

## NYIKA-VWAZA TRUST (UK)

### CONSERVATION RESEARCH NOTE No. 7

## **EXTENT AND IMPACT OF ALIEN INVASIVE PLANTS IN 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 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 for the 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). Internationally, it is the Nyika's grassland flora that forms its main conservation interest.

However, a significant threat to this biodiversity comes from invasive plant species (IAS), all of which (apart from bracken *Pteridium aquilinum* – see Research Note 2) are non-native. The most problematic species in this regard are considered to be the Mexican Weeping Pine *Pinus patula* and the Himalayan Raspberry *Rubus ellipticus* (Kanzunguze 2016), although Black Wattle *Acacia mearnsii* can be locally abundant near drainage lines close to where it was first introduced. In addition, it is known that Wattle and *Rubus* are difficult to eradicate owing to long-lived seeds remaining in the soil. In his study, Kanzunguze recorded invasives along valleys around Chelinda Camp in 31 belt transects, which can be readily relocated.

A study by the Mzuzu University Student's Club (2013) showed that the main invasive species around Chelinda and Lake Kauline were the widespread *Pinus patula* and *Acacia mearnsii*, which was locally abundant near to drainage lines. These two species are changing the ecology of the grassland and shrubland in places.

Attempts have been made to control the three alien invasive species, but generally such efforts have been very localised and not maintained for more than a year or two (e.g. Nyika Vwaza Trust 2005, 2006, 2010, 2011). The situation was made worse by the *Pinus* plantation at Chelinda (planted in 1952) being clear-felled from 2007, resulting in excessive soil disturbance and growth of weed species. A recent study (Sichinga 2017) on the effects of this clearance showed that native grassland plants had difficulty in re-establishing, especially as *Rubus ellipticus* colonises aggressively.

Given the significant management concern on IAS, and linked to what we already know, the following are conservation research questions that need to be addressed:

1. Extend the survey of invasives to other parts of the Nyika National Park to determine if there are other IAS that are becoming problematic, and how far invasives (particularly pine) have extended. However, it is recognised that probably the main area of concern is around Chelinda Camp.
2. Determine what impact the main invasive species might be having on species of particular conservation interest, including nesting birds, and on forest patches.
3. Determine whether invasive stands are changing the hydrology of the important dambos by drying them up, or by encouraging invasion by bracken fern.

4. Investigate what might be the most appropriate, cost-effective methods for control of, in particular, *Pinus* and *Rubus*. What measures need to be taken to ensure any clearance can be maintained?

This set of potential 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.

A basic potential monitoring network of transects has been initiated around Chelinda, which needs to be maintained, along with plots associated with the pine plantation clearance. 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. In addition, a proposal from CABI in Nairobi has been submitted to the GEF to look at alien invasives across Malawi (contact: Arne Witt). If this project succeeds in getting funded, one of the study sites will be the Nyika National Park. The Nyika-Vwaza Trust has agreed to support and cooperate with this initiative wherever possible.

#### References:

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