

THE MAMMALS OF THE LOWER SHIRE VALLEY WILDLIFE RESERVES (LENGWE, MAJETE AND MWABVI), MALAWI

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INTRODUCTION

The proximity of the Lower Shire Valley to the Lower Zambezi and the Mozambique coastal plain gives it a unique biogeographical position: a number of plant and animal species, endemic to the south-eastern lowlands of Africa from Natal northwards, reach their northern limits of distribution in the Shire Valley. The Nyala Antelope *Tragelaphus angasii* is one of these, and it was mainly to protect this magnificent animal that the Lengwe thickets were proclaimed a game reserve in 1928; smaller numbers are to be found also in Mwabvi, which received official protection in the same year (as the "Tangadzi Stream Reserve"). These reserves fared variably during the following decades, until Lengwe became a national park (in 1970) and in the late 1960s bore-holes were installed in order to provide permanent water to all wild animals. The lack of permanent water at Lengwe had been a major problem, forcing water-dependent animals to migrate to the Mwanza and Shire rivers in the dry season, thus coming into contact with a barrier of heavy human settlement. The fate of Nyala and some other species improved greatly after the provision of water-holes, while other species decreased or disappeared altogether through a combination of poaching and the park being too small to accommodate wide-ranging species. In Majete Wildlife Reserve (gazetted in 1955) the entire population of Elephants *Loxodonta africana* (some 220 animals) was deliberately exterminated in the years 1986-1992 (Sherry 1995); in Mwabvi, poachers armed with heavy weaponry massacred large numbers of game in 1992, and caused the complete extinction of the Black Rhinoceros *Diceros bicornis*. In the 1990s generally, game populations continued to decrease in Mwabvi and Majete, and locally in Lengwe.

Apart from a study of Black Rhino in Mwabvi (Jachmann 1984) and other species there (Evans 1979), a number of notes concerning game counts and Nyala in particular in Lengwe (e.g. Bell & Dudley 1982), and investigation of the rodents of Lengwe (Happold & Happold 1991), surprisingly, very little serious research had been carried out and published on the mammals of the Lower Shire reserves. Even a popular publication based largely on Lengwe, by someone who knew the area well (Hayes n.d.), is remarkably short on firm detail.

Between November and April 2002 we spent four months in the Wildlife Reserves of the Lower Shire, carrying out biodiversity surveys. A description of the vegetation was published recently (Dowsett-Lemaire 2004). Here we present the results of our investigations on the mammal fauna of the region, including an updated species checklist. Our task was also to advise the Department of National Parks and Wildlife on the ecology and management of the larger mammals, especially within the context of existing plans for restocking the reserves (Anon. 2000a, 2000b, 2001). We have strong reservations about such plans and explain our reasons below.

The limited funds available for our surveys did not allow us to carry out any trapping of small rodents. We did a very small amount of mist-netting around our campsites, during which a few bats were caught. About half of our time altogether was spent in Lengwe (nearly two months), and nearly a month each in Majete and Mwabvi, over a series of short visits. A gazetteer of most localities mentioned here appeared in Dowsett-Lemaire (2004); in addition Madziabango

(Mwabvi) is at 16°37'S, 34°58'E. Nomenclature follows Ansell & Dowsett (1988).

RESULTS

The following are among the more interesting results: the status of the two small galagos in the Lower Shire was not clear (cf. Ansell & Dowsett 1988, 1991), but we heard the Zanzibar Galago *Galagoides zanzibaricus* in thicket in all three areas, from Mwabvi north at least to the Ntundu stream in Majete. Conversely, we heard the Night Ape or Lesser Galago *Galago moholi* only in Lengwe, in woodland west of Makanga and near Main Camp, and for the moment all other claims of this species in the protected areas should be treated as unconfirmed.

In spite of the general lack of larger mammals in Majete, we heard Spotted Hyenas *Crocuta crocuta* at most of our campsites there. Vocalisations and tracks show there to be small numbers present in Lengwe and Mwabvi too.

Tree Hyrax *Dendrohyrax arboreus* was heard in forest and thicket at a few places in Majete, Lengwe and Mwabvi: they are the first definite records from within the Lower Shire reserves.

A count of Hippopotamus *Hippopotamus amphibius* the length of the Shire in Majete (between the rapids above the Mkurumadzi confluence and the Kapichira dam) confirmed that the population is probably in the region of 60 animals (51 were counted, the largest group being of 22). A very recently born youngster was seen in late December.

We were able to confirm the presence of Suni *Neotragus moschatus* as far north as the Ntundu thicket in Majete, and it is present in good numbers in Lengwe and small numbers in Mwabvi. The suggestion that the species may have disappeared from Lengwe (made as a result of its non-appearance during recent Wildlife Society of Malawi water-hole counts) is fortunately premature. There is a recent report from Liwonde National Park (from where previous claims had been rejected).

A few Reedbuck *Redunca arundinum* still exist in southern Lengwe, as in Majete, but the species is now apparently extinct in Mwabvi.

The status of the Red Squirrel *Paraxerus palliatus* in Malawi has been little understood; we found it only in tall forest and thicket, locally in Lengwe and Mwabvi, whereas the Sun Squirrel *Heliosciurus mutabilis* was far more widespread, in woodland too.

The present list deals only with species for which there are firm records (or erroneous ones, in square brackets); anyone wishing to have a list of other species which might conceivably be found in time in the area is referred to the maps in Ansell & Dowsett (1988), and to more recent publications. Records of small mammals collected in Lengwe are mainly from Happold & Happold (1991) and Happold *et al.* (1987), and in Mwabvi from Anon. (1975). Otherwise, all unattributed observations are our own.

ANNUAL POPULATION ESTIMATES

Two kinds of population estimates have been undertaken over many years in Lengwe, namely strip counts by DNPW staff (Table 1) and counts at water-holes by Wildlife Society of Malawi members (Table 2). The strip counts are made along a series of transects; in earlier years they meandered somewhat, but since 1998 they have been straight lines (and the data analysed by the

DISTANCE programme). According to Kamanga (2000) there are now 28 such transects in Lengwe, at 2 km intervals, orientated at 180° in Old Lengwe, 270° in the extension. In 1999 it seems the transects in Old Lengwe were walked three times during the year, those in the extension twice. There are 8 such transects in Old Lengwe, and this is where most animals by far are to be found. We examined 4 of them. The water-hole counts are undertaken annually in October (at the end of the dry season) and consist of whole-day counts at the main water-holes over one or more days. The results are given as the average number of each species counted each day. Results for the past 10 years or so from the two methods are summarised below (from Kamanga 2000 and Bamford 2001 respectively, although note that the DNPW figures for some years do not always accord with those presented by earlier analysts, cf. Chiwona (1992) for 1991 counts).

Although the two census methods have different aims, it is useful to present the results claimed side by side, to see if any trends are evident. The main point that arises is the very great variability from year to year for any species, a variability that far exceeds what could realistically have occurred. For example, the strip counts of DNPW of such a conspicuous animal as the Buffalo varied enormously each year, even in two years in which census techniques were standardised (4144 in 1998, 2485 in 1999). Not only is such a dramatic reduction in Buffalo numbers unbelievable, but our own field observations convince us that there is no way Lengwe can hold 2000 or more, and that the numbers are rather in the low hundreds. These over-estimations result, we believe, from counts being undertaken over several months (e.g. July to October in 1991), on different days (transects 1, 2, 5 and 6 walked one day, transects 3 and 4 the next), and then the pooled results analysed. With such a mobile animal, counting the same group twice, even on the same day, is very likely.

Table 1: DNPW strip count censuses in Lengwe National Park, 1990-1999.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Warthog	927	1003	727	1332	1326				390	901
Nyala	3404	4207	2746	1751	2876				2527	1084
Bushbuck	261									
Kudu	581	331		307	61	139			302	461
Buffalo	1293	1889		1125	1927	2040			4144	2485
Suni	610	1371		3025	2303	1794				
Impala	1194	1113		1699	1043	1972			4520	2823

Table 2: Wildlife Society of Malawi water-hole counts in Lengwe National Park, Malawi (daily average), 1990-2000.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Warthog	233	275	171	67	119	117	121	140	114	29	103
Bushpig	0	8	3	0	6	19	3	0	0	0	5
Nyala	600	889	769	507	649	542	521	491	223	59	396
Bushbuck	98	145	116	53	100	101	68	53	64	5	81
Kudu	27	12	20	37	19	28	14	5	6	1	22
Buffalo	17	0	6	75	22	5	27	3	96	5	86
Suni	0	6	15	0	4	8	1	0	1	0	0
Impala	3	91	98	90	127	164	68	33	91	1	238

Other species present different biases; for example the distribution of Impala (large groups, rather sedentary, concentrated in areas of suitable habitat) cannot be investigated in the same way as that of Nyala (small groups, widespread in thicket areas but very mobile as they move to and from water-holes).

The transect lines do not present a satisfactory means of counting the majority of species either, because they cover a range of habitats (not all favoured by the species concerned), but no attempt has been made to take into account the amount of each habitat type along the line (no vegetation profiles) nor the varying visibility. Kumchedwa (1994) made a preliminary attempt to show that each species favoured certain habitats, but this has not been followed up by a more rigorous analysis of the vegetation along each transect.

Adding this to the fact that data from different seasons and multiple counts along the same lines are pooled (presumably to produce figures large enough for analysis by DISTANCE or other methods), and we have figures that we believe are completely unrepresentative of actual population levels and trends. Chiwona (1992) had already recognised that the estimates produced were very imprecise, with enormous standard variations, and we do not believe that reliance now on DISTANCE analysis solves the problem of "poor data in, poor results out".

These same census techniques are used briefly each year for one or two counts in Majete and Mwabvi: the same reservations apply, with the addition that the intimate knowledge available to assess the results from a small, intensively-visited area like Old Lengwe, is lacking. Kamanga & Sichali (2000) show that data obtained there are few, and we believe the results relating to numbers, group size and sex-ratio need to be treated with extreme caution therefore. Logistical problems too mean that counts do not always start early in the day, and it cannot be stressed too strongly that rigorous attempts are needed to ensure that census indices are as comparable as possible.

The water-hole counts target relatively few species, and important ones such as Impala drink rarely or (in the case of Buffalo) mainly at night, and so are not counted. The extent of standing water available away from the water-holes is an obvious bias (and is thought to be the reason for the apparent drastic decline in the 1999 counts). The number of observers available means that only the major water-holes can be covered, and it needs to be established to what extent the "minor" water-holes are utilised. And despite the investigations by Bell & Dudley (1982), the paucity of naturally recognisable individual animals means that an idea of how frequently each Nyala (for example) drinks must await the immobilisation and marking of a representative sample, and follow-up observations. At present, it is assumed they drink every two days, and the water-hole counts are analysed accordingly.

As discussed with research staff, the many biases evident in results from these counts mean that to rely on them alone for population monitoring is unwise. We believe an integrated study is necessary along the following lines:

- regular road counts be re-instated, as a means to determine distribution and status of Impala, and the movements of Buffalo herds. Day-long counts at all major water-holes should be undertaken once a month: in order to better understand the results from late dry-season water-hole counts over the years, it is important to monitor seasonal use;
- the transect lines should be cleared and marked permanently, and vegetation and visibility profiles made, so that regular counts can be made along them;
- representative individual Nyala, Impala and Buffalo should be immobilised and marked, and

intensive field searches undertaken regularly to determine seasonal home ranges. In the case of Nyala and Buffalo, which are not always easy to locate in thick cover, some radio tracking would be desirable.

RESTOCKING WILDLIFE RESERVES

Rowan Martin in the draft management plans (Anon. 2000a, 2000b, 2001) makes detailed suggestions regarding (re-) stocking of Majete and Mwabvi in particular. We believe there are several strong arguments against following any of his advice.

Some of the species recommended by Martin for stocking are animals that have never occurred naturally in Malawi (such as White Rhino *Ceratotherium simum* and Giraffe *Giraffa camelopardalis*); they are in no danger elsewhere, introducing them could upset the balance of a natural environment, and the result would be a zoo rather than a natural area with its own identity, history and integrity. Places such as the Nyala Park at Sucoma already fill the niche of game park admirably; treating wild areas such as Majete or Mwabvi in the same way is inexcusable.

Some of the species recommended for stocking have never occurred historically in the Lower Shire (e.g. Wildebeest and Roan Antelope), although Martin does not seem to be aware of this. Even where a species has occurred in the past and is now extinct or in very small numbers, it is essential to determine and remedy the reason for their present status before going to the expense of translocating animals (with all the stress that means for them too). An area such as Majete has been largely cleared of game through poaching, and until there is a much larger and effective policing force (and their effectiveness clearly in evidence) restocking cannot be justified. It has been suggested a fence should be erected around Majete, but to anyone who has seen anything of this huge area of broken country, this seems a hugely expensive and unrealisable dream. In the case of a species such as Impala (still present in Majete in very small numbers) the area does not seem to be particularly favourable, the area of riverine habitat is very limited and the dry woodland (covering most of the reserve) not suitable. The suggestion by Rowan Martin of a carrying capacity of 700 Impala (to be translocated from Lengwe) seems completely unrealistic. Mwabvi is smaller, and although the great poaching pressure of the past seems no longer to exist, the hundreds of people using the two through roads means that this area can never hold large game populations.

The suggestion that Lengwe, this tiny jewel of natural habitat, which still has some substantial populations, should also be subjected to restocking, is too appalling to contemplate. Martin suggests the park "could probably stand up to 100" White Rhino (an exotic, and this without any impact study it seems). As regards Giraffe "there seems to be no good reason why they should not be introduced to a park which is being 're-constituted'". Habitats in Lengwe are eminently suitable for the species" (he suggests 100). Such suggestions are completely unscientific in the absence of any serious study, and they are in no way necessary for the conservation of the species concerned. Indeed, in the absence of any study, it is not unlikely the result could be a deterioration of the present population balance. DNPW needs to set out clearly its definition of a "National Park" or "Wildlife Reserve", and should distinguish both from artificial "game parks".

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REFERENCES

- ANON. (1975) *Aberdeen University Expedition to Mwabvi Game Reserve, southern Malawi, Central Africa*. Preliminary report: 1-29. (The final report was never published).
- ANON. (2000a) *Majete Wildlife Reserve. Park plan*. (1st draft). Min. Tourism, Nat. Parks & Wildlife and ULG Northumbria Ltd, PriceWaterhouseCooper. 55 pp. + annexes.
- ANON. (2000b) *Lengwe Wildlife Reserve. Park plan*. (1st draft). Min. Tourism, Nat. Parks & Wildlife and ULG Northumbria Ltd, PriceWaterhouseCooper. 54 pp. + annexes.
- ANON. (2001) *Mwabvi Wildlife Reserve. Park plan*. (1st draft). Min. Tourism, Nat. Parks & Wildlife and ULG Northumbria Ltd, PriceWaterhouseCooper. 55 pp. + annexes.
- ANSELL, W.F.H. (1981) The range of the Nyala in Malawi. *Nyala* 7: 85-90.
- ANSELL, W.F.H. (1982) Some mammal species absent from or marginal to Malawi. *Nyala* 8: 23-29.
- ANSELL, W.F.H. (1985) Mammals from Malawi, part I. *Nyala* 11: 18-24.
- ANSELL, W.F.H. & R.J. DOWSETT (1988) *Mammals of Malawi. An annotated check list and atlas*. Trendline Press, Zennor, St Ives.
- ANSELL, W.F.H. & R.J. DOWSETT (1991) Addenda and corrigenda to *Mammals of Malawi* (Ansell & Dowsett, 1988). *Nyala* 15: 43-46.
- BAMFORD, M. (2001) Lengwe game counts 1967-2000. Unpubl. report, Wildlife Society of Malawi, 3 pp.
- BELL, R.H.V. (1989) Chapter 5: Malawi, pp. 20-26. In: East R. (compiler) *Antelopes Global survey and regional action plans. Part 2. Southern and south-central Africa*. IUCN, Gland.
- BELL, R. & C.O. DUDLEY (1982) Two methods of estimating Nyala (*Tragelaphus angasi* Gray) populations in Lengwe National Park, Malawi. *Nyala* 8: 5-16.
- BERGMANS, W. (1994) Taxonomy and biogeography of African fruit bats (Mammalia, Megachiroptera). 4. The genus *Rousettus* Gray, 1821. *Beaufortia* 44: 79-126.
- CARTER, J. (1987) *Malawi, wildlife, parks and reserves*. Macmillan, London.
- CHIWONA, E.A. (1992) 1991 animal population estimates and distribution in Lengwe National Park. Unpubl. report. Dept. Nat. Parks & Wildlife, 17 pp.
- CLARKE, J.E. (1983) *Protected areas master plan for Southern Region*. Dept. Nat. Parks & Wildlife, Lilongwe.
- DOWSETT-LEMAIRE, F. (2004) The vegetation of the Lower Shire valley reserves. Majete, Lengwe and Mwabvi, Malawi. *Nyala* 22: 9-22.
- EVANS, P.G.H. (1979) Habitat preferences of ungulates in closed savanna of central Africa. *Mammal Review* 9 (1): 19-32.
- GRUBB, P. (1989) The systematic status of the Suni (*Neotragus moschatus*) in Malawi. *Nyala* 13: 21-27.
- HALL-MARTIN, A.J. (1977) The influence of man and wildlife on Rift Valley plant communities of Malawi. *Nyala* 3 (1): 3-29.
- HANMER, D.B. (1980) [Correspondence]. *Nyala* 6: 159.
- HANMER, D.B. (1984) The Sable who came in from the drought? *Nyala* 10: 121.
- HANMER, D.B. (ed.) (1989) Fauna and flora records. *Nyala* 13: 87-101 (mammals, p. 100).
- HAPPOLD, D.C.D. & M. HAPPOLD (1991) An ecological study of small rodents in the thicket-clump savanna of Lengwe National Park, Malawi. *J. Zool. Lond.* 223: 527-547.
- HAPPOLD, D.C.D., M. HAPPOLD & J.E. HILL (1987) The bats of Malawi. *Mammalia* 51: 337-414.
- HAYES, G.D. (1967) How Independence saved an African reserve. *Oryx* 9: 25-27, 24.
- HAYES, G.D. n.d. (1971) *A guide to Malawi's National Parks and game reserves*. Govt Printer, Zomba.
- HAYES, G.D. (1979) Lions -- man-eaters and others. *Nyala* 5: 6-11.
- HUNTER, N.D. (1978) G.D. Hayes and the N.F.P.S. *Nyala* 4: 67-75.
- HUTSON, J. (1977) The Lengwe game counts 1967-1977. *Nyala* 3 (2): 14-25.
- JACHMAN, H. (1984) Status of the Mwabvi Rhino (*Diceros bicornis*). *Nyala* 10: 77-90.
- KAMANGA, K.C.J. (2000) Ground census of large mammals in Lengwe National Park, 1999. Unpubl. report. Dept. Nat. Parks & Wildlife, 12 pp.
- KAMANGA, K.C.J. & E.R.M. SICHALI (2000) Ground census of ungulate species in Mwabvi and Majete Wildlife Reserve. Unpubl. report. Dept. Nat. Parks & Wildlife, (unpaginated = 5 pp).
- KUMCHEDWA, B.K. (1994) Population estimates and distribution of the key animal species in Lengwe National Park for 1993. Unpubl. report. Dept. Nat. Parks & Wildlife, 16 pp.
- LIGGITT, B. (1979) In quest of rhino. *Nyala* 5: 97-103.
- LONG, R.C. (1973) A list with notes of the mammals of the Nsanje (Port Herald) district, Malawi. *Soc. Malawi J.* 26: 60-78.
- MITCHELL, B.L. (1953) Game preservation in Nyasaland. *Nyasaland J.* 6 (2): 37-51.
- MUNTHALI, S.M. (1991) The feeding habits of Nyala (*Tragelaphus angasi*) in Lengwe National Park, Malawi. *Nyala* 15: 17-23.
- RUSSELL, T. (1975) Mwabvi: exciting allure of the unknown. *Nyala* 1 (1): 2-7.
- SHERRY, B.Y. (1995) The demise of the Elephants of the Middle Shire Valley, southern Malawi. Report to FFPS (UK). Project n° 94/30/9. 40 pp.
- SHERRY, B.Y. & A.J. RIDGEWAY (1984) *A field guide to Lengwe National Park*. Montfort Press, Limbe.
- SMITHERS, R.H.N. & J.L.P.L. TELLO (1976) *Check list and atlas of the Mammals of Mozambique*. Nat. Museums & Monuments (Museum Memoir n° 8), Salisbury (Harare).
- SWEENEY, R.C.H. (1959) *A Check list of the Mammals of Nyasaland*. Nyasaland Soc., Blantyre.

ANNOTATED MAMMAL LIST

SORICIDAE (SHREWS)

- *Crocidura hirta*. Present in Old Lengwe, apparently in small numbers, in various thicket and savanna habitats (Happold & Happold 1991).

ERINACEIDAE (HEDGEHOGS)

- Four-toed Hedgehog *Aterix albiventris*. One was seen by the Dande stream in Mwabvi (Anon. 1975).

PTEROPODIDAE

- *Rousettus aegyptiacus*. Specimens have been collected in Lengwe (Bergmans 1994).

NYCTERIDAE (SLIT-NOSED BATS)

- *Nycteris macrotis*. One specimen has been collected in Lengwe (Happold *et al.* 1987).
- *Nycteris thebaica*. One was collected from a pit-latrine in Lengwe (Happold *et al.* 1987).

RHINOLOPHIDAE (NOSE-LEAFED BATS)

- *Rhinolophus fumigatus*. Present in caves in Mwabvi Gorge (Anon. 1975).
- *Rhinolophus clivosus*. Has been collected from a hollow baobab tree in Lengwe (Happold *et al.* 1987).
- *Hipposideros commersoni*. This enormous insectivorous bat has once been collected in riparian forest in Lengwe (Happold *et al.* 1987).
- *Hipposideros caffer*. Two specimens are known from Lengwe (Happold *et al.* 1987). This species might be expected in the bat colony in caves on the Nankhwali stream in the Lengwe extension, but high water levels prevented any captures to confirm this. Many collected in Mwabvi Gorge, and a colony of several hundred found at Ndipitakuti (Anon. 1975).

VESPERTILIONIDAE (PIPISTRELLE BATS)

- *Scotophilus viridis*. Two specimens were collected in riparian woodland in Lengwe (Happold *et al.* 1987).
- *Pipistrellus africanus nanus*. Quite common in thicket-clump savanna in Lengwe (Happold *et al.* 1987).
- *Nycticeinops schlieffeni*. Several have been collected in woodland and riparian forest in Lengwe (Happold *et al.* 1987), and two were captured in woodland at Mwabvi in November, one collected being a pregnant female with two foeti (pers. obs.).
- *Scotoecus albobfuscus*. An individual of this distinctive species was well seen in Lengwe (pers. obs.).

MOLOSSIDAE (FREE-TAILED BATS)

- *Tadarida pumila*. As with the next species, occurs in the roofs of buildings in Lengwe, but only in small groups (Happold *et al.* 1987, pers. obs.).
- *Tadarida condylura*. There are large colonies, of up to 200 bats, in the roofs of buildings in Lengwe rest camp (Happold *et al.* 1987, pers. obs.).

LORISIDAE (GALAGOS)

- Greater Bushbaby *Otoleon crassicaudatus*. Common in thicket and woodland in all three reserves.
- Lesser Bushbaby or Night Ape *Galago moholi*. We found it only in Lengwe, where we heard it once in the West Makanga area and once near Main Camp (both in November). [Listed by Rowan Martin (Anon. 2000a, 2001) from Majete and Mwabvi (also Anon. 1975, under the name of *G. senegalensis*), but although likely to occur, confusion with the next species means there is no definite record].
- Zanzibar Galago *Galagoides zanzibariensis*. Occurs commonly in thicket in all three reserves, north to the Ntundu stream in Majete. Its distinctive call is uttered mainly in the early evening. At Migudu in Mwabvi they have become used to receiving fruit left out by C. Leach (pers. obs.). There is a specimen from just outside Mwabvi, in the Mulaka Hills area (Ansell & Dowsett 1991). Easy to watch at Bush Camp n° 6 at Lengwe in December, when they came to the edge of the forest to eat the fruit of *Drypetes mossambicensis*.

CERCOPITHECIDAE (MONKEYS AND BABOONS)

- Yellow Baboon *Papio cynocephalus*. Very common in all habitats in all three reserves, in groups of up to 50 or more. Very fond of the fruit of *Cordia*, *Baobab*, *Ximena*, *Strychnos* etc.
- Vervet Monkey *Cercopithecus pygerythrus*. Present in rather small numbers overall (less frequently noted in forest and

thicket than Blue Monkeys) in all three reserves.

- Blue Monkey *Cercopithecus albogularis*. Locally common in forest and thicket in Lengwe and Mwabvi, in groups of 20 or more at times. It is listed for Majete (Hayes n.d.), although the mention of it being "recorded in western areas" by Martin (Anon. 2000a) seems odd (where is the suitable habitat, other than in the east, along the Shire?) and local scouts have no knowledge of it at all in the reserve now (Austin Msanda and Tizola Moyo, pers. comm. 2001). It is very rarely in sight of habitation, and the suggestion by Martin (in Anon. 2000a) that they might become a problem in Lengwe (e.g. around tourist camps), and could then be translocated to Majete, seems fanciful.

CANIDAE (DOGS)

- Wild Dog *Lycaon pictus*. It is probably no longer present in any of the three areas, except as a very rare visitor. Reported by Game Department staff to have been common in Mwabvi (the Thangadzi) in the past (Long 1973). Three were seen in 1975, and in 1977 a very large group of 32 was seen chasing Kudu, and consistently harassing the animals (Nyala 1977, 3 (2): 50). Liggitt (1979) saw fresh spoor, and a freshly dead Kudu thought by scouts to have been killed by Wild Dogs. Known to have occurred in Majete (D.B. Hamner in Ansell & Dowsett 1988), and said to have occurred in Lengwe in the past (Clarke 1983), although we know of no definite record from either area.
- Side-striped Jackal *Canis adustus*. The status of this species is uncertain, and in spite of camping out on 97 nights we did not once hear it. "None recorded recently in Majete" (Anon. 2000a), indeed unknown there to local scouts. It certainly occurs in Lengwe, judging by scout reports (e.g. Austin Msanda pers. comm. 2001), though is no longer common (Hayes n.d.), and similarly in Mwabvi (Anon. 1975) it can be no more than very scarce. There is a general scarcity of rodents, the type of grassland seeming not very suitable, and this may explain the few Jackals present.

MUSTELIDAE (MUSTELIDS)

- Cape Clawless Otter *Aonyx capensis*. Present in Majete along the Shire river.
- Honey Badger *Mellivora capensis*. Known from Majete (Carter 1987) and Mwabvi (Anon. 1975). A skull of an immature found in the Nkombedzi stream bed, Lengwe.

VIVERRIDAE (CIVETS ETC.)

- Two-spotted Palm Civet *Nandinia binotata*. A sight record of this species was claimed from Dande water-hole in Mwabvi (Anon. 1975), but it was not seen by M. Davies (who has kindly sent us a copy of his complete diary of the Mwabvi survey). There is no other record from west of the Lower Shire, and so this record requires confirmation. We did not hear this species during many nights camped in forest or thicket. The local race *gerardi* was supposedly from the Lower Shire, but whether from low altitude or the neighbouring highlands is not known.
- African Civet *Civettus civetta*. Present in all three reserves.
- Rusty-spotted Genet *Genetta rubiginosa*. Common in all three reserves, and the specific identity confirmed in Mwabvi, where one was found dead in 1975 (M. Davies's diary). Records are attributed to this species, although the rarer *G. angolensis* might also occur. Sherry (in Anon. 2000a) considered there to be two species in Majete (under the names of *G. genetta* and *G. neta*).
- Bushy-tailed Mongoose *Bdeogale crassicauda* or Meller's Mongoose *Rhynchogale melleri*. These two species appear very similar in the field. Bushy-tailed was reported from several areas of Lengwe by A.J. Hall-Martin (Ansell & Dowsett 1988). Meller's was reported seen at Fodya water-hole in Mwabvi by Liggitt (1979), while one or the other was seen several times there, singly or in pairs (Anon. 1975).
- Large Grey Mongoose *Herpestes ichneumon*. Listed from Majete (Anon. 2000a), but only in vague terms, and there may not be a firm record. One seen in Lengwe (Namichenga, 20 November 2000), and seen twice in Mwabvi (Anon. 1975).
- Slender Mongoose *Galerella sanguinea*. Quite common in woodland in all three reserves.
- White-tailed Mongoose *Ichneumia albicauda*. Sherry & Ridgeway (1984) wrote that it "may be seen" in Lengwe, which implies they had definite sightings. Otherwise known from the Lower Shire only near Chiromo (Sweeney 1959).
- Banded Mongoose *Mungos mungo*. Present in Majete. Small numbers occur locally in Lengwe and Mwabvi in thicket and woodland, in groups of up to 20 or so. A concentration of no fewer than 78 was reported in Lengwe by Hayes (n.d. = 1971); recent observations do not suggest it is as numerous as that.
- Dwarf Mongoose *Heliogale parvula*. Recorded from eastern Majete (B.Y. Sherry in Ansell & Dowsett 1988). Locally present in Mwabvi in small numbers, in groups of up to 8, in woodland and thicket near termitaria (Anon. 1975).

HYAENIDAE (HYAENAS)

- Spotted Hyaena *Crocuta crocuta*. Heard at nearly all camp sites in Majete and tracks widespread, surprisingly in view of the scarcity of medium to large game animals. Small numbers throughout Lengwe. Occasionally heard or tracks seen in Mwabvi.

FELIDAE (CATS)

- Leopard *Panthera pardus*. There are no recent reports from Majete, whence it is listed by Carter (1987) and considered "widespread and stable" by Rowan Martin (Anon. 2000a). In Old Lengwe there is still the odd animal

(pers. obs. of fresh spoor on the Nkombedzi in 2002), and in the north-west extension in the Kamzimbi area scouts report them still as quite common, feeding on Bushbuck in particular. Mwabvi had a good population to at least the mid-1970s, and observations included a Suni as prey, 6 m up in a tree (Anon. 1975; M. Davies's diary). They are probably still present, though there is no definite record in recent years.

- Lion *Panthera leo*. Lions were common in the Lower Shire, including the Lengwe area, to at least the end of the 1930s (Hayes 1979). Two "young" Lions turned up at Sucoma in 1974 (Hamner 1980), and in 1975 a male had to be killed there, after falling into a canal (Nyala 1975, 1 (2): 15). A pride moved into Lengwe during the dry season of 1977, being seen several times (Nyala 1977, 3 (2): 50). In the north-western area of the extension, two were present in 1994, and killed a Kudu at the Katawana stream source, but there is no recent report (R. Fight pers. comm. 2001). In Mwabvi Lions were regularly seen and heard up to the mid-1970s, in groups of up to three (Anon. 1975); they are now extinct. Majete once had Lions, but there have been no reports since at least the 1980s.
- Caracal *Felis caracal*. In spite of there being a "Caracal link" in Lengwe, we know of no definite record of this species, and even Hayes (n.d.) wrote no more than that it was "thought to be present". It has, however, been reportedly seen as close as the Nyala Park at Sucoma (J.C. Margeot in Hamner 1989).
- Serval *Felis serval*. Reported from Majete by B.Y. Sherry (in Anon. 2000a). Known from Lengwe, including the north-western area of the extension. Long (1973) reported one seen in Mwabvi, near the entrance gate, in July 1961, and there were scout reports in the 1970s (Anon. 1975).
- Wild Cat *Felis lybica*. Reported from Majete (D. Tweddle in Ansell & Dowsett 1988), listed for Lengwe (Carter 1987), and there are sight records from Mwabvi (Anon. 1975).

ELEPHANTIDAE (ELEPHANTS)

- African Elephant *Loxodonta africana*. Majete was a centre of distribution in southern Malawi, and there were estimated to be some 220 or so using the area, for at least part of the year, in the early 1980s (Sherry 1995). Large numbers were slaughtered by poachers in the late 1980s (a survey in 1994 finding the remains of at least 52 carcasses), and the last ones to be reported were in 1991 (Sherry op. cit.). There were good numbers in Lengwe in the 1930s (Hunter 1978), but they have been extinct there since 1964 (Sherry & Ridgeway 1984). In Mwabvi just one was said to remain until 1974 (Russell 1975).

RHINOCEROTIDAE (RHINOCEROSSES)

- Black Rhino *Diceros bicornis*. Formerly present in Mwabvi, although probably never as many as the 15-17 reported by members of the Fauna Preservation Society in 1959-63 (Long 1973) or the 15-30 estimated by the Aberdeen University expedition (Anon. 1975). In 1983 Jachmann (1984) considered there to be 6 or 7 left. In 1992 poachers killed one and the others fled into Mozambique, to certain death. Reported from Lengwe in the past, but long extinct there.

EQUIDAE (HORSES)

- Burchell's Zebra *Equus burchellii*. Used to occur in Majete, but certainly absent now. There were good numbers in Lengwe in the 1930s (Hunter 1978), but they are extinct now. A few were seen just outside Mwabvi, in the Nyakali Mulaka Hills area, in 1954 (Long 1973), and one or two were apparently present inside the reserve up to 1975 (Anon. 1975).

PROCAVIIDAE (HYRAXES)

- Yellow-spotted Dassie *Heterohyrax brucei*. Common on all rocky hills in Majete and the Kamzimbi area of north-western Lengwe. In Mwabvi common in the Mwabvi Gorge (and on Nkhangan Hill).
- Tree Hyrax *Dendrohyrax arboreus*. Occurs in the Niundu thicket in Majete, where one heard in March, and previously reported from the general area by the late Dr R.H.V. Bell (Ansell & Dowsett 1988). Small numbers present in tall *Sterculia* forest in the north of Lengwe (they were noisy in December at Bush Camp n° 6), and similarly present in Mwabvi (Migudu). These are the first definite records from within the Lower Shire reserves.

ORYCTEROPODIDAE (ANT BEAR)

- Ant bear *Orycteropus afer*. Present in suitable sandy areas in all three reserves.

SUIDAE (PIGS)

- Wart Hog *Phacochoerus aethiopicus*. Occurs locally in small numbers in Majete (only one female and 3 young were seen by us in December). Very common throughout Old Lengwe (up to six young seen with two adults, and even once a single female with eight young) and quite common in Mwabvi, at least between Matope and the Mulaka Hills.
- Bush Pig *Potamochoerus porcus*. Locally common in thicket in Majete, in groups of up to half a dozen. Widespread in forest and thicket in Lengwe, in family groups of up to seven. Signs suggest it is not uncommon in Mwabvi.

HIPPOTAMIDAE (HIPPOPOTAMI)

- Hippopotamus *Hippopotamus amphibius*. Common in the Shire river in Majete, a census in early November from above the Mkurumadzi confluence to Kapichira dam (c. 10 km) gave a total of 51 seen, and a probable maximum of

60. The main group was of 22 (including two very small young) near the Ntundu confluence. One recently born young was seen with its mother (away from the herd) near Kapichira in March.

HOVIDAE (ANTELOPE ETC.)

- [Wildebeest *Connochaetes taurinus*. Rowan Martin (Anon. 2000b) suggests this species might be 're-introduced' to the Lower Shire reserves. But Ansell (1982) showed that the species (which became extinct in Malawi in or soon after 1925) was present before that only east of the Shire Valley, especially in the area of Lake Chitwa and the plains south of Lake Chilwa.]
- [Lichtenstein's Hartebeest *Sigmoceros lichtensteini*. Apparently there are historical records from Majete (Clarke 1983), but none recently. In Lengwe, present in small numbers before and after the second World War (Hayes n.d.), three are reported to have appeared in 1966 (Hayes 1967), and the odd ones were observed to 1973 (Hutson 1977). The extension to Lengwe gazetted in 1975 was said to include Hartebeest (Nyala 1976, 2: 61), but the species has probably been long extinct now. Mitchell (1953) reported that this species occurred in mopane in Mwabvi, and the last scouts' reports were in 1975 (Anon. 1975). In 1917 the species was seen in the Madziabango area by R. Rae (in litt. to R.C. Wood).
- [Natal Red Duiker *Cephalophus natalensis*. Although suggested as probably present in Mwabvi (Mitchell 1953), and listed conditionally by Carter (1987), there is no evidence for its occurrence in the Lower Shire Valley (Ansell & Dowsett 1988). Equally incorrect is the listing of it from Majete in the past (Clarke 1983) and Lengwe, and the comments by Rowan Martin that in all three reserves it has become 'extinct in recent times' (Anon. 2000a).]
- [Blue Duiker *Cephalophus monticola*. Reported by Sweeney (1959) to be not uncommon in parts of the Lower Shire Valley, and specifically listed by him from the Thungadzi (i.e. Mwabvi) and Lengwe reserves. All such reports are doubtless misidentifications of Suni, the Blue Duiker being absent from the Lower Shire Valley (Ansell & Dowsett 1988).]
- [Grey Duiker *Sylvicapra grimmia*. Quite common in open woodland in Majete, parts of Lengwe, and Mwabvi.
- [Klipspringer *Oreotragus oreotragus*. Present on rocky hills throughout Majete, in the north-west of the Lengwe extension (Kamuzimbi) and suitable habitat in Mwabvi (e.g. Mwabvi Gorge).
- [Oribi *Ourebia ourebi*. According to Rowan Martin 'they are no longer found' in Majete (Anon. 2000a) and Mwabvi (Anon. 2001), and they were listed from Lengwe by Hayes (n.d.). However, there is no evidence that the species has ever occurred anywhere in the Lower Shire (Ansell & Dowsett 1988).]
- [Sharpe's Grysbok *Raphyceros sharpei*. Present quite commonly in woodland and small thickets in all three reserves.
- [Suni *Neotragus moschatus*. The species occurs as far north as the Ntundu thicket in Majete (pers. obs.) and also near Phwadzi on the Ntumba stream (T. Moyo pers. comm.). It is difficult to see how this population is 'threatened', as suggested by B.Y. Sherry (in Anon. 2000a). [It may indeed occur further north still in Liwonde National Park, whence there are reports of an animal photographed recently. But a specimen claimed from Thyolo was a misidentification by the collector (B.L. Mitchell) of a Blue Duiker (T. Grubb in litt. to W.F.H. Ansell, 1986).] Widespread wherever there is suitable thicket in Lengwe, singly or in pairs, the total population being several hundreds. Not often seen at water-holes. Rather less numerous in Mwabvi (one seen in the Dande stream bed and signs elsewhere, especially Mwabvi stream). There is possibly a specimen from 'Tangadzi, W. of Chiromo', although it bears also a label marked 'Cholo' (Grubb 1989).
- [Impala *Aepyceros melampus*. Small numbers occurred in Majete (B.Y. Sherry thought fewer than 10 in the 1980s), but it is now confined to the hinterland, away from the Shire, between the Nakanibo and Ntundu streams, and very few remain (T. Moyo pers. comm. 2001). In Old Lengwe it is locally very numerous in open grassland and the edge of thicket clumps (more so than in the 1970s). It ranges even in small numbers to the West Makanga area, and is also reported from the Katarawa area of the north-western extension. In Mwabvi small numbers occur locally (up to five together), especially in the mopane of the Matope area.
- [Roan Antelope *Hippotragus equinus*. A group of seven was reported to have been seen in Lengwe by two different observers in December 1975 and May 1976 (Nyala 1976, 2: 65), but we are not convinced that there was not confusion with Sable. Apart from one shot more than a century ago between Zomba and Blantyre, there is no other acceptable record from the whole of southern Malawi, a report from Majete being rejected too (Ansell & Dowsett 1988, cf. Anon. 2000a). Roan are also unknown from neighbouring areas of Mozambique (Smithers & Telford 1976).]
- [Sable Antelope *Hippotragus niger*. Small numbers still occur in parts of Majete, away from the riverine area. Bell (1989) estimated a population of c. 100. Not known now from Old Lengwe, but it apparently occurred up to at least the 1970s, and 3-4 were present in the Nchalo area in 1984 (Hanmer 1984). In Mwabvi a group of c. 15 reported in 1959 (Long 1973), of over 20 in 1974 (Russell 1975) and of 21 in the Matope area in 2001 (pers. obs.). Bell's (1989) estimate of c. 200 in Mwabvi is excessive; we would suspect there have never been many more than 50.
- [Buffalo *Syncerus caffer*. Used to occur in Majete (B.Y. Sherry estimated fewer than 10 in the 1980s), but there are no recent reports. In Lengwe they were in the past secretive and mobile (Hayes n.d. = 1971). A herd of 70 was noted in 1977, the biggest group reported there to that date (Nyala 1977, 3 (2): 50). At least one herd of similar size was present during the present survey in the area between the Nkombedzi, Main Camp and Bush Camp n°1, and another towards Makanga. The total population in Lengwe appears to be in the low hundreds, estimates by DWNP staff of 4144 in 1998 and then 2485 in 1999 (Kamanga 2000) showing clearly the shortcomings of their census techniques.

- [Buffalo usually visit the water-holes at dusk or during the night, so counts at the hides are ineffective as a rule. One young Buffalo translocated from Kasungu to Liwonde National Park in May 1985 (and tagged) was killed at Nchalo (on the edge of Lengwe) in October 1986 (J.C. Margeot and J.A. Hanmer in Hanmer 1989). In the north-western extension they are no more than occasional visitors to the Kamuzimbi area. Herds of 66 and 74 were reported from Mwabvi in 1963 (Long 1973), but it seems possibly only one group was involved. There is still a large herd of 52 in woodland in the Matope area (pers. obs. 2001), and a few animals occur in the forest zone.
- [Greater Kudu *Tragelaphus strepsiceros*. Local in small numbers in Majete, the estimate of 1000 (i.e. on average 1.5 per km²) by Bell (1989) is probably now too high by a factor of two, as a result of continued poaching in the reserve. Quite numerous in Old Lengwe (though far less so than Nyala). One of the few species encountered often in the tree savanna of the south-west and numerous still in the north-western extension area. Small numbers (groups of up to 12+) occur locally in forest and open woodland in Mwabvi. Bell's (1989) estimate of at least 300 seeming realistic.
- [Nyala *Tragelaphus angasi*. In Old Lengwe locally numerous in thicket and thicket clumps (though noticeably less common than in the 1970s, prior to the culling exercise). In Mwabvi very local and not at all numerous, one male and two females in the Malema forest were the only ones seen by us. In 1975 a population of 30-40 had been estimated there (Anon. 1975), and that seems to be realistic still. Ansell (1981) has discussed the historical range of this species, which has never occurred in Malawi north of about Chikwawa. Bell & Dudley (1982) have discussed census techniques in Lengwe. Munthali (1991) has shown that Nyala in Lengwe feed mainly by grazing and foraging, with little browsing, and that they graze from 20% of the time (in the late dry season) to as much as 50% in the rains. Some of the plant species eaten by Nyala are listed by Hall-Martin (1977). There is no evidence that it has ever occurred in Majete, where the existing thickets are certainly too small.
- [Bushbuck *Tragelaphus scriptus*. Widespread in thicket and riparian in all three reserves, usually singly or in pairs.
- [Eland *Taurotragus oryx*. There were good numbers in Lengwe in the 1930s (Hunter 1978), but extinct by the 1970s. Similarly, used to occur in Majete, but no longer present. Mwabvi apparently held Eland in the past: fresh tracks were reported from the Madziabango area in 1917 (R. Rae in litt. to R.C. Wood).
- [Reedbuck *Redunca arundinum*. A few occur in Majete, along the major rivers in the eastern section. There have always been very few in Lengwe, mainly in the Makanga area (perhaps only there now), a pair being seen occasionally in West Makanga. Bell (1989) estimated a population of c. 50 in Lengwe, and there are unlikely to be more of this easily-hunted species. Unusually, Hayes (1967) reported that Reedbuck visited the water-hole at what is now Main Hide ('Magomero') in 1964, soon after a bore-hole was sunk to keep it supplied with water. Formerly present in Mwabvi, the last being reported in 1975 (Anon. 1975).
- [Waterbuck *Kobus ellipsiprymnus*. Present now only in Majete, but in small numbers (groups of up to five), being the most frequently encountered antelope in riparian areas, and even away from water in the region of Phwadzi. Bell's (1989) estimate of possibly 100 may be on the conservative side. Ansell & Dowsett (1988) map historical records from Lengwe, but it is not clear what its past status was (Sherry & Ridgeway 1984).

MAMMIFERAE (PANGOLINS)

- [Pangolin *Manis temminckii*. Known from Majete (R.H.V. Bell in Ansell & Dowsett 1988), Lengwe (Austin Msanda, pers. comm. 2001), and from Mwabvi (Anon. 1975).

SCURIDAE (SQUIRRELS)

- [Sun Squirrel *Heliosciurus mutabilis*. Common in forest and thicket clumps in all three reserves. These animals (of the race 'shirensis') are variable in colour, but are usually predominantly pale ginger, with the brown tail showing signs of rings, often rather faint.
- [Bush Squirrel *Paraxerus cepapi*. Common in woodland in all three reserves, especially abundant in mopane.
- [Red Squirrel *Paraxerus palliatus*. Lengwe: small numbers present in thicket and especially in forest (e.g. along the Nkombedzi). Mwabvi: one seen in Nta Thumba thicket on the way to the Dande (reports by Anon. 1975 might include some misidentified Sun Squirrels). Note that this forest-associated species is not closely related to the woodland *P. cepapi*, and the suggestion that they might hybridise is refuted (Ansell & Dowsett 1988), being based on superficial interpretation of museum skins.

HYSTRICIDAE (PORCUPINES)

- [Porcupine *Hystrix africaeaustralis*. Common and widespread in all three reserves.

THIRYONOMYIDAE (CANE RATS)

- [Greater Cane Rat *Thryonomys swinderianus*. Common in grassland and on the edge of thicket along the Shire river in Majete (not collected, but a very small juvenile and adults seen closely, and certainly this species). Anon. (1975) reported *T. swinderianus* as very common in open woodland and grassland in Mwabvi, but as pointed out by Ansell (1985) the possibility of these being the very similar Lesser Cane Rat *T. gregorius* (usually in drier woodland than its congener) cannot be ruled out, in the absence of a specimen.

BATHYERGIDAE (MOLE-RATS)

- [Silvery Mole-rat *Heliophobius argenteocinereus* (which has small colonies, of large mole-hills) is known from Mwabvi (Anon. 1975, pers. obs.).

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