



MIXED BLESSING: Woodchoppers harvest pines in Tokai forest. Pine trees are crucial contributors to South Africa's forestry industry, but also cause harm when they spread from plantations to invade water catchment areas or nature reserves, says the writer. PICTURE LULAMA ZENZILE

Invasive species threaten our national biodiversity

Action to improve understanding and management of the impact of foreign flora and fauna is more important than ever

ALONG with habitat destruction, over-exploitation of species, climate change and pollution, invasive species are currently regarded as one of the five major causes of biodiversity loss.

Very few ecosystems anywhere on Earth have been spared their effects.

With the dawn of the Age of Discovery and European colonialism, and the technological innovations associated with these events, human business and agricultural activities generated the widespread invasions that now threaten the biodiversity of our planet.

The ways that humans use and move species around within new regions determines whether, and to what extent, such species are likely to spread.

For example, widespread planting of alien plants in gardens creates multiple "launch sites" and exposes many habitats to potential invasion.

Invasions have become so widespread and extensive that it is difficult to manage them all comprehensively.

Until recently, most attempts to do so have sought to deal mainly with the symptom of the problem – the spread of alien species.

Although eradication (the total elimination of an alien species from a given region) has been successful in some cases, most attempts have failed because the alien species is already too widespread and abundant to make its total removal possible.

Therefore in many cases, eradication is not the end goal of invasive species management; rather the aim is to reduce the distribution and abundance of invading species to reduce their negative impacts and to protect assets threatened by the invaders.

This is also the goal of the national Working for Water programme administered by the Department of Environmental Affairs.

Launched in 1995, this conservation initiative seeks to reduce the density and distribution of many very widespread invasive plants.

Managing invasive species and limiting their negative effect is not easy because different stakeholders have contrasting views in this regard.

Also, conflicts of interest upset and complicate

Dave Richardson

many conservation efforts with a substantial proportion of conservation budgets being spent on addressing or avoiding such conflicts.

There are many examples of such conflicts in South Africa.

These include plant species that have been introduced for food, fibre, ornamentation, or for many other purposes but which now run rampant as invaders of our natural ecosystems.

For example, pine trees are crucial contributors to South Africa's forestry industry, but also cause harm when they spread from plantations to invade water catchment areas or nature reserves.

The same applies to animal species introduced for aquaculture or in the pet trade.

Authorities battle to come up with strategies to manage invasive birds, fish and mammals that some people want to have in parts of the environment.

Attempts to manage invasive animals frequently encounter problems with animals-rights activists, as was the case in South Africa recently for Himalayan tahr and mallard ducks.

Despite the fact that both species have negative effects on native biodiversity, some stakeholders maintain that such impacts do not justify efforts to limit their numbers or to eradicate them.

This shows that in many cases, such invasive

species are still viewed as beneficial in at least parts of areas where they are invasive, and by some sectors of society.

So how can we manage invasive species in ways that also take seriously the concerns of various stakeholders?

The ideal outcome would be for all parties to agree on win-win solutions, where the species in question can still deliver benefits but not cause harm.

The road to such solutions involves open discussions between all stakeholders and, inevitably, trade-offs and compromises.

While resolving such issues will not be easy, biologists, ecologists, epidemiologists, ethicists, and philosophers, among others, should work together to devise cost-effective management plans and to solve problems associated with biological invasions.

Also, researchers need to understand the impacts of invasive species, as well as the perceptions of different stakeholders about these species.

It is clear that effective management of biological invasions requires a multi-faceted and multi-pronged approach.

Insights from different disciplines are needed to prevent the introduction of high-risk species; to enable effective management of emerging invasions (before they become widespread and have major impacts); to deal with invaders that are already too widespread to eradicate; and to manage widespread invaders and heavily invaded ecosystems.

In all this, we need to realise that the complexity of managing invasive species is increasing rapidly as more species become invasive, as invasive species affect more ecosystems, and as more stakeholders are affected.

It's fair to say that the importance of understanding, controlling and using invasive species to our advantage and to protect South Africa's biodiversity has never been higher.

● *Dave Richardson is the director of the DST-NRF Centre of Excellence for Invasion Biology and a distinguished professor at the Department of Botany and Zoology at Stellenbosch University. This is an abridged version of an article that appeared in Quest Magazine.*

“
ERADICATION IS NOT THE
END GOAL OF INVASIVE
SPECIES MANAGEMENT,
RATHER THE AIM IS TO
REDUCE THEIR NEGATIVE
IMPACTS AND PROTECT
ASSETS UNDER THREAT