Invasive Alien Species in Protected Areas: Management - There is always SOMETHING you can do

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Invasive Alien Species

Invasive Alien Species[1] (IAS) are a major threat to biological diversity on a global scale. The Convention on Biological Diversity (CBD) recognises the importance of this global issue and calls on contracting parties to: *"prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats and species"* Article 8 (h)). Alien invasive species are found in all taxonomic groups: they include introduced viruses, fungi, algae, mosses, ferns, higher plants, invertebrates, fish, amphibians, reptiles, birds and mammals. They have invaded and affected native biota in virtually every ecosystem type on earth. The ecological cost includes the loss of native species and ecosystems, ecosystem services and livelihoods. No matter where a protected are is, or what type of protected area is involved, it is only a matter of time until IAS will be a management issue that needs to be addressed.

Basic principles of IAS management: precaution, prevention, fighting back

Many, if not most, alien species will not become invasive. However, where an alien is invasive, the impacts to biodiversity can be direct, indirect, cumulative and/or complex. IAS are a form of biological pollution. Unlike other pollution, however, they are not diluted in time but, on the contrary, expand in numbers, density and geographic spread - and often exponentially. Impacts from alien species on biodiversity are wide-ranging and insidious. Two conclusions can be reached from this:

- Prevention of introduction[2] is the preferred option
- The precautionary[3] approach/principle should be used throughout, when dealing with invasive alien species issues

Prevention of introduction is the first and most cost-effective option, from the point of view of environmental costs as well as monetary costs (Wittenberg et al. 2001, IUCN 2000); This lesson has been learned the hard way in several cases of highly destructive and costly invasive organisms such a the brown tree snake in Guam, water hyacinth in Africa and elsewhere or possum in New Zealand (Clout & Lowe 2000, Clout 1999).

The second line of defence against biological invasion is the early detection of an introduced potentially invasive alien species, allowing for rapid response (e.g. eradication before numbers have become too big, or the area of spread too vast). This is particularly important for Protected Areas: an invasive species may well be present in large numbers in a particular country for instance, but not yet have arrived in some of the more valuable and vulnerable

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[1] In the context of the Convention on Biological Diversity (CBD) :"invasive alien species" means an alien species whose introduction and/or spread threaten biological diversity.

[2] " **Introduction**" means the movement, by human agency, of a species, subspecies, or lower taxon (including any part, gametes or propagule that might survive and subsequently reproduce) outside its natural range (past or present). This movement can be either within a country or between countries. (IUCN 2000)

[3] "**Precaution**" relates to decision making in situations of scientific uncertainty. In the CBD preamble, this is worded as: lack of full scientific certainty shall not be used as a reason to postpone measures to avoid or minimise a threat of significant reduction or loss of biodiversity (for further discussion see e.g. IUCN 2000 b).

areas like protected areas. Surveillance efforts should focus on valuable sites as well as on sites that are vulnerable to be a point of entry – for ecological weeds these would be road ends, rubbish dumps etc. Even if such sites are of relatively "low" conservation value, weeds often appear in them first and then spread from there into areas of high conservation value. Taking action outside area boundaries can hence be a crucial part of protecting the Protected Area itself (DOC 2000).

Even if an invasive alien species has established itself, eradication may still be possible, especially on islands. Where it is ecologically feasible and socially acceptable, eradication should be the preferred option over long-term control, because eradication is usually more cost effective and less risky for the environment than control. However, commitment of resources needs to be assured, as half-baked or unsustained attempts result in certain failure. Methods for eradication have been increasingly numerous and successful, and the size of islands or other areas from which species have been eradicated is constantly growing. Eradication can be a very important tool in turning back the tide of biodiversity loss (Veitch and Clout 2001).

Where eradication is not feasible, long-term control or containment should be considered. Several strategies for control exist, including the use of biological control agents and integrated pest management (Wittenberg and Cock, 2001). The desired outcome of control should be to achieve gains for native biodiversity and/or livelihoods. Like for eradication, there needs to be both management and political commitment to spend the resources required over the long term, or the control attempt will fail. (McNeely *et al* 2001).

Any mitigation needs to be rigorously planned and the ecological implications need to be taken into account. For instance, the removal of a herbivore may trigger the invasion by alien plant species or the removal of a predator may release one of a prey which is itself an invasive species. Preventing such undesirable effects requires a multi-species, ecosystem approach to eradication or control, and by careful planning (Zavaleta 2001).

RAT FACT

In 1989 the kakerori (Rarotonga flycatcher) was one of the world's rarest birds (29 individuals). The Takitimu Conservation Area (Rarotonga, Cook Island) was created by traditional owners (clans) of the area. Clans manage the area and the ship rat (*Rattus rattus*) is controlled. As a result, in 2002 more than 250 birds were alive and well, and the area is a flagship for income generating activities (ecotourism).(Aliens 2003).
Photo: Rod Hay.

Where to start?

Technical help in the management of IAS can be found for example in the Global Invasive Species Database (*www.issg.org/database*), which is aimed to be a practical management tool. Several international programmes can provide publications – for instance the Global

Invasive Species Programme (*www.gisp.org*), ISSG, many IUCN Programmes or Regional Offices (*www.issg.org* and *www.IUCN.org*), CABI (*www.cabi.org*)

More "anarchic" and bottoms up support can be found for instance on the listserver Aliens-l (see *www.issg.org* on how to join), where questions can be posed, experiences shared, and where you can find people that are dealing with similar problems ("peers helping peers"). It is email based – and hence available to people with bad internet connections (email is easier than web access).

Awareness building is crucial, and can start at local level: schools, villagers, local communities. This does not require large funds or extensive logistics – one or two people "at the coalface" can make a tremendous difference, especially if they can deal with the Protected Areas IAS issues in an ecological and cultural context (Togia 2003). Awareness of IAS problems leads to support of management, and to helping with prevention and other tasks. For instance – if communities understand the threats posed by IAS, they are usually willing to ensure that their gardens do not become "jump-off" points from where weeds or other invasive species can get into a protected area. It is very important to link the IAS issue with the outcome that will follow from management: for instance it is not a "kill rats" or "kill weeds" programme for the sake of it, but it is a "protect our endemic species" project. Livelihoods benefits can also flow, be it in the form of eco-tourism, or in the form of a renewed understanding of traditional values and uses of biodiversity (e.g. medicinal use of plants, carving,…). (Aliens 2002, 2003)

Conclusions

- Sooner or later ANY Protected Area will have to face Invasive alien species as a management issue.
- Fighting back is possible – but often this is not well understood
- Prevention of arrival of new alien species is the top priority
- Early detection / rapid response is the second line of defence
- Eradication is the next best option – methods are improving all the time, successful eradications are achieved on large size areas
- Control is a long-term solution if eradication is not possible
- There is great urgency: species extinctions are going on right now and livelihoods are badly affected
- Prevention, eradication and control methods are improving dramatically but often this is not well known
- The aim of IAS management is ecosystem restoration (or protection) and the preservation of livelihoods
- IAS issues must be mainstreamed into Protected Areas management
- There is always something you can do <u>right now</u>

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