

Stop the invasion before it is too late

By Krissie Clark & Wayne Lotter

As the sun filters through the majestic trees and the array of greens, yellows and reds fill our surrounds, we are amazed by the beauty of the Eastern Miombo Woodlands in southern Tanzania. Each valley brings a new surprise, like taller more magnificent trees, a sweet tasting crystal clear stream, a graceful Pennant-winged nightjar or the familiar smell of fresh elephant dung. As we continue walking we wonder what the next valley will bring. Will we encounter something small like a colourful flower or butterfly, or will it be something big like a herd of eland or elephant. However, to our dismay instead of a natural wonder we are met by a horrible sight, we spot an INVASIVE ALIEN SPECIES known as *Mimosa pigra*.

Now you may be wondering what an invasive alien species is and why we were so disturbed by the site of it. Well, firstly you need to understand what an indigenous species is. Indigenous species, be it a plant or an animal, are those species that are native to a particular region. They have evolved and occurred in that region for thousands of years, and were not brought into that area by humans. An indigenous species usually has a variety of natural enemies (predators, parasites and diseases) that have developed with it and keep its population numbers in check in relation to the diversity of other species that share its habitat. All indigenous species have natural enemies and occur in a state of dynamic or fairly stable equilibrium with each other. If a species occurs in a region where it is not indigenous, it is referred to as an alien (exotic, foreign, introduced, non-native, non-indigenous) species. Any species that occurs artificially outside its known historical natural range, no matter how long ago it was introduced, is regarded as an alien. Most alien species can only survive in their adopted country if they are cared for. However, a certain percentage of alien species manage to flourish in their new environments, and reproduce and maintain populations without human assistance. These are termed naturalised species. If naturalised species are also able to spread over considerable distances into new, undisturbed, natural areas and replace the indigenous species, they are regarded as invasive alien species.

The majority of invasive alien species are introduced intentionally. For example they are brought in as crops, pets or for forestry and as ornamental garden plants. Alien species may also arrive indirectly with fodder, as stowaways on ships (rats) or by adhering to animals, humans or vehicles (plant seeds).

The scary thing about invasive alien species is that although only a small percentage of these alien species will become invasive, their impacts are immense, insidious and usually irreversible. Freed from their natural enemies (most often specialised insects and diseases which occur in their native habitat and inhibit them from growing too prolifically), they have the ability to transform the structure and species composition of eco-systems by replacing or excluding indigenous species by outcompeting them for resources. Invasive alien species can also change the functioning of ecosystems. For example invasive plants can alter the fire regime, nutrient cycling and hydrology in native ecosystems. Thus it is no wonder that invasive alien species are regarded as the second greatest threat to biological diversity globally, after habitat fragmentation. A harsh reality concerning the problem of invasive alien species is that it becomes far more expensive to control invasions the longer they are left, and the chances of controlling them effectively diminishes simultaneously over time. Already there are numerous cases around the world, such as in New Zealand and the Island of St Helena off Africa, where the infestations of alien species have caused irreversible damage and it is no longer feasible to restore the situation.

The bad news is that during our wonderings in southern Tanzania we saw several alien species that are known to be invasive elsewhere. The majority of these were observed along rivers near settlements and in towns and villages, where they were used as ornamental plants in gardens or used to create hedges. These included species such as Giant Sensitive Plant *Mimosa pigra*, Lantana *Lantana camara*, Jacaranda *Jacaranda mimosifolia*, Seringa *Melia azedarach*, Pricky Pear *Opuntia sp.*, Pine Tree *Pinus sp.*, Gum Tree *Eucahytus sp.*, Yellow Oleander *Theveta peruviana* and Water Lettuce *Pistia stratiotes* (an aquatic weed spotted in the mighty Ruvuma River). These species have caused extensive problems in other countries

because of their invasiveness, potential for spread, and economic and environmental impacts. Two of these species (*Mimosa pigra* and *Lantana camara*), are even listed on the global list of the 100 worst Invasive Alien Species!!!

One of the problems we noticed in southern Tanzania, which applies to many places elsewhere in the country as well, is that towns and villages are often dispersed within natural areas. For example within the Selous-Niassa Wildlife Protection Corridor there are 29 villages scattered within it, and thus these villages provide the perfect vector sites, for these nasty invasive alien species to multiply and expand in to the surrounding natural areas. In the cases of most of the invasive alien species used by people there are viable alternatives in the form of more benign species which could be used instead, without threatening the natural vegetation, the grazing potential of the land (including for livestock) and/or the agricultural productivity of the land zoned for growing much needed crops.

The good news, however, is that we think that it is not too late. Invasive species tend to follow what is referred to as a "long fuse big bang" population growth curve. They persist at low numbers for many years, slowly increasing and then suddenly their population literally explodes. From our casual observation during our recent travels in southern Tanzania (Songea, Namtumbo, Tunduru and Ruvuma River area), it appeared as if the invasive alien plant numbers are still at a relatively low level. However, the situation may prove very different after an extensive survey, and elsewhere in Tanzania.

The challenge facing Tanzania is how to respond to known invasive alien species and to new introductions of alien species that could potentially become invasive. Some initiatives are already in process, for example in the East Usambara Mountains, Ngorongoro and Serengeti National Park, the invasive alien plants problem is being tackled, and similarly in Dar es Salaam measures to reduce Indian House Crow numbers have been instituted. However, these are all relatively small scale and a more intensive national strategy and action plan is needed. Tanzania needs to develop systems for evaluating the risks and benefits associated with alien species, and for deciding when to use them and when to prevent their introduction or eradicate them. This entails considering the economic, developmental, environmental and human well-being costs-and-benefits, and recognizing the close relationship between these sectors. When species are identified as a threat, appropriate responses are also needed. These need to include establishing techniques and a programme for their eradication, as well as for controlling and monitoring their introduction.

One way to tackle the problem may be to set-up an initiative similar to what is being done in South Africa, where the fight against invasive alien species has been integrated around poverty relief initiatives. National, provincial and conservation agencies have implemented programmes that employ thousands of people to clear alien vegetation every day, with the emphasis to recruit women (60%), youth (20%) and disabled (5%) from the most marginalized sectors of society and who would otherwise have been jobless. This creates an enabling environment for skills training and community upliftment. To date these programmes have cleared well over a one million hectares of invasive alien plants and in so doing have provided jobs and training to over 20 000 people per year. Tanzania could duplicate the principles of this programme and improve on it, for instance by adopting a more holistic 'land care' approach that would include proper rehabilitation after clearing the targeted plants.

We therefore urge Tanzania and its relevant Ministries, NGO's and other groups to take immediate action and start addressing the invasive alien species problem in its country, before it becomes too costly and late!