

## 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 – extends over 1800 km<sup>2</sup>. Within the more extensive 3,134 km<sup>2</sup> 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. Around 1800 plant species have been recorded from 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, that is 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*, is a colony-forming plant that spreads by underground rhizomes. It occurs naturally on the Nyika Plateau in grassland areas and especially on forest margins, often covering extensive areas (Burrows & Willis 2005, Kanzunguze 2019a,b). 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 2018) looked at the extent and historic spread of the numerous bracken patches on the Nyika and produced a detailed historical map (Peace Parks Foundation n.d.). More recently, a study supported by NVT (Kanzunguze 2019a, 2019b) found that in 2017 bracken covered 20,940 ha of the Nyika plateau (13.7% of the total area) and was distributed more densely within 5 km of the general Chelinda area. The extent of bracken had increased by 19,920 ha (122%) between 1986 and 2016, a 4% annual rate of increase. This study concluded that: (i) controlling the species across the plateau is probably not a realistic option, (ii) the impacts of bracken invasion are varied, but it does locally reduce plant species diversity, and (iii) that fire regimes are probably an important factor in its spread.

In 2019, a project (a joint initiative from CABI in Nairobi and DNPW, funded under the GEF) started to look at alien invasives in Malawi, with one of the main study areas being bracken invasion on the Nyika plateau. Some small study plots have been established. The Nyika-Vwaza Trust has agreed to support and cooperate with this initiative wherever possible.

What is now required are answers to the questions: (a) what are the underlying causes of bracken spread, (b) what are the actual impacts on plant species diversity and on bird species of particular concern, and (c) what might be the most effective control measures?

A series of research and conservation projects is suggested to address these 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?

This set of projects, 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:

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