

NYIKA-VWAZA TRUST (UK)

CONSERVATION RESEARCH NOTE No. 2

DOES THE SPREAD OF BRACKEN FERN POSE A PROBLEM TO THE NYIKA NATIONAL PARK?

The Nyika Plateau in northern Malawi, the area above 1800 m that forms the core of the Nyika National Park, covers an area of over 1800 km². Within the more extensive 3,134 km² Nyika National Park, about 60% is covered by miombo woodland, evergreen forest is around 3%, and the remaining 37% consists of montane grassland and dambos for which the area is best known. There is a total of around 1800 plant species recorded for the Nyika plateau (Burrows & Willis 2005), with a large proportion of these being found in the montane grasslands, including most of the 33 known endemic and 13 near-endemic species, species only found on the Nyika and/or adjacent upland areas such as the Viphya Mountains to the south or the Mafinga Mountains and Misuku Hills to the north. Internationally, it is the Nyika's grassland flora that forms its main conservation interest.

The bracken fern, *Pteridium aquilinum*, a colony-forming plant that spreads by underground rhizomes, occurs naturally on the Nyika Plateau in grassland areas and especially on forest margins, often covering extensive areas (Burrows & Willis 2005). Once established, the colonies do not allow much plant growth underneath and are sometimes seen as forming rather sterile habitats. Bracken fern is also notoriously difficult to eradicate or even control, despite much research in upland areas across the world. In recent years there has been concern expressed that these colonies are spreading at the expense of the grassland flora, and that this might be due to a range of factors such as disturbance, drying out of dambos or even climate change. However, until recently the evidence for this was primarily anecdotal and any impacts had not yet been measured.

A recent research project (Kanzunguze 2017a) has been looking at the extent and historic spread of the numerous bracken patches on the Nyika, which resulted in detailed historical maps (Peace Parks Foundation n.d.), and showed that total bracken coverage in 2016 was 4362 km² (15% of the whole plateau) in both grassland and forest, an increase of 244% over the last 30 years. A further study is now in progress (Kanzunguze 2017b) to determine what the cause for any spread of bracken might be and under what circumstances it may spread. What is required are answers to the questions – is bracken actually posing a threat to the plateau's biodiversity, and if so what can National Park management authorities do about it?

A series of research and conservation projects is proposed that will address the following issues:

1. Determine what impact any spread of bracken fern will have on the ecology of the Nyika, in particular on grassland plant species and birds. How important and useful are bracken stands, which animals use them, and what species would be affected (positively or negatively) if bracken was to be cleared. For example, the bird Charring Cisticola uses bracken stands for breeding.
2. Determine whether the spread of bracken is or could negatively affect existing drainage patterns and hydrology on the plateau. And whether any spread is a result of changes in hydrology induced by, for example, increased fire frequency.

3. Document what control measures on bracken have been taken to date, and which techniques seem to work on a sustainable basis. What is the cost-benefit ratio, and which is the most cost-effective means?

As part of this project, a basic monitoring network needs to be established and maintained, which will soon be partly in place using transects across some of the main affected areas. Monitoring could possibly be carried out by local students or schoolchildren on educational visits, although any analysis would need to be done by more experienced researchers.

This set of projects, which are primarily research-orientated at this initial stage, could be implemented in stages by a range of people, ranging from National Parks or TFCA staff, visiting foreign students or researchers, Malawian university students or by local school children, or even casual visitors.

References:

Burrows, J.E. & Willis, C.K. (2005). Plants of the Nyika Plateau. Southern Africa Botanical Diversity Network Report No. 31. SABONET, Pretoria.

Kanzunguze, A. (2017a). Mapping and remote detection of bracken fern invasion on the Nyika Plateau. Unpublished report to the Nyika Vwaza Trust. http://www.nyika-vwaza-trust.org/Library/Kanzunguze_Bracken%20mapping%20Nyika_NVT%20report%20Sept2017.pdf

Kanzunguze, A. (2017b). Ecology of *Pteridium aquilinum* (bracken) invasion on the grassland plateau in Nyika National Park. MSc proposal, Mzuzu University, Malawi.

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<https://maps.ppf.org.za/arcgis/apps/MapSeries/index.html?appid=bbd06887886c48d98f4d6c0f135f8a3b>