

# Managing invasions before they become widespread

**John Wilson** and **Sarah Davies** discuss the challenges.



A) A small nest of the European paper wasp (*Polistes dominula*). The wasps have a painful sting, and frequently nest in people's houses. This invasion is causing havoc across the northern suburbs of Cape Town and in Stellenbosch, and the wasps are expanding their range rapidly. B) Two specialised wasp control teams have been established in Cape Town focusing on the removal of European paper wasp nests. In their first season they removed over 6 000 nests from private residences across the northern suburbs. Residents requiring assistance with wasp removal are urged to report a sighting on the City of Cape Town's Spotter Network, or send an email to [invasive.species@capetown.gov.za](mailto:invasive.species@capetown.gov.za). It is still too early to tell whether we can eradicate this species from South Africa, but immediate action can stop them becoming a permanent and painful fixture of South African summers. Image: Ulrike Irlsch, City of Cape Town (top: wasp nest) and Ntsikelelo Baba (bottom: wasp control team)

Invasive species can be managed in many different ways, but of course if we can prevent species being introduced, then there will be no invasions. Prevention can be achieved by banning imports of certain species, or ensuring that ships, cargo and passengers are inspected and cleaned before they arrive. Using laws and regulations in this way does, however, come at a cost to personal freedom. There has to be a good reason why someone is not allowed to keep a particular species of animal as a pet or grow a particular crop. Therefore for prevention to be effective, detailed scientific evidence is needed to support a decision to ban a species, and the risks posed must be publicised so that business owners and travellers know what to look for and why they should be careful. But even if regulations are based on sound evidence, are well publicised, and are respected, accidents will happen. Preventing future invasive species at the border is sometimes simply impractical or too costly, and of course it will not stop species that are already in the country from invading. Therefore, South Africa set up a national invasive alien vegetation clearing programme, the Working for Water Programme, which has been very successful in creating jobs removing invasive trees from water catchments (thereby protecting and restoring our precious water resources). The focus of the Working for Water Programme has naturally been on tackling existing problems. But there are many potential future invasive species out there. In 2010, South Africa had about 8 750 introduced plant species. Out of these, 660 were recorded as naturalised and 198 were listed as invasive in the National Environmental Management: Biodiversity Act. Only 64 were being actively controlled or managed in some way by Working for Water. Most introduced plant species will never cause significant problems, but even if a small fraction does, the costs to the country will be massive. This is why it is important to try to deal with invasions before they become widespread.

## Contingency planning

One of the most important elements in the pro-active management of biological invasions is contingency planning. This involves setting out clear plans and strategies that are to be implemented when a particular event occurs. For example, all the major ports in South Africa have an oil-spill contingency plan so that as soon as a spill occurs, the plan goes into action to stop the flow of oil, contain the spread and begin cleaning it up. In the same way, contingency plans can be made for invasive organisms. Rather than waiting until an invasive species is widespread and causing massive impacts before management starts, a management programme (based on the contingency plans) can be immediately implemented once a species is detected in the country. Early Detection and Rapid Response (EDRR) is part of this process. Resources are allocated to detecting and identifying particular species or





problems before they become widespread. This can be done by people who are specially trained to look for particular invaders, or by engaging with the wider public through publicity campaigns and hot-lines like iSpot, where the public is involved in reporting and learning about new species they see growing or living around them (<http://www.ispotnature.org/communities/southern-africa>). The 'rapid response' part of EDRR involves having enough skilled people and resources to immediately clear, capture or contain the alien invasive organisms once they have been detected. For a South African example see the City of Cape Town's EDRR unit <http://www.capetowninvasives.org.za/edrr>.

In cases where a species has a restricted distribution it might be possible to clear or remove every single individual (including all seeds and/or eggs) from South Africa. If we can prevent such species from being introduced again in future, i.e. eradicate them, then there will be one less invasive species to worry about. A good example of eradication is the removal of feral cats from South Africa's Marion Island (Marion Island is part of the Prince Edward Islands group and lies 1 400 km south of Port Elizabeth in the Southern Ocean). For many other examples of eradication, go to <http://diise.islandconservation.org/>.

### Detecting new invasions

A lot of work and money is needed to detect and document new invasions, provide reliable assessments of species already in the country or that might be introduced, and coordinate management between the various people involved. To achieve this, the South African National Biodiversity Institute (SANBI), through funding from the Department of Environmental Affairs, set up an Invasive Species Programme in 2008 (see <http://www.sanbi.org/biodiversity-science/state-biodiversity/biodiversity-monitoring-assessment/invasive-aliens-early-det>, for more details read <http://dx.doi.org/10.1590/sajs.2013/20120111>). The aim of the Invasive Species Programme is to make

Kudzu vine (*Pueraria montana*), the light green plant with the large leaves shown here growing over and covering several trees and bushes in Mpumalanga, is considered one of the worst invasive species in the USA. It is originally from Asia and was introduced to South Africa in the 1920s to a single farm. Thankfully, it hasn't yet spread widely and is currently restricted to a few small populations in a couple of provinces, but it is starting to move. Kudzu vine poses a major threat to South Africa's biodiversity and infrastructure, and as such, it has been declared a national eradication target. It will take time and persistence to remove all the plants, but SANBI's Invasive Species Programme is committed to ensuring that the on-going environmental devastation caused by kudzu vine in the southern states of the USA is not replicated in southern Africa.

Image: Dr Sijrk Geerts, Cape Peninsula University of Technology

sure that we understand and manage not just the current widespread invaders but also species that might be future threats. If we can stop the next Port Jackson willow or lantana before they become widespread then we will have made a major impact. And if we can be persistent and consistent enough to eradicate such species from South Africa, then we will have permanently reduced the size of the future invasion problem.

In summary, while much can be done to prevent new introductions, it is impossible to stop all invasions from happening, and many future invaders have probably already been introduced. But if we are pro-active in managing species before they become widespread we can limit the next wave of invasions. The future might not be invasive free, but it is certainly looking much brighter than the past! **Q**

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