

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 – extends over 1800 km². Within the more extensive 3,134 km² Nyika National Park, about 60% is covered by miombo woodland, evergreen forest covers 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 alien 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 to localities around Chelinda where it was first introduced. An earlier study by the Mzuzu University Student's Club (2013) also showed that the main invasive species around Chelinda and Lake Kauline were *Pinus patula* and *Acacia mearnsii*. Both species are, in places, changing the ecology of the grassland and shrubland. In addition, it is known that Wattle and *Rubus* are difficult to eradicate owing to long-lived seeds remaining in the soil.

Attempts have been made to control the three main 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 much worse by clear-felling from 2010 of the *Pinus* plantation at Chelinda (planted in 1952) 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* colonises aggressively.

A recent project from CABI in Nairobi and DNPW, looking at alien invasives across Malawi and funded under the GEF, has as the Nyika plateau as one of its major study sites. The Nyika-Vwaza Trust has agreed to support and cooperate with this initiative wherever possible.

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 there that are becoming problematic, and how far invasives (particularly pine and Himalayan raspberry) have extended, although 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 forest patches or on species of particular conservation interest, such as nesting birds.

3. Determine whether invasive stands are changing the hydrology of the dambos by drying them up, or if they are 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?

A basic potential monitoring network of transects has been initiated around Chelinda. This needs to be maintained, along with the monitoring plots associated with 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.

These potential projects, which are primarily research-orientated at this stage, could be implemented in part 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.

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