwatch teams.

As a new country I found Madagascar to be really exciting. It was great fun learning and using some Malagasy. The people were so hospitable and the food was very good. It was also an education. I appreciated learning about new cultures and different perceptions.

The overall experience was excellent and I am grateful to Earthwatch Europe, the European Union and the East Africa Natural History Society for the opportunity. I gained in travelling to another beautiful country, making new friends and achieved a wealth of new experiences

Catherine Ngarachu, Box 44486, Nairobi, Kenya

NOTES

GULL-BILLED TERNS FEEDING ON DUNG BEETLES (FAMILY SCARABAEIDAE)

The food of the Gull-billed Tern is usually insects, taken from the air or near the surface of water, and occasionally fish.

Every year from late January until March the southern short grass plains of the Serengeti National Park, Tanzania, are home to over a million wildebeest plus tens of thousands of other large mammals. At this time of the year there are frequent but scattered rain showers which encourage the growth of grass in the mineral-rich earth. It is here the wildebeest give birth to their young. During this period flocks consisting of several thousand Gull-billed Terns can be seen flying over the herds, while at other times the only Gull-billed Terns

that are seen are odd birds, usually along the shores of Lakes Masek and Ndotu or by pools in the Hidden Valley.

In February 1986, while driving to Lake Manyara National Park along the Makuyuni to Mto wa Mbu road, I saw a very large flock (estimated to be in the tens of thousands) of Gull-billed Terns flying low over the ground in the area east of Lake Manyara, apparently feeding on insects either just above ground level or on the ground. Unfortunately, I did not have time to leave the road to get a closer look at them. A few days later while driving in the Serengeti National Park, which was still very dry at that time, there were very few Gull-billed Terns to be seen. Small groups, all numbering less than twenty, were present at Lake Ndotu and in the Hidden Valley. On the afternoon of 20 February a huge storm hit the Lake Ndotu area, with strong winds followed by very heavy rain. The next morning was fine and it was very noticeable that there were Gull-billed Terns almost everywhere. The terns were spread over a very large area and again probably numbered in their tens of thousands. They appeared to be feeding on insects just above ground level.

Almost every year I visit this area with safari clients to experience the annual wildebeest migration and every year Gull-billed Terns are present but not necessarily in such large numbers. There appears to be a definite relationship between rainfall and the number of terns.

In February 1996 I was fortunate to have clients with me who were interested in birds, so I took the opportunity of making an effort to see just what the terns were feeding on. One morning, after heavy rain during the previous afternoon and evening, we were parked among a large herd of Wildebeest with large numbers of terns flying above and around them. It soon became clear that the Terns were feeding on dung beetles (Family Scarabaeidae). They caught the beetles by swooping down on them and then ate them while still in flight. The wet ground and the presence of thousands of Wildebeest created ideal conditions for dung beetles. As we watched many freshly hatched beetles were emerging from the ground, while others were busy rolling balls of dung. This was the perfect opportunity for the Gull-billed Terns to feed on them. Some terns appeared to fly close to the Wildebeest but I was never able to see if they were catching insects disturbed by the animals.

What is still a mystery is where are the terns before the rain storms? It would appear from my observations that the terns only arrive at an area after heavy rain. Before that very few are seen but the influx immediately after rain is very rapid.

Dave Richards, P. O. Box 24545, Nairobi.

LIFE IN AND AROUND THE HOT SPRINGS AT LITTLE MAGADI

I first visited Little Magadi on 29 September 1984 on an EANHS field trip. I went again on 26 October 1997 with

a small party in two 4WD vehicles. The track to the lake is faint, and very rocky. The campsite is flat, with fine views, but there is no shade and no water.

Little Magadi, also known as Lake Nasikie Engida ($1^{\circ}43' S$; $36^{\circ}17' E$ altitude 627 m), is a small lake on the

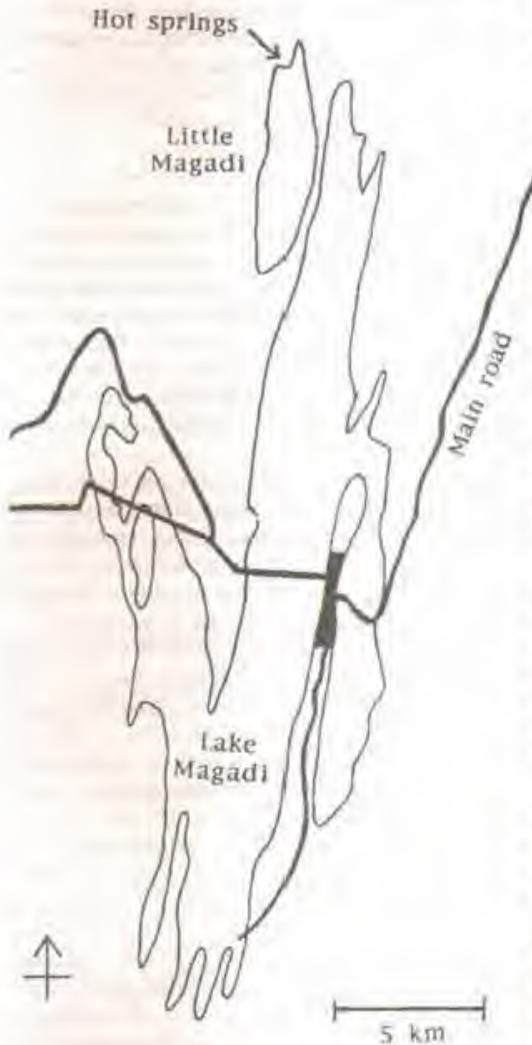


Figure 1. Map of Lake Magadi and Little Magadi or Lake Nasikie Engida

NW side of Lake Magadi (figure 1). The water level is 19 m higher than the main lake (Baker, 1958). Water enters the lake at its NW corner from hot springs that rise at the foot of East-facing cliffs. The springs rise at many different points and discharge into shallow streams flowing over a braided bed of sand and gravel down into the lake.

Temperatures measured directly in the spring outflows were between 70° and $82^{\circ} C$. In the streams the water temperature varied over short distances depending mainly on the flow

At temperatures up to 50 – $55^{\circ} C$ the filamentous blue-green "alga" *Arthrospira platensis* (Cyanophyta) grew

luxuriantly. In flowing water it was attached to the bottom and floated downstream. In pools it formed dense mats producing copious gas bubbles in sunlight. Where it was killed by excess heat it became bleached white. At $44^{\circ} C$ and below it was gradually replaced by a yellowish-green encrusting alga *Chloroflexus* sp., which became dominant at about $38^{\circ} C$. When damaged or dead it became orange or bright red, or sometimes black and smelly.

In still water at temperatures between 37° and $59^{\circ} C$ a small brine fly (family Ephydriidae) swarmed on the surface, and its larvae and pupae lived in the filamentous mat. Between 44° and $50^{\circ} C$ this was the only animal found, but at lower temperatures it overlapped with a large black brine fly *Ephydra magadensis*. Vast numbers of adults of the latter swarmed on the surface of water at temperatures between 35° and $38^{\circ} C$. The flies lay salmon-pink eggs that hatch into silvery-grey larvae. The pupae are blackish with thick, leathery skin, and have two curved processes on the back by which they anchor themselves. The young stages are in constant danger of straying, or being carried by the flow, into water that is too hot, which results in deposits of dead larvae and pupae stranded on sand banks. Probably the juveniles are also eaten by the many wading birds attracted to the streams.

In samples from temperatures up to $38^{\circ} C$ I found larvae and pupae of a fly of the family Ceratopogonidae. Up to $34^{\circ} C$ there were also red larvae of a fly *Chironomus* sp. (family Chironomidae) living in slime tubes. In pools at about $32^{\circ} C$ I found water beetles of the family Hydrophilidae, and many small copepods *Cletocamptus confluentis* (Schmeil) of the family Cletodidae (Crustacea).

Long-legged spiders with bodies about half a centimetre long ran very fast over exposed sand and gravel, and also seize larvae and pupae at the water surface. A smaller, reddish spider hunted in similar fashion but remained on dry land.

In 1984 many dead insects were seen in the springs, including grasshoppers, a dragonfly, a bug *Lethoceros nilotteus* (family Belostomatidae), water beetles *Cybister* sp. (family Dytiscidae) and many large caterpillars of moths (family Sphingidae). Large numbers of small fish *Tilapia grahami* were seen in cooler water. None of these were seen on the second visit in 1997.

Ephydra magadensis was described (Wirth, 1975) from samples collected at Lake Magadi, and it is not known to occur at any other site. The flies swarm on mud in lagoons around the (dry) main lake. The small ephydrid fly is a new species, and is about to be described. The ceratopogonid fly, the chironomid fly, the hydrophilid beetle and the copepod have not yet been identified.

Acknowledgements

The cyanophytes, algae and bacteria collected from the springs were kindly identified by Dr Mwatha of the Botany Department, Kenyatta University. Professor J. Green identified the copepods.

References

- Baker, B. H. (1958). Geology of the Magadi Area. Geological Survey of Kenya Report no. 42. 81 pp.
- Wirth, W.W. (1975). A revision of the brine flies of the genus *Ephydra* of the Old World (Diptera: Ephydriidae). *Entomologica Scand.* 6, 11–44.

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LETTERS TO THE EDITOR

WERE THE MOUSEBIRDS MATING?

How and where do speckled mousebirds *Colius striatus* breed and nest? A while ago on two consecutive days I observed a flock of about 20 birds suspended on the telephone wire with a lot of twittering and general excitement. After a while the scenario seemed to get more excited and many of the birds were hanging opposite each other belly to belly. Sometimes a third bird would muscle in and push another away from his opposite number. If there was mating, it was too quick to observe but the procedure certainly looked very "sexy".

Of course, how would a male mount a female if she hangs more or less upside down on the wire? It seemed a logical solution. Every now and again some of the birds flew across to the nearby pawpaw tree *Carica papaya* and pecked on the pawpaw leaves which now resemble a fishing net as only the ribs were left. It appears as though the pawpaw leaves gave them strength to continue with their occupation. After about two hours they all flew away. Apart from those two days I have not observed this again and the remaining pawpaw leaves are intact.

Can the experts confirm my suspicion that it was a mating orgy?

Christa v. Kalckstein
P.O. box 45161, Nairobi

MOUSEBIRD CLUSTERING BEHAVIOUR

As appealing as it would be to think the above described mousebird behaviour was an orgy, I fear it isn't. Mousebirds are extremely gregarious and live in flocks of up to 30 birds (averaging around 8–10) and clustering seems to serve an important social function for them. When the weather is wet or cold (and at night), the whole flock may cluster very tightly together. Pat Frere (pers. comm.) could get these birds to form extremely large clusters by showering them with the hosepipe. While the purpose of this behaviour often is simply to warm each other, even when it isn't raining or cold mousebirds will form small clusters which is what was seen by Ms v. Kalckstein. The excitement may have

been due to the finding of a new food source, *i.e.* the young pawpaw leaves. Premating behaviour is very obvious and includes mutual feeding and preening, followed by an amusing display by the male and even, at times, by the female, and ending in copulation. It cannot be confused for anything else. The nests are usually built in bush about 1½ to 3 m off the ground. For a more detailed and extremely interesting description of mousebird behaviour, read the section in *Birds of Africa, Vol. III*, by C.H. Fry, *et al.*, pp. 251–253 available in the EANHS Library. (The Editor)

ELEPHANTS IN LIMURU—AGAIN!

In September 1989, I sent a report to you about 2 elephants (mother and half-grown son) who visited the tea estates in Limuru and spent some time on the late Tiny Kingsford's estate there. I mentioned at the time that, although I have lived in Limuru since 1925, I had never seen, or heard of, elephants visiting the settled areas here.

The press reported a second visitation of elephants in September 1997—this time it was a larger herd of 16, which had evidently come in from the Uplands or Aberdare Forests. I was unfortunately absent at the time, but returned a day or two later, to see their footmarks in the cultivated tea and tracks near our house.

The herd appeared on Kiawaroga tea estates and this time they were seen by a number of workers and their children. Once again the elephants did little, if any, damage, to crops, and allowed themselves to be escorted away peacefully by rangers from Kenya Wildlife Service.

Unfortunately, however, there was a report later in the local press that a child had been killed by a lone elephant in the Limuru area, who may, or may not, have been part of the same herd on its way back to the forest. The elephant was shot by the KWS—a sad ending to what had been at first another friendly visit.

H.S. Morton, Mabrouke Estate, Box 1, Limuru, Kenya

REQUEST FROM THE EDITOR

URBAN WILDLIFE

Over the years, we have had a number of articles about urban wildlife. These have been extremely popular. For instance, the article on jumping spiders had a very positive response from readers.

In the future, I would like to start a section in the *Bulletin* which features writers observations in their "own backyards". These observations can be on anything that strikes your interest, from things like the jumping spider which the author observed while working on his computer to road kills such as those reported some years ago by Adrian Lewis. And please don't think you have to concentrate only on birds and

mammals. Other vertebrates, arthropods, the life found in ponds or streams in the city, or interesting plants or fungi, or whatever strikes your fancy will be welcome.

SOCIETY NEWS

EANHS MEMBERSHIP QUESTIONNAIRE— RESULTS FROM 96 QUESTIONNAIRES RETURNED AS OF 15 NOVEMBER, 1997

In August of 1997, with assistance of the Royal Society for the Protection of Birds (RSPB), the Executive Committee members, representatives from the sub-committees and several observers from the Society's Uganda Branch, BirdLife International secretariat and the RSPB, attended a workshop in Naivasha to plan for the future of the EANHS.

In order to have some idea about how the members of the Society feel about the present state of the Society, and what suggestions they have for improving it, a questionnaire was sent out earlier in the year. We received 96 questionnaires back altogether, which was an excellent response, and we would like to thank everyone who took the time to put down their thoughts. The responses clearly show the real interest and concern that members have for their Society and were very useful in guiding our discussions.

Below is a condensed analysis of the results. There were many detailed and specific responses which could not be categorised and are too numerous to be listed here. Rest assured that these were not ignored by the Executive during the planning workshop. The report below is as detailed a summary as could be reasonably fitted into the Bulletin. For anyone who wants to see the full set of responses, the collated information is in the EANHS office.

Results from 96 questionnaires returned as of 15 November 1997:

1. Approximately how long have you been a member of the society?

	No.	%
<1 yr	12	12.6
1-5 yr	33	34.7
6-10 yr	9	9.5
>10 yr	37	38.9
No. ans.	4	4.3
Total	95	100

2. What is your present membership category?

	No.	%
Life	19	20.7
Sponsor	6	6.5
Full	42	45.7
Family	13	14.1

Student	9	9.8
Other	3	3.2
Total	92	100

3. Which age bracket do you fall into?

	No.	%
under 25	10	11.8
25-55	41	48.2
over 55	34	40
Total	85	100

4. Do you work professionally in the field of biodiversity?

	No.	%
Yes	30	35.3
No	55	64.7
Total	85	100

5. Why did you join the society?

	No.
Interest in nature and conservation	74
Acquiring information (including publications)	42
Social activities (meetings, field trips, etc.)	26
Library	12
Birds (all related activities)	5
Recruited	4
Access to museums and collections	2
Total	165

6. What do you think are the Society's most important activities?

	No.
Social activities (meetings, trips, etc.)	35
Conservation action and advocacy	27
Education/training	23
Awareness raising	18
Birds (all related activities)	16
Publications	16
Creating forums/networks	5
Library	3
Total	143

7. What else should we be doing?

	No.
More education	17
More and better public relations and fund-raising	8
More conservation advocacy	8
More activities	6
More activities to attract and interest young members	6

More bird related activities	6
Other (some of these were specific detailed suggestions)	6
Creating branches outside Nairobi	5
Create links with other like-minded organisations	4
Satisfied with what you are doing	4
Broaden target community	3
Create a wider range of sub-committees with specific interests	3
Promote conservation ethic in local communities	3
Support and participate in research	2
Total	81

8. What, if anything, should we stop doing?

	No.
Nothing	20
Competing with other NGOs	4
Other	18
Total	42

The many and varied responses to this question defied simple categorisation. We particularly appreciated one member's comment: "Stop asking silly questions! You're doing a very good job all around."

9. How much do you participate in Society activities?

	No.	%
A lot	7	7.9
Some	22	24.7
Very little	37	41.6
Not at all	23	25.8
Total	89	100

10. If you participate very little or not at all, is this because

	No.	%
you are content to support the EANHS and its work, and receive Society publications?	22	28.2
you do not have the time?	26	33.4
you live outside Nairobi?	22	28.2
you have transportation problems?	4	5.1
of another reason?	4	5.1
Total	78	100

11. What three words best describe how the Society appears to you.

	No.
educational	54
energetic	21

vibrant/dynamic	17
old-fashioned/rustic	16
dusty	13
boring/stuffy	10
"invisible"	5
conscientious/efficient/hardworking	5
enthusiastic/motivated	4
informative	4
productive/useful	4
entertaining	3
intelligent/intellectual/scientific	3
professional	3
badly organised/unfocused	2
charming	2
concerned	2
conservative	2
diversified	2
interesting	2
knowledgeable	2
empowering (for birdwatchers)	1
few active members	1
good value for money	1
increases awareness	1
local	1
Total	181

The questionnaire authors slipped up a little here! They gave examples of possible answers ('vibrant, energetic, educational' and 'dusty, old-fashioned, boring'), which many respondents interpreted as alternatives. Despite this, a trend still shows itself. The Society is seen strongly to have an educational, information giving role.

12. Do you think this image needs to be changed or improved?

	No.
Yes	47
No	25
No response	2
Total	74

If yes in what ways?

	No.
More PR	11
Modernise/restructure	7
More information/educational activities	7
More and varied activities	6
More youth orientation	4
Detach from/clarify relationship with Museum	3
Try to reach local/rural community	3
Improve transport for members	2
Less birds	2
Make links with other organisations (schools, NGOs, etc.)	2
More scientific content	2
Lessen cost to members	1
Total	50

13. How would you feel if the Society decided to change its name?

	No	%
Support in principle	18	21.7
Object	23	27.7
No strong feelings	39	47.0
Depending on name	3	3.6
Total	83	100

14. Are there any other points you would like to make?

	No
More indigenous involvement	6
You're doing a good job	5
Activities on weekends	2
Get publications out on time	2
Solve transport problem	2
Better PR	1
Total	18

The responses to this last question and question 12 were similar. There was a lot of emphasis on better PR—we are working hard on this. Another concern was the perennial problem of transport, especially for younger members. References to it came up throughout the questionnaire. There are solutions being looked for for this perennial problem. This isn't an easy one, but we must try to solve it if we are to involve more young people, and the need to involve and encourage young naturalists/conservationists is very clear.

Several members emphasised that we should not lose the Regional outlook of the Society. This was an important concern of those attending the workshop as well, and is being kept firmly in mind.

Several members expressed concern about the Society getting involved in the 'political quagmire' of active advocacy. On the other hand, many members expressed the wish to see the Society more involved in this. In recent years we have moved in the direction of advocacy, because our mandate of promoting conservation makes this unavoidable. Caring about the environment implies action as well as words.

A subject that has come up many times in the Executive Committee meetings appeared in the questionnaire also: the timing of talks and trips. There were several suggestions that the talks be moved to the weekend which has, in fact, already been considered. There was also one suggestion that trips be sometimes held on Saturdays for those who worship on Sundays.

Several members expressed (mild) frustration that activities were too much centred on Nairobi. Evidently there is plenty of scope for regional members' groups. As there are lots of active and interested members outside Nairobi, we hope that a number of these groups will take off soon. The Executive Committee is looking into the best ways of encouraging and supporting a process of regionalisation.

In response to the last question, one member asked

"Why the questionnaire—is there a crisis?" No, there is no crisis. With assistance from the RSPB, we have an opportunity to modernise and invigorate the Society, but we want to be sure that we act as true representatives of the members. In order to do so, we needed some feedback from you—hence, the questionnaire.

L.A. Depew, Editor, Box 57, Kilifi, Kenya

87TH ANNUAL GENERAL MEETING

The 87th annual general meeting of the Society took place on Monday, 9 June, 1997, in the Louis Leakey Memorial Auditorium of the National Museums of Kenya. The agenda items were: approval of the minutes of the 86th AGM, matters arising from these minutes, Chairman's report, Honorary Treasurer's report for 1996 and election of the executive committee and several sub-committees.

Below are the chairman and treasurer's reports. It was encouraging to hear the optimism expressed in both reports. The elected officers and members of the Executive Committee and sub-committees are listed on the back cover.

The meeting was followed by an extremely interesting and at times amusing video entitled *Flying for Gold*, about the flying feats of birds.

EANHS Chairman's Report 1996/7

Ladies and gentlemen

I am delighted to welcome you all to the Society's 87th Annual General Meeting.

You may have noticed that the Chairman is limping and the Honorary Secretary is on crutches! Rest assured that there is no symbolic significance attached to this.

The Chairman's speech on these occasions serves as a record of our activities, our successes and our failures as a Society over the past year. This time, though, I am going to treat the events of the year rather briefly, for the good reasons that I want to talk to you also about the future, and that I would otherwise end up speaking for half the night.

It has once again been a busy year, especially for our proliferating sub-committees and projects. A few examples: the Kenya Wetlands Working Group successfully brought to a close important bibliographic and inventory projects, as well as hosting an almost confusing profusion of seminars and workshops. Among other activities, BirdLife Kenya held a productive meeting on 'Birds and People', and continued to work with the Museum to produce 'Kenya Birds'. Our newest sub-committee, which deals with mammals, has made an active and enthusiastic start, and is currently compiling information on who is doing what mammal research in the region. Succulenta EA kept up a lively programme of events and outings, and

the journal of xerophytic plants, *Ballya*, appeared promptly and contained much interesting material.

Unfortunately, prompt publication was not a characteristic of some of our other publications — the *Journal of East African Natural History*, the *Bulletin and Scopus*. This reflects the increasing difficulties of producing such periodicals on a shoestring, rather than any lack of effort by the Editors. All those who are involved continue to work extremely hard for the Society, and on a voluntary basis. There are encouraging signs that we may catch up with our publication schedules over the next year. I hope this may happen, and I do urge all EANHS members to continue their support, by subscribing and contributing material. These publications fill important niches in the region, and we must strive to keep them going through this difficult patch.

The Friends of Nairobi Arboretum, a special project of the Society, had a mixed year. Its activities in the Arboretum came to a halt for around seven months because of a procedural hitch involving the Forestry Department. Fortunately this has now been resolved with the signing of a formal Memorandum of Agreement, and FONA can continue with their excellent work on the ground.

The Friends of City Park, formed to help restore the Park to its previous glory, at once found that they were in danger of losing the entire site to dubious land allocations. The Friends have had great success in putting this issue on the political agenda, and the prospects for saving the Park look much brighter than they did a year ago (though we are not out of the woods yet). All the residents of Nairobi (at least, all those who are not land-grabbers) must owe this energetic and determined group a debt of gratitude.

The Society has continued to co-ordinate the Important Bird Areas Programme in Kenya, and there have been several useful meetings of its Advisory Council. Most of the technical work on the IBAs has been done by the National Museums of Kenya, a good example of productive NGO-Government collaboration. We have spoken out strongly again on the issue of degazettement in Arabuko-Sokoke, and remain active participants in the Forests Working Group that is hosted by our colleagues in the East African Wildlife Society. Through BirdLife Kenya, the Society has continued to sponsor vital research work on threatened species, this year including the East Coast Akalat and Sharpe's Longclaw.

The office has generally functioned efficiently this year. I would like to thank Catherine Ngaracha, who took over as our honorary Office Manager at very short notice, and Vincent Owuor, for all their hard work, as well as saying thanks to the volunteers who have put in many hours helping out — in particular Narinder Heyer and Pauline. Appealing for more volunteers is part of the ritual of this report: in order not to disappoint you, let me make this appeal and say how much help a regular commitment to a few hours in the office can be.

I would also like to thank three people who have made immense contributions to the EANHS in various

ways, and who are now stepping down from their posts. Lorna Depew, our Honorary Secretary for no fewer than ten years, has put more time, energy and dedication into the Society than most people can probably imagine. I am delighted that, subject to the approval of this meeting, she will be able to remain involved and to put her biological training to good use in future as our new Honorary Editor. Our retiring Hon. Editor, Dr Edward Vanden Berghe, may have kept a lower profile, but he has put many, many long and largely thankless hours into the production of our *Journal and Bulletin*, as well as involving himself with other Society work. Edward has succeeded in raising the scientific and production standards of our publications to a high level that forms an excellent foundation for the future. We are sorry that he no longer has the time to be involved with this work, but hope he will continue his active interest in the Society's affairs.

Last but not least, I would like to say 'thank you' to our Honorary Librarian, Mary Rigby, who unfortunately is leaving us soon. Mary has brought her professional knowledge, tact and organisational skills to bear not just in the library but many other areas too, and has been an indefatigable source of support for the Society's activities. We shall miss her greatly.

We have had a strong Executive Committee this year, that has with rare exceptions functioned effectively and constructively. I would like personally to thank all its members for their work, not least in sitting through and contributing to some marathon Committee meetings. The Society is in better financial health this year than it has been for some time, and you will hear more about this from our Hon. Treasurer, Andrew Brass — appropriately, since he is the person largely responsible for this happy situation. Indeed, Andrew deserves very special thanks not just for his sound financial planning but for the patience with which he has disentangled and reconstructed our accounts, an exercise which I hope will cease to be necessary in future as we move to more modern systems of financial management. A point that I expect Andrew will make is that our membership subscription receipts still lag well behind the costs of looking after members, and this is something that is of concern for the future.

And with this coming year we are certainly looking to the future. For a number of reasons, 1997, two years short of our 90th birthday, seems an appropriate time to do some serious soul-searching and to map out the Society's future. We have plans to begin this in August with a so-called Strategic Planning Workshop. Let me outline a few of the issues that we will be needing to address, trying to avoid any additional jargon as much as possible:

- The Society is a venerable institution. We have a long and illustrious history of activity in the field of what is now known as 'biodiversity'. Our impetus has always been scientific, and our work voluntary. These are vitally important traditions that must be sustained. Yet equally it is becoming clear that, if we want to be able to study and enjoy nature in another 90 years, we must focus our

efforts increasingly on conservation. It is also evident that our expanding activities, and the near impossibility of sustaining volunteer involvement on the levels of past years, make it essential to professionalise ourselves to some extent. How can we best meet these new challenges while still maintaining our diversity of activities, the involvement of our members in what we do, and our scientific underpinning?

- A frequent regret of mine as Chairman is that I interact with only a small proportion of the membership. Yet I obtain a distinct feeling that many members are confused and dissatisfied. This is showing up on our membership lists: despite the strength and diversity of the Society's activities, our membership is static at best, perhaps declining. Evidently those who you have given the task of running the Society are, in some ways, missing the point. Late Bulletins, cancelled outings, lacklustre functions — all problems we have experienced at times — do not help: this is what the membership perceives, rather than our successes in advocating conservation. We must find out what members want — and ensure that this can be delivered. We must also build up our membership base to the point where membership services become cost-effective — which they are not at the moment.
- The Society's present structure, with a Uganda branch, numerous sub-committees, and a clutch of semi-autonomous projects, is elaborate, at times creates administrative strains, and prevents us establishing a clear and positive image — or 'brand' for those who prefer the marketing term. There is strength in diversity; there is also confusion. How do we make the Society overall stronger, more recognisable and more effective, while allowing Society action groups to flourish? Do we need to consider a change of name as part of updating our image?
- Where and how does the Society fit in to the increasingly complex and fragmented conservation structure in Kenya? What should be our role, and how can we play it most effectively?
- How do we build a secure financial basis for our operations in the future, and ensure that our finances are handled competently and securely?

A group of about 15 persons from the Executive and the sub-committees will be meeting at Elsanjere Field Studies Centre from 22–26 August to discuss these and other issues, and to come up with the outline of a strategic plan for the EANHS. Before then, I would like to hear the views of as many members as possible on the Society: what we do well, what we do badly and what we should be doing at all. Subject to the Executive's approval, I shall be circulating a short questionnaire on these topics with the next newsletter, but I would be very pleased to hear the views of any members, on any subject, at any stage before our August meeting. This will be the first fundamental review of the Society in its long history, and nothing is off-limits for discussion.

That said, my personal expectation is that we shall avoid radical changes in our overall approach and philosophy, which I believe give us a unique and tremendously valuable niche in the region. Should any major decisions be reached, these will be referred back to another General Meeting, perhaps in September or October.

Some members may be horrified at the thought of scarce EANHS funds being spent on what may sound like a junket to Naivasha for the Executive (though I can assure you that such events are in fact very hard work for all involved!). Do not be alarmed. The meeting will be supported entirely by the Royal Society for the Protection of Birds, the BirdLife International Partner in the United Kingdom. This is part of the RSPB's very welcome support for the development of the BirdLife Partnership in East Africa. The EANHS has been the Partner designate in Kenya and Uganda since 1994, and during the year both the Kenya and Uganda committees, after some debate, decided to sign up as full Partners. The Ethiopian Wildlife and Natural History Society and the Wildlife Conservation Society of Tanzania are the other Partner organisations in eastern Africa.

What does being a BirdLife Partner entail? The two most commonly asked questions are, does this mean that we will only be concentrating on birds?, and, does this mean that we will lose our independence? The answer to these questions is no, and no. The aims of the BirdLife Partnership are to conserve all wild bird species and their habitats, and, through this, to protect the world's biological diversity and support sustainable use of resources. The wide-ranging activities of the EANHS, combined with our traditional strong interest in birds, ideally fit these aims. No-one interested in xerophytes, dragonflies, liverworts, fairy shrimp or elephant shrews needs to feel in the least constrained by our joining the Partnership. Neither are we constrained from setting, and working towards, our own national priorities for conservation. At the international level, BirdLife Partners collectively agree on policy, discussed in Africa once a year at a regional Partnership meeting. I attended the first of these, in Accra, Ghana late last year, and was impressed by the real spirit of seriousness and co-operation in setting this agenda among the African Partnership (outside eastern Africa, there are presently Partners in Ghana, Sierra Leone, Egypt, Tunisia and South Africa). The BirdLife secretariat have requested us to host the next African Partnership meeting here in Kenya in November this year.

Support to help us grow into a strong and effective BirdLife Partner will be coming from the RSPB. Over the course of the next several years they will provide finance and (where appropriate) advice to help enhance our administration, our capabilities in fund-raising and project-management, and our services to members. Our conservation activities will also be given a big boost by a grant awarded to the BirdLife Partnership in Africa by the Global Environment Facility (an international fund run by the World Bank, UNDP and UNEP, that provides resources for biodiversity conservation). We can expect a modest level of funding over five years to follow up

the Important Bird Areas work with some innovative conservation action on the ground. Our hope is that this can be a central point around which our other conservation projects can be built.

If we remain determined and clear-headed, we have every prospect of becoming a much more dynamic and effective Society, one that has a real focus on the diversity of life and that makes use of the tremendous skills and energies of its members. I stress that last point, because our membership is an integral part of the Society and its workings, in a way that is highly unusual in other organisations. Your support, and the support of the many potential members who have not yet joined us, will be vital for the Society's success in the exciting years ahead. The challenges are great; the tasks are enormously important. I am certain that the Society can count on you all.

EANHS Treasurer's Report 1996/7

Mr Chairman,

I have pleasure in presenting the Financial Accounts for the year ended 31 December, 1996, particularly as they show a total surplus for the year of Shs 454,479/-, compared with Shs 57,663/- for the previous year, even though declining membership showed lower subscription income of Shs 298,244/-, down from Shs 318,674/- in the previous year. All funds surplus to cash flow needs are held on interest-bearing deposits at the best prevailing rates.

Two significant changes contributed to this most satisfactory result. Firstly, sales of books *etc.* Shs 689,982/- was significantly higher than last year's total of Shs 109,385/- and resulted in a surplus for 1996 of Shs 224,992/-, up from Shs 23,968/- in the previous year. Then contributions to overhead from administration of project funds increased by Shs 517,733/- to Shs 868,014/- for 1996, which more than offset the increased Administration Costs of Shs 211,987/-, the 1996 figure reaching Shs 1,111,916/-.

The Balance Sheet has been re-arranged to show Designated Funds and Donor Funds separately as these are held in custody. The Society negotiates a contribution to overhead for administration of donor funds and agrees with project managers cash flow arrangements to service their budgets. You will note the increase in the Net Assets of the Society to Shs 1,637,399/-, of which Shs 646,444/- is due to various funds, leaving a net increase in the assets of the Society of Shs 460,955/-. I am sure you will agree that the finances of the Society are extremely healthy indeed.

As a matter of interest the total cash flow for the year amounted to Shs 6,231,469/-. Of this amount some Shs 1,453,791/- is attributed to the Society, an increase of Shs 512,100/- over the previous year, all of which reflects the substantial volume of flow through the Society's offices. So, in addition to the plans for restructuring and restaffing outlined by the Chairman, changes in the accounting function include computerising the books of account.

I propose the adoption of the Balance Sheet and Financial Accounts for the year ended 31 December, 1996, as presented, and will attempt to answer any questions members may have.



Papilio desmondi teita

EANHS MEMBERSHIP RATES PER ANNUM

	Local	US\$	UK
Life	10000	200	130
Corporate	5000	200	130
Sponsor	1000	50	35
Institutional*	500	30	20
Full	350	15	10
Family	500	-	-
Pensioner	100	-	-
Student*	100	10	7

*Schools and Libraries.

**Only children under 18 and full time University undergraduates. Graduate students register as full members.

Membership offers you free entry to the National Museums, free lectures, films or slide shows every month in Nairobi; field trips and camps led by experienced naturalists; free use of the joint Society-National Museum Library (postal borrowing is possible) and a copy of the EANHS Bulletin every four months. The Society is the BirdLife Partner for Kenya. It organises the ringing of birds in eastern Africa and welcomes new ringers. It also runs an active Nest Record Scheme.

Subscriptions are due on 1 January. From 1 July you may join for half the yearly subscription and receive publications from that date. Application forms may be obtained from the Hon. Secretary, Box 44486, Nairobi, Kenya.

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The *Bulletin of the EANHS* is a printed magazine issued three times a year, which exists for the rapid publication of short notes, articles, letters, and reviews. Contributions may be in clear handwriting, printed or on disk. Black and white photographs and line drawings are most welcome. Please send to the Editor (EANHS) Box 57, Kilifi, Kenya.

The *Journal of East African Natural History* is published in collaboration with the National Museums of Kenya. It is published two times a year. Contributions, typed in double spacing on one side of the paper, with wide margins, should be sent to the Editor (EANHS), Box 57, Kilifi, Kenya. Authors receive 25 copies of their article free of charge.

Scopus is the publication of the Ornithological Sub-committee of the EANHS. It is published two times per year. All correspondence should be sent to D.A. Turner, Box 48019, Nairobi, Kenya.

Kenya Birds is a publication of BirdLife, Kenya. It is published two times per year and contains popular and informative articles on birds and birding in Kenya. Correspondence should be sent to Dr Leon Bennun, Box 44486, Nairobi, Kenya.

Ballya is published three times a year by Succulenta EA, a division of the EANHS. Members of the EANHS can join Succulenta EA, and receive *Ballya*. Contributions to *Ballya* can be sent to Professor L.E. Newton, Box 38995, Nairobi, Kenya.

