SABONET NYIKA EXPEDITION 2000

Plant collecting in the Nyika National Park in northern Malawi and Zambia.

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> he Nyika Plateau, situated in northern Malawi with a small part in adjacent Zambia. is the largest montane complex in south-central Africa. The plateau is situated at an altitude of about 2 000 m, rising to 2 607 m at the highest point, Nganda Hill. The vegetation consists mainly of rolling grassland and dambos, which are marshy headwaters of streams. Small patches of evergreen forests occur in many places, particularly on valley sides, and very extensive forests can be found in the eastern parts of the plateau. Occasional lichen-covered rock outcrops have become view-sites like Chosi. Domwe and Jalawe View Points and Fingira Rock. The escarpments on the sides are rather steep, and are densely covered in miombo woodland (dominated by the genera Brachystegia, Julbernardia and Uapaca) and protea/heath scrub.



Above Nyika wilderness with rolling grasslands stretching to the horizon. Photo: C.K. Willis.

Left Malawian parataxonomist Hassam Patel, surrounded by *Pycnostachys stuhlmannii* (Lamiaceae) in the Wovwe Valley. Hassam has been collecting plants on the Nyika since the early 1970s and is the most experienced 'plant hunter' of the Nyika. Photo: J.E. Burrows.

From 22 March to 10 April last year, a plant collecting expedition to the Nyika Plateau was undertaken by botanists from Malawi, Zambia, Zimbabwe, Mozambique and South Africa, and as far afield as the University of Dar-es-Salaam in Tanzania. A SABONET (Southern African Botanical Diversity Network) project, the aim of the expedition was to build up an extensive collection of plants from the Nyika Plateau for use in compiling a comprehensive checklist and field guide. A secondary goal was to improve contacts between plant taxonomists from southern African countries and to exchange knowledge and skills in keeping with SABONET's philosophy of 'learning by doing'.

Our South African contingent left from Pretoria with two vehicles and their trailers loaded with camping equipment, dozens of herbarium presses, literature, maps, tools, binoculars and laptop computers. After meeting up with expedition members from Lydenburg and Pietersburg and going through the border formalities at Beit Bridge, we finally arrived in Harare, where the two Zimbabwean botanists joined us. Whilst driving through Zimbabwe we had to rely on

Map (right) based on Carter 1987. Below The giant lobelia, *Lobelia mildbraedii*, growing on the shores of Lake Kaulime, Nyika National Park. Photo: C.K. Willis.



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fuel stored in numerous jerry cans as the country was going through the throes of a fuel crisis. After a delay in Harare we eventually left for the Tete corridor in northern Mozambique, and the following three days were spent driving to Mzuzu in northern Malawi punctuated with border formalities, countless refueling stops and wonderful scenery. The vegetation next to the road was discussed in detail on the two-way radios in our vehicles.

We were joined by the rest of the expedition members in Mzuzu, the largest town in northern Malawi. In contrast to over-populated southern Malawi, the north is very sparsely populated, and there are very few big towns. From Mzuzu we headed for the Nyika National Park via Rumphi and the Thazima Entrance Gate. The pouring rain made the access road rather difficult, as did a truck blocking the road, and then one of our vehicles broke down and had to be towed to Chelinda, our rest camp on the Nyika Plateau.

The name 'Nyika' means wilderness. The area has been inhabited for more than 3 000 years and evidence of the early history can be seen in several places, from rock paintings to iron smelting sites. In fact, iron smelting was practised on the Nyika Plateau until about 1930, and may be one of the reasons for the lack of woody plants in many areas. However, the need for the conservation of the Nyika Plateau soon became evident. In 1948 the area of what is now known as the 'Juniper Forest' in the south-eastern part of the plateau (named after Juniperus procera, the dominant tree of the forest) was made a reserve. In 1951 the grasslands were protected and hunting prohibited. In addition, the remoteness and inaccessibility of the Nyika Plateau helped its conservation. A pine and gum plantation originally established by the Colonial Development Corporation in the centre of the plateau, around what is now known as Chelinda, proved unprofitable because it was difficult and expensive to transport the wood, and was not extended. The high-lying plateau was declared a national park in 1965, and in 1978 extended to include the surrounding escarpments and lower slopes. Originally known as 'Malawi National Park' it was renamed 'Nyika National Park' in 1969 and is currently Malawi's largest

national park, with an area of 3 134 km². A very small part of Nyika (70 km²) lies across the border in Zambia.

The climate of the Nyika Plateau, being at a high altitude, is temperate and relatively cool – almost as if one has left Africa for some part of Europe. Plenty of rain falls, mainly from December to April, and the average annual rainfall of Chelinda is about 1 200 mm. Streams are plentiful on the plateau, and have created magnificent waterfalls where they plunge down the escarpment. Temperatures are pleasant to cool from September through to June, but occasional frost has been recorded in July and August.

More than 90% of the Nyika Plateau is rolling grassland. There are over 100 grass species, mixed with low shrubs and bracken (*Pteridium aquilinum*). Dominant are species of the grass genera *Loudetia*, *Trachypogon*, *Andropogon* and *Exotheca*. The herbaceous flora of the grasslands is of special interest. Quite a few of the species are endemic to Nyika, such as *Oxalis chapmaniae* and the grass *Setaria grandis*. Several others are near-endemic (known only from Nyika and a few mountain ranges in northern Malawi). So far, thirty-four plant taxa have been identified as either strict or near-endemics.

Several genera which are so well known to us in South Africa also occur here: *Moraea, Kniphofia, Aloe, Protea, Lapeirousia* and *Gladiolus*. Very attractive are the whiteflowered *Delphinium leroyi* and the common *Spermacoce*. The Nyika Plateau is known as the richest orchid area in south-central Africa with more than 200 different orchid species. Most of them are terrestrial in the grassland and are in the genera *Holothrix, Habenaria, Disa, Satyrium, Disperis* and *Eulophia*.

Evergreen forests are prominent in the eastern parts of the plateau and the high humidity enables mosses and

Left Kniphofia thomsonii (Asphodelaceae), Nyika National Park, Malawi. Photo: J.E. Burrows. Right Hassam Patel with Gladiolus dalenii subsp. dalenii

(Iridaceae), Chelinda Bridge, Nyika National Park. Photo: H. Kurzweil.







lichens to grow on trunks and branches of forest trees, and epiphytic orchids abound. Magnificent tree ferns can also be seen.

The afromontane forest-grassland mosaic has been the subject of intense debate amongst botanists for many years. Clearly there is a dynamic relationship between these two vegetation types, the balance being controlled by a range of factors (fire, soil, climate and human influence). Conventional wisdom holds that forests were once more widespread than today, and that grassland is 'derived' from forest as a result of clearance and the activities of pastoralists and agriculturalists. An alternative view, certainly for the Nyika, is that forest is not the climax vegetation. Palaeo-ecological evidence and contemporary pollen and soil patterns have indicated that grassland is in fact the true 'relict' vegetation type on the plateau. Meadows and Linder have suggested that 'the Nyika grasslands are of greater antiquity than has been thought and there is no good reason to suppose that they were derived from the forest in recent times'.

In order to protect forest patches, park management $_{\scriptscriptstyle \mathcal{J}}$ burns the grasslands in rotating blocks so that no area



Above left Hawkmothpollinated Delphinium leroyi (Ranunculaceae). Photo: C.K. Willis. Above right Disa ukingensis (Orchidaceae). Left The nearendemic Habenaria petraea (Orchidaceae). Photos: H. Kurzweil.



remains unburned for many years, thereby avoiding the build-up of a large mass of fuel that would cause very hot fires and thereby damage forest trees. Frequently observed species on forest margins are pioneer species such as *Hagenia abyssinica*.

The fauna of the grasslands consists mainly of occasional herds of zebra, eland and roan antelope. Other buck, like bushbuck and reedbuck, can also be seen. There are some half-tame bushbuck living in the forests around Chelinda. The larger antelope are the target of poachers and poaching control is one of the main concerns of the park management. Other common visitors to Chelinda are leopard and spotted hyaena. In fact, some of our equipment was chewed on one night, by what was almost certainly a hyaena. In the past there have also been prides of lions in the grasslands, but these have since left, although lions can still be found in the lower reaches of the park, along with elephant, kudu, buffalo and baboon. Over 350 bird species (including three endemics) have been recorded, among the more prominent being the wattled crane, Denham's bustard and several birds of prey. There is also an endemic chameleon, an endemic toad, and several endemic butterflies. Rainbow trout have been artificially introduced into the three dams on the plateau (Chelinda is situated next to one of them), and angling is permitted with a licence.

The high rainfall and the frequently impassable, endless dirt roads to (and inside) the Nyika National Park, put the park out of reach of the average tourist. In fact, although open all year, Nyika is generally inaccessible for two-wheel drive vehicles during the rains. Air Malawi operates regular flights to Chelinda, but these are suspended during the rainy season. Once in Nyika, getting around by four-wheel drive vehicle is the most comfortable solution, although during the rainy season some of the roads are not negotiable even by four-wheel drive. To see the more remote areas, walking or horse-riding are the only alternatives. The Nyika Safari Company organizes wilderness hiking trails and horse-rides, lasting from several hours to many days. Accommodation facilities are quite luxurious as Chelinda rest camp is well-equipped and the chalets have much-needed open fireplaces (and an endless supply of firewood from the surrounding pine plantation). Most visitors bring their own food - but every chalet has a cook to prepare meals. A large dining room is also available for visitors who prefer to order meals from the Nyika Safari Company. There is even a curio shop and a bar, but no fuel is available so travellers have to bring their own. Chelinda

also has a camping site for budget travellers.

Parts of the Nyika Plateau and certain plant groups have been extensively collected before, so we focused on those that have not been botanically explored, and also concentrated on the herbaceous flora of the grasslands, which has received considerably less attention than, for example, the grasses themselves or the forests. Despite our intensive collecting, some areas, particularly in the inaccessible northern and eastern parts of the park, still remain undercollected.

Our first week was spent collecting around the Chisanga Falls, Chosi View Point, Lake Kaulime, Domwe View Point and Dembo and Chelinda Bridges. We also went on day trips to the northern part (Nganda Hill, Jalawe) and to the Zambian part of Nyika. Some of us also collected in the miombo woodland near Thazima. For the first two days we all went out collecting together; later the team split up into several smaller groups to cover a larger area. Each group contained a botanist specialized or experienced in a certain plant group and several 'learners'. In the second week several overnight excursions of two or three days duration were undertaken, including a back-packing trip to the Wovwe river in the eastern parts of Nyika in search of the rare maidenhair fern, Adiantum reniforme* (originally collected here in 1972, the third confirmed occurrence of this fern on the African continent), a trip to Juniper Forest in the south to explore the forest and the adjacent grasslands, and a trip to Mwanda Peak and Fingira Rock in the south-western part of the park.

In total 3 343 plant numbers were collected, and where possible four or five duplicates of each number. The plan is to send a duplicate of each to the National Herbarium, Zomba, Malawi (MAL), the University of Zambia Herbarium, Lusaka, Zambia (UZL), the National Herbarium, Harare, Zimbabwe (SRGH), the National Herbarium, Pretoria, South Africa (PRE), and the INIA Herbarium, Maputo, Mozambique (LMA).

Several new distributional records for both Malawi and the Nyika National Park were made during our expedition. Preliminary analyses indicate that ten pteridophyte and thirty-seven angiosperm taxa collected were new distributional records for the Nyika National Park. Most of the collections are still being identified by staff in various southern African herbaria. In terms of numbers, the most important families on the Nyika are, in descending order, Asteraceae, Orchidaceae, Fabaceae, Poaceae, Rubiaceae, Lamiaceae and Cyperaceae.

In the course of this collecting trip, Hubert Kurzweil collected material of fifty-six different orchid species. Although our expedition took place at the end of the main flowering season for terrestrial orchids, many were still in flower (mainly in the genera Habenaria, Holothrix, Cynorkis, Roeperocharis and Satyrium, but also Neobolusia stolzii and Brownleea parviflora). Unfortunately it was rather late in the year for the genus *Disa*, as most species had already finished flowering or were in fruit; only Disa ukingensis, D. zombica and D. hircicornis were still at their best. Most of the orchid species collected on the Nyika Plateau are widespread in central Africa. One exception is Habenaria petraea, which, although common on the Nyika Plateau, is only known from here and a few mountains in northern Malawi. Another noteworthy find was a Habenaria, which does not seem to match any known species but could merely be an untypical H. cornuta. Calanthe sylvatica, which we collected next to the Wovwe River in the Malawian part of the Nyika Plateau, is widespread in tropical and southern Africa, Madagascar and the Mascarene Islands, but has apparently not yet been recorded from Malawian Nyika (only from Chowo Forest in Zambian Nyika). The most interesting orchid was collected while driving up to Nyika, next to the road on the South Viphya Plateau about 160 km south of Mzuzu. It is either a

Acknowledgements

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Further reading

Carter, J. (1987). Malawi: Wildlife, Parks and Reserves. Macmillan, London.

Hough, J. (1989). Malawi's National Parks and Game Reserves. Wildlife Society of Malawi, Blantyre.

*An article on this intriguing fern appeared in the December 1999 issue of *Veld & Flora*, page 168. **A more detailed article by Hubert Kurzweil on the orchids of Nyika has appeared in *Orchids South Africa* **31**:76-85 (2000).

Right

Adiantum reniforme collected from the Wovwe River, Nyika Plateau during the expedition, 28 years after it was first collected by the Wye College Expedition in the same locality in 1972. Below Spoils of the two-week plant hunt where 3 343 numbers were collected by expedition members in the Nyika National Park, Malawi and Zambia. Photos: C.K. Willis.



