

Threats to the evergreen forests of southern Malawi

F. Dowsett-Lemaire and R. J. Dowsett

Malawi has a large number of isolated highland forests on either side of the Rift Valley. While those in the north do not at present suffer from serious degradation, in the south several have been much encroached upon for fuel wood and land for cultivation. As a result localized birds, reptiles, butterflies and plant species are threatened. In a two-year exploration of the evergreen forests of the country conducted for the Forestry Department, the authors surveyed the distribution and status of the flora and fauna, and identified threats to the survival of the rarer taxa.

Malawi is a small country of enchanting and varied landscapes, with the greatest number (more than 40) of isolated mountain or hill forests in south-central Africa. Only one area, the Nyika Plateau in the north, is protected comprehensively within a national park. Most other forest patches are included in forest reserves, but their protection status depends more on local human demands for land and wood. The density of human population is particularly high south of 14°S and endangers the survival of several local species of wildlife and plants.

The vegetation

Most of the forested hills in southern Malawi are situated east of the Rift Valley formed by the Shire River (Figure 1) and bear mid-altitude evergreen forests (Table 1). The flora was described in part by Chapman and White (1970), but the importance of medium-altitude forests was overlooked. A more complete account of the vegetation is in progress (Dowsett-Lemaire, 1988 and unpub.). The wetter types of mid-altitude forest are dominated by 40-m tall *Newtonia buchananii* trees, and constitute a community little studied and largely destroyed in the African tropics. Two of the finest examples of *Newtonia* forest occur on Chikala Hill and in the Ruo Gorge (Mulanje), with an interesting mixture of lowland and Afromontane elements. Those

on the slopes of Mt Mulanje are (or were) most extensive; 123 species of trees and woody shrubs have been recorded (Dowsett-Lemaire, 1988). There is an endemic tree *Rawsonia (Dasylepis) burtt-davyi* and a semi-strangling

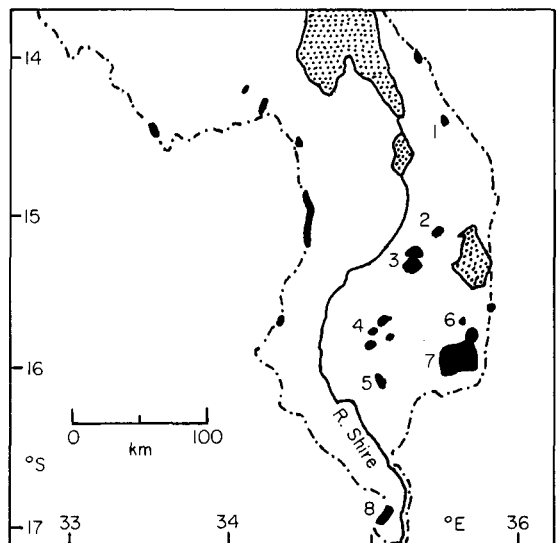


Figure 1. Map of southern Malawi showing the evergreen forests; shaded areas are lakes. Numbers refer to localities mentioned in the text: (1) Mt Mangochi; (2) Chikala Hill; (3) Mt Malosa and Mt Zomba; (4) southern Shire Highlands including Lisau and Soche; (5) Mt Thyolo; (6) Macheмба Hill; (7) Mt Mulanje; (8) Malawi Hills.

Oryx Vol 22 No 3, July 1988

Ficus so far unmatched; a new species of *Tapinanthus* mistletoe was recently collected from the upper Ruo Gorge. As a whole, the fern flora of the Mulanje forests is the richest in the country (over 100 species), with some *Asplenium* and *Elaphoglossum* spp. still to be named. There are two endemic *Streptocarpus* lithophytes (*S. dolichantus* and *S. milanijanus*) and at least one endemic orchid (*Polystachya* sp. 1 in la Croix *et al.*, 1983). The small forest on Mt Soche has an apparently endemic tree in its understorey, *Buxus nyasica*.

At higher altitudes, above 1500–1600 m, Afro-frontane forests are comparatively impoverished, but there is an interesting variant dominated by tall *Widdringtonia cupressoides* on Mt Mulanje, this cedar being at the northern limit of its range (Edwards, 1985; Dowsett-Lemaire, 1988).

The wildlife

The bird distribution in Malawi is described by Benson and Benson (1977), and the butterflies by Gifford (1965). As with the vegetation, many new distribution records were obtained during our survey. Nevertheless, several bird and butterfly species are extremely localized and their survival is threatened. The birds that are included

in the African Red Data Book (Collar and Stuart, 1985) are marked with an asterisk below.

The green barbet *Stactolaema olivacea* occurs in Malawi, as different subspecies, only in the Misukus (extreme north) and on Mt Thyolo. It eats mostly figs, of which there is a noticeable abundance in these two forests. The distinctive subspecies on Thyolo, *belcheri*, is known otherwise from one mountain in adjacent Mozambique (Namuli).

The green-headed oriole *Oriolus chlorocephalus** is a sparsely distributed species in south-eastern Africa (Hall and Moreau, 1970). It was mentioned in five localities by Benson and Benson (1977), but in fact breeds in just two forest areas in southern Malawi: on Chikala Hill (c. 15 pairs) and Thyolo (including lowland forest on the tea estates, 40–45 pairs). Recent records on Lisau are of passage birds; there have been no acceptable records on Mt Soche since the 1940s; the forest on Namzadi Estate no longer exists.

The Thyolo (Cholo) alethe *Alethe choloensis** was found in all the mid-altitude and submontane forests of the south (east of the Rift). It is almost endemic to Malawi, as it is otherwise known from only two mountains in adjacent Mozambique (Collar and Stuart, 1985). Overall numbers in Malawi are in the order of 1500 pairs. It is locally common in several forests, especially on Mt Thyolo (c. 200 pairs) and mid-altitude Mulanje (c. 1000 pairs in 1984).

The spotted thrush *Turdus fischeri** has a very localized distribution in Africa (Collar and Stuart, 1985). The Malawi endemic race *belcheri* is known from just four forest localities: Lisau, Soche, Mt Thyolo and the slopes of Mt Mulanje. Its overall numbers are very low—some 30 to 40 pairs.

The white-winged apalis *Apalis chariessa** is presently recorded from 11 mid-altitude forests, in some of which it is common (especially Lisau). It is otherwise known from forests in Kenya (1), Tanzania (2) and Mozambique (1), and may now be extinct in Kenya. It is threatened through its prime habitat being riparian or secondary *Albizia* forests in the Shire Highlands, which are under heavy human pressure. Total numbers are not much above 100 pairs.

Table 1. Main features of the evergreen forests of southern Malawi mentioned in the text

Locality	Altitude (m)	Forest type	Size (ha)*
Mt Mangochi	1550–1700	Submontane	230
Chikala Hill	1300–1600	Mid-altitude	285
Shire Highlands:			
Mt Malosa	1700–1950	Submontane	730
Mt Zomba	1600–1950	Submontane	600
Lisau Saddle (Chiradzulu)	1300–1450	Mid-altitude	160
Mt Soche	1300–1520	Mid-altitude	150
Mt Thyolo	1200–1450	Mid-altitude	1000
Thyolo tea estates	c. 1050	Lowland	600
Machemba Hill	1150–1300	Lowland	40
Mt Mulanje (incl. Mchese):			
Lower slopes	600–950	Lowland	c. 200
Middle slopes	900–1500	Mid-altitude	1800
Upper slopes and plateaux	1500–1850	Submontane	} 5000
	1850–2300	Montane	
Malawi Hills	600–900	Lowland	400

*Sizes are measured from aerial photographs.

Southern Malawi: evergreen forests



Figure 2. Large tracts of Chinsongeli Forest, Mt Mulanje, have been cleared for the planting of annual food crops.

Some 14 forest-associated butterflies are apparently endemic to Malawi, of which eight occur in the south, with three only on the slopes of Mt Mulanje: the lycaenids *Alaena lamborni*, *A. ochracea* and *Baliochila woodi* (Mulanje); the nymphalids *Charaxes margaretae* (Mulanje), *C. martini*, *C. chinteche* (north also), *Cymothoe zombana* and *C. melanjae* (Mulanje).

The forests are too small to contain many species of large mammals. The blue monkey *Cercopithecus albogularis* is still common locally, as is a forest antelope, the blue duiker *Cephalophus monticola*. Hunters have exterminated in places bushbucks *Tragelaphus scriptus* and bushpigs *Potamochoerus porcus*.

Among other vertebrates, an endemic chameleon *Chamaeleo mlanjensis* (Broadley, 1965) and an endemic subspecies of frog *Arthrolepis adolfifriederici frankei* (Stewart, 1967) are confined to rain forest along the Ruo River on

Mulanje. Another chameleon *Rampholeon platyceps* appears endemic to the forests of southern Malawi, from Mulanje and Zomba to the Malawi Hills (Loveridge, 1953; Hargreaves, 1979).

The conservation status of the evergreen forests

All forest remnants but one (on Machemba Hill where the forest is being felled) are included in forest reserves. However, the increasing human population is placing timber and firewood supplies under severe pressure in most places. On the Mulanje slopes, forest is also cleared for subsistence cultivation: many of the estate workers have insufficient land for gardens at lower levels, and there is also an influx of squatters from war-torn Mozambique. As a result, all lowland and mid-altitude forests remaining on Mulanje are seriously threatened. For example, Chinsongeli Forest, on the south-eastern slopes,

Oryx Vol 22 No 3, July 1988



Figure 3. Mt Thyolo, with the hill forest eaten into by cultivated land; tea and *Eucalyptus* plantations in the foreground.

extended from 900 to 1800 m, and aerial photographs show that it still covered 40 sq km in 1974, thus being the largest single block of forest in Malawi. Destruction has accelerated in the last few years and little forest now remains below 1500 m (Figure 2). The wood is wasted, and maize gardens established on steep rocky slopes are soon washed away, encouraging further felling. These *Newtonia*-dominated forests are not only an ecosystem of considerable scientific interest, but also provide a vital source of water—in particular for the foreign-exchange-earning tea estates extending over the plains below.

Equally disturbing is the situation on and around Mt Thyolo. The Thyolo area (1000–1400 m) lost most of its forest early this century, with the establishment of the tea estates. Some of the estates have preserved important fragments of lowland forest in stream depressions, but the forest reserve established on Mt Thyolo itself has

Southern Malawi: evergreen forests

been steadily encroached upon for gardens in the past 20 years (Figure 3).

Quite a number of the Shire Highlands forests are endangered. The most important of these from the natural history viewpoint is Soche, near Blantyre. It had been reduced in size to 150 ha by 1974; felling continues illegally and unless this is stopped at once, the city of Blantyre will lose for ever what could be an environmental education area of considerable value.

Among the larger forests that are fairly well protected are Mt Mangochi, Chikala, Malosa, Zomba and Lisau. The buffer zone of woodland around Chikala and Lisau has been extensively cut, however, and pressure on the forests will increase. The *Widdringtonia* forests on the high plateaux of Mulanje still suffer from felling of cedars and illegal bushfires. Burning has not ceased in recent years (contrary to the predictions of Edwards, 1985). The lack of fire-breaks

below the lip of the plateaux is a problem, worsened by the encroachment of cultivation on the slopes. In September 1983 several fires were even lit inside the fire-break protection on the top.

Action recommended

What is needed overall is recognition of the importance of preserving as many evergreen forests as possible for water, soil and timber conservation, with particular attention being paid to the enforcement of the laws in those areas of special scientific interest. Most of these forests are relatively small, and policing them effectively initially requires an increase of forest guards, finance for which might be sought from external donors. The pressing need for timber (building poles and firewood) must also be met by the planting of more fast-growing exotic trees in areas near to large human settlements; wherever possible this should be on land that is not well forested with indigenous vegetation. Attention should also be given to a reafforestation programme using indigenous trees, although the time scale involved will mean this is of no help to forests under immediate threat. One of the ways that destruction of the forested slopes of Mulanje could be halted is by providing the tea estate workers with rations of maize meal—at present their incomes are insufficient to buy food. Otherwise illegal gardens cannot reasonably be banned.

Unfortunately, even well-planned reafforestation and other measures will not overcome the rate of forest destruction in the most populated areas (particularly the southern Shire Highlands and the lower slopes of Mulanje), and several unique forest ecosystems in southern Malawi are not likely to survive the next decade or two.

Acknowledgments

This survey of the Malawi forests was carried out while F. D.-L. was employed by the University of Liège, Belgium, and we are very grateful to the University (especially Professor J.-C. Ruwet who fully supported the project). The National Geographic Society generously provided financial assistance. Many people were helpful to us in Malawi, particularly field staff of the Forestry Department.

References

- Benson, C.W. and Benson, F.M. 1977. *The Birds of Malawi*. Montfort Press, Limbe.
- Broadley, D.G. 1965. A new chameleon from Malawi. *Amnologia*, **32**, 1–3.
- Chapman, J.D. and White, F. 1970. *The Evergreen Forests of Malawi*. Commonwealth Forestry Institute, University of Oxford.
- Collar, N.J. and Stuart, S.N. 1985. *Threatened Birds of Africa and Related Islands*. ICBP and IUCN, Cambridge.
- la Croix, I., la Croix, E.A.S., la Croix, T.M., Hutson, J.A. and Johnston-Stewart, N.G.B. 1983. *Malawi Orchids. Volume I. Epiphytic Orchids*. National Fauna Preservation Society of Malawi, Zomba.
- Dowsett-Lemaire, F. 1988. The forest vegetation of Mt Mulanje (Malawi): a floristic and chorological study along an altitudinal gradient (650–1950 m). *Bull. Jard. Bot. Nat. Belg.* **58**, 77–107.
- Edwards, I. 1985. Conservation of plants on Mulanje Mountain, Malawi. *Oryx*, **19**, 86–90.
- Gifford, D. 1965. *A List of the Butterflies of Malawi*. Society of Malawi, Blantyre.
- Hall, B.P. and Moreau, R.E. 1970. *An Atlas of Speciation in African Passerine Birds*. British Museum (Natural History), London.
- Hargreaves, B.J. 1979. Cautious, carnivorous clowns—chameleons of Malawi. *Nyala* **5**, 32–39.
- Loveridge, A. 1953. Zoological results of a fifth expedition to East Africa. III. Reptiles from Nyasaland and Tete. *Bull. Mus. Comp. Zool. Harvard*, **110**, 141–322.
- Stewart, M.M. 1967. *Amphibians of Malawi*. State University of New York Press, New York.
- F. Dowsett-Lemaire and R.J. Dowsett, Rue de Bois de Breux 194, B-4500 Jupille, Liège, Belgium.