

**Additional Resources:**

**Global Invasive Species Database (and Early Warning System):** ISSG has developed a *Global Invasive Species Database (and Early Warning System)*. Key features of this database include its accessibility (it is available on Internet) and ease of use. A simple habitat matching model is used to predict which other global regions are potentially at risk of invasion. These developments are carried out as part of the Global Invasive Species Programme (GISP), coordinated by the Scientific Committee on Problems of the Environment (SCOPE). IUCN, CAB International and UNEP are partners in GISP. The *100 of the World's Worst Invasive Alien Species* list and database is an integrated subset of the *Global Invasive Species Database*.

**Aliens** is the bi-annual newsletter of the Invasive Species Specialist Group (ISSG), a specialist group of the Species Survival Commission (SSC) of the World Conservation Union (IUCN). Its role is to put researchers in contact with each other and to publish information and news of alien invasive species and issues.

**Aliens-I** is a listserver dedicated to invasive species. It allows users to freely seek and share information on alien invasive species and issues, and the threats posed by them to the Earth's biodiversity. To subscribe, look for instructions on the ISSG website.

**IUCN Guidelines:** The *IUCN Guidelines For The Prevention Of Biodiversity Loss Caused By Alien Invasive Species* (As approved by 51<sup>st</sup> Meeting of Council, February 2000) can be obtained from the ISSG office, or <http://iucn.org/themes/ssc/pubs/policy/invasivesEng.htm>

**Websites:** Invasive Species Specialist Group: [www.issg.org](http://www.issg.org)  
Global Invasive Species Database: [www.issg.org/database](http://www.issg.org/database)  
The World Conservation Union: [www.iucn.org](http://www.iucn.org)  
The Global Invasive Species programme: <http://jasper.Stanford.EDU/GISP/>



This booklet is printed as special lift-out in *Aliens 12*. For additional copies or for information about *Aliens*, contact: ISSG office, School of Environmental and Marine Sciences (SEMS), University of Auckland (Tamaki Campus), Private Bag 92019, Auckland, New Zealand Phone: ++64 9 3737 599 x5210, Fax: ++64 9 3737 042, E-mail: [issg@auckland.ac.nz](mailto:issg@auckland.ac.nz)

# 100 OF THE WORLD'S WORST INVASIVE ALIEN SPECIES

## A SELECTION FROM THE GLOBAL INVASIVE SPECIES DATABASE



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# Biological Invasion

**The Invasive Species Specialist Group (ISSG)** is a New Zealand-based specialist group of the Species Survival Commission (SSC) of the World Conservation Union (IUCN). It is chaired by Dr Mick Clout (University of Auckland).

**The goals of ISSG** are to reduce threats to natural ecosystems and the native species they contain - by increasing awareness of alien invasions and of ways to prevent, control or eradicate them.

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**Cover image:** Brown tree snake (*Boiga irregularis*). Photo: Gordon Rodda

What happens when a species is introduced into an ecosystem where it doesn't occur naturally? Are ecosystems flexible and able to cope with change, or can a new arrival have far-reaching repercussions and do permanent damage? Will something special be lost forever? Does it matter?

In the distant past, the earth's mountains and oceans represented formidable natural barriers to all but the hardest of species. Ecosystems evolved in relative isolation. Early human migration saw the first intentional introductions of alien species as our ancestors attempted to satisfy physical and social needs, but the magnitude and frequency of those early introductions were minor compared to those associated with today's extensive global trade and passenger movements.

History is rich with tales of the disastrous outcomes of some intentional introductions such as that of the Nile perch, which resulted in the extinction of more than 200 other fish species. We can avoid repeating such mistakes by learning from history. Yet surprisingly, potentially damaging introductions continue. The ongoing release of the mosquito fish that feature in this brochure, is a good example. Another is the questionable behaviour of some participants in the international garden seed and pet trade.

Careless behaviour leads to unintentional introductions. So-called 'accidents' now account for the majority of successful invasions.

The list of "100 of the World's Worst Invasive Alien Species" in this booklet illustrates the incredible variety of species that have the ability, not just to travel in ingenious ways, but also to establish, thrive and dominate in new places. Today, alien invasion is second only to habitat loss as a cause of species endangerment and extinction.

The genes, species and ecosystems that make up the earth's biological diversity are important because their loss and degradation diminishes nature. Species other than our own have a right to exist and to retain their place in the world. We do not know how to estimate which species are essential to ecosystem functioning, which are redundant, and which will be the next to flourish as the world changes. When we introduce a new species into an ecosystem, the full impact is often not immediately apparent. Invasion by species such as *Miconia calvescens* can change entire habitats, making them unsuitable for the original native community.

Safeguarding the earth's diversity is the best way to maintain our life support system. There is evidence to suggest that the biosphere acts as a self-regulating whole and that diverse systems may be more resilient. Island ecosystems, which have evolved in isolation often have relatively fewer plants, herbivores, carnivores and decomposers to maintain essential processes and are more vulnerable to invasion. On islands around the world species extinction is increasing at an un-

precedented rate. A number of the invasive alien species featured in this booklet are contributing to these losses.

Useful initiatives, which contribute to better management practices and a reduced incidence of biological invasion, are being taken by communities all over the world. Invasive alien species are now a major focus of international conservation concern and the subject of cooperative international efforts, such as the Global Invasive Species Programme (GISP). As awareness grows, people and their communities are able to make informed choices that will have lasting effects on their descendants.

The list of "100 of the World's Worst Invasive Alien Species" that is presented here is designed to enhance awareness of the fascinating complexity, and also the terrible consequences, of invasive alien species. Species were selected for the list according to two criteria: their serious impact on biological diversity and/or human activities, and their illustration of important issues surrounding biological invasion. To ensure the inclusion of a wide variety of examples, only one species from each genus was selected. There are many other invasive alien species, in addition to those on this list of examples. Absence from the list does not imply that a species poses a lesser threat. We hope that, by raising general awareness, the risks of further harmful invasions will be reduced in future.

2; second title should read: "Rosy wolfsnail *Englandina rosea*".  
First sentence in the Caulerpa Seaweed section: delete "in France".  
over; 3d line in paragraph on "Websites" read: "IUCN - the World Conservation [www.iucn.org](http://www.iucn.org)"