



MAURITIAN WILDLIFE FOUNDATION

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Exotic importations threaten our endemic fauna and flora.

The recent articles in the press on the impact of introduced species to Mauritius highlight an issue that has until recently failed to attract sufficient attention. The Mauritian Wildlife Foundation has been monitoring the introduction and spread of introduced species and we are alarmed at the extent of the problem. It is encouraging that the Government is working towards finding a solution and has a number of initiatives in the forthcoming Native Terrestrial Biodiversity and National Parks Bill.

Considering the damage that invasive species may have upon our wildlife, tourism, agriculture and the standard of living we wish to inform Mauritians of these impacts and ask everyone to support an approach where Mauritius follows the examples of New Zealand, Australia, Israel, Canada and the European Union where there are strict controls on the importation of exotic animals and plants.

Highest rate of introductions in our history?

The period since the mid-1990s has seen an accelerated increase in the number of introduced animal species becoming established in Mauritius. If all the species that are currently feral on Mauritius become established we will have been party to the period with the highest rate of introductions in our history.

The view expressed in the press, by some, that many of the species which are commonly kept by pet keepers, and may subsequently escape, have little or no effect upon our ecosystems is wrong. We would like to stress that the biggest threat facing our native wildlife are the impacts of escaped and released species that have been brought into Mauritius for the pet trade, for public display, for aquaculture and for other purposes.

The large investment that has been made by the Mauritian Wildlife Foundation, other NGOs, the Government and many international conservation organisations, over the last four decades to conserve our wildlife is being squandered by the misguided importation, and subsequent release, or escape, of reptiles, birds, fish and other aquatic life, not to mention the importation and “escape” of exotic plants.

The nature of some invasive species is that they may spend many years at low numbers and then show explosive population increases. So the fact that some introduced species have not yet become invasive is no guarantee that they will remain so.

Damaging reptiles

The species that has attracted most recent attention is the Green Iguana. Fortunately it is not to our knowledge established on Mauritius although to judge from the reports of feral animals it is probably only a matter of time. Some have expressed the view that it is not going to do any harm and become invasive since it is a vegetarian. We contest this thought and note that many of the worst invasive species, like rabbits and goats are herbivores. Iguanas are invasive in the Caribbean and where they occur in high numbers they impact upon the tourist industry since many tourists do not like them, and in Puerto Rico they are a threat to aviation when they sunbathe on runways and cause them to be shut down. While the Iguana may not have a big effect on biodiversity it could have an economic impact.

The Giant Madagascar Day Gecko is having a severe impact, and wherever it occurs the number of endemic lizards drop dramatically. This species was introduced with the pet trade in the early 1990s and spread from Baie du Tombeau and is now found over much of Mauritius. The claim that has been made that the species has been here since the 1960s is not supported and there were thorough island wide surveys of lizards in the 1960s and 1970s by the Director of the Mauritius Institute Jean Vinson and his son Jean-Michel and there was no sign of any Giant Madagascar Day Geckos. Baie du Tombeau is also the centre of spread of another day gecko the Gold-dust Gecko. This species has become established in the last five years and is now beginning to spread with populations being reported many miles from the original site.

The fresh water communities are being threatened by the Red-eared Terrapin which is imported into Mauritius in large numbers for the pet trade, and is often found feral. This species is invasive in many countries and is a voracious predator. Recently we have identified a second apparently exotic species of terrapin in our waterways the Chinese Soft-shelled Terrapin.

Rodrigues has also had its reptile introductions including the agama lizard *Calotes versicolor* and Blue-tailed Day Gecko *Phelsuma cepediana* in the mid-1980s and 1990s.

Throughout the tropical regions of the world introduced reptiles are proving to be a growing threat to biodiversity. We urge that the trade in reptiles for the pet market be completely banned since many species have such high invasive and damaging potential. Snakes are a real threat to our biodiversity and we note that there have been several reports of snakes in the port and Pailles in the 1990s and 2000s, including a poisonous cobra and a Reticulated Python *Python reticulatus*.

A proliferation of parrots

The trade in parrots threatens to be particularly damaging. Escaped or released exotic parrots may become invasive and impact upon fruit and vegetable crops. We are alarmed at the increased numbers of feral parrots on Mauritius. There are recent reports of various free-living cockatoos, African Grey Parrots, Lesser Vasa Parrot, lovebirds, Rainbow Lorikeet and conures.

These parrots may also bring diseases that threaten our endemic Echo Parakeet *Psittacula eques*. We know that parrots carry a range of viral diseases that are difficult or impossible to detect by routine disease screening. Our wild Echo Parakeets are being affected by Psittacine Beak and Feather Disease that kills many of the young, and detailed studies at the University of Kent, UK, have suggested that this disease is a strain introduced to Mauritius with captive parrots from South Africa in the 1950s. We have also discovered another strain that exists in captive parrots that was introduced more recently perhaps in the last decade from South-east Asia.

There are many other diseases that can be imported with parrots and the only safe policy is to stop the trade since screening methods are not sensitive enough to detect all the potentially damaging viral diseases.

There are about 370 species of parrots and the invasive potential of most has never been tested. Species that are not known to be invasive may become so when introduced to a new country because of the absence of its natural predators, competitors and diseases.

The import of parrots for display and the pet trade is quite unnecessary. Bird keepers should breed from the many species of birds that are already held captive in Mauritius. This would ensure that no diseases could be imported and we would have our own domestic strains of birds to satisfy local demand. Experience from other countries has demonstrated that a ban on the importation of birds, results in subsequent improvements in the care and the development of self-sufficient domestic bred stocks. This has to be the way forward.

Rivers and ponds

Our freshwater systems are poorly known, and have been largely overlooked by conservationists. They have been badly affected by introduced fish, plants and invertebrates that are impacting upon our native and endemic fish, invertebrates and plants. World-wide the aquarium trade has been responsible for spreading invasive aquatic organisms. The Giant Apple Snail first recorded in the wild in 1999 is having a profound economic effect by feeding upon taro and watercress crops and destroying tourist attractions like the famous water lilies in Pamplemousses Botanical Gardens. It will also limit the potential for paddy rice growing in Mauritius. We also have Crayfish and Catfish both introduced to our rivers in the last twenty years. Thankfully, the authorities were swift to destroy piranhas imported for the pet trade in 2000s and we trust the same will be done for recently introduced fresh water rays. Both of these animals, if established, may have made our watercourses unsafe.

Even our islands are not safe

One of the major findings of our studies has been just how vulnerable the islands around Mauritius and Rodrigues are to invasion by a whole range of introduced species. One would have hoped that our island Nature Reserves would be free from recent introductions especially since from the 1970s to 1990s a huge amount of effort went into clearing the most important islands of goats, rats, mice, cats, rabbits and hares.

The Asian House Shrew *Suncus murinus*, which has long been on Mauritius only got to Rodrigues in the late 1990s when it devastated populations of native and endemic invertebrates. From the main island it got to Ile Cocos nature reserve in about 2009. Here on Mauritius the shrew got to Flat Island in 2009/2010 when it caused the complete loss of three species of endemic reptiles from the island amounting to over half a million individuals.

Alarmingly in 2008 the highly poisonous Australian Red-backed Spider was found on Gunner's Quoin, a closed Nature Reserve. It may have got there when visitors from a passing boat from Australia stopped off for a picnic, which is a frequent occurrence, suggesting that closer policing of the islands is necessary.

Recent Invasive Plants

Introduced plants can spend several decades at low levels before they reach numbers when they are no longer controllable. In some cases, an invasive animal helps with their establishment and spread. In Mauritius, the expansion of the Red-whiskered Bulbul *Pycnonotus jocosus* helped the invasion of Ceylon Privet *Ligustrum robustum* and Strawberry (Chinese) Guava *Psidium cattleianum*.

There is a continual problem of plant introductions and not all these are legal. We have recorded the invasion of several plants over the last twenty years although their initial introduction may be older (50 years and more).

Examples include:

Rattlebox *Sesbania punicea* planted as a roadside plant. Invading inland from the highway eg from La Vigie to Rose Belle.

Tibouchina *Tibouchina viminea*, an ornamental plant with beautiful purple blue flowers. Invading in the uplands at Grand Bassin, Petrin, Les Mares and Alexandra Falls.

Eupatorium *Clibadium surinamense*, a nectar producing plant introduced in 1936 as a support for biocontrol of sugar cane pests. Has invaded abandoned agricultural land, some forests, sugar cane fields, river banks, mountains and some areas of the Black River Gorges National Park.

Tipek *Strobilanthes colorata*, an ornamental plant from India was introduced in the late 1950s and has now become an aggressive species in humid forests of Le Pouce, Grand Peak, La Nicoliere, Piton Savanne and the National Park.

Hydrylla verticillata, a small Asian aquatic submerged plant found in rivers and natural pools. It was introduced in 1954 and has now invaded rivers.

What to do?

As a first step we recommend a policy of reverse listing where there is a complete ban on the importation of all exotic plants and animals. Exceptions would cover named domesticated species that it would be safe to import. This measure would be coupled with eradication, where possible, of all recently introduced exotic species now living in the wild.

Incomplete list of animal species introduced and possibly established since the 1990s.

Giant Madagascar Day Gecko *Phelsuma grandis*, originally recorded in the early 1990s at Baie du Tombeau and now widely spread across the island and increasing. Control now impossible.

Gold-dust Day Gecko *Phelsuma laticauda*, established around BaieduTombeau and spreading. Unlikely to be controllable.

Standing's Day Gecko *Phelsuma standingi*, small population introduced in Baie du Tombeau, that may or may not establish.

Mourning Gecko *Lepidodactylus lugubris*, a small population established in the south-east since 2012.

Slender Worm Snake *Typhlops porrectus*, discovered in the 1990s, a species probably introduced many years ago.

Panther Chameleon *Furcifer pardalis*, well established since the 1990s in several locations, it is an effective predator of our endemic geckos and young birds. Unlikely to be controllable.

Green Iguana *Iguana iguana*, highly invasive in the Caribbean. A common pet that is often found feral, likely to establish itself soon if measures are not taken to eradicate it.

Red-eared Terrapin (Slider) *Trachemys scripta elegans*, a highly invasive species that damages freshwater ecosystems. A common pet that is often found feral may already have small breeding populations, urgent control required, and trade halted.

Chinese Soft-shell Turtle *Pelodiscus sinensis*, several recent records of this suggest that we may have a recently established population of this widely traded species.

Egyptian Goose *Alopochen aegyptiacus*, highly invasive in several countries where it impacts upon aviation by feeding on the mown grass next to runways. A small population established in the west of Mauritius, around Cascavelle, from birds released in the 1990s.

Mallard *Anas platyrhynchos*, the most invasive of all the ducks. Several introductions since the 1970s, including introductions in the last ten years. Common in several areas of the island.

White-faced Whistling Duck *Dendrocygna viduata*, a small population established in the west of Mauritius around Cascavelle, from birds released in the 1990s.

Fulvous Whistling Duck *Dendrocygna bicolor*, birds seen in the west of Mauritius since the 2000s may or may not have an established population.

Laughing Dove *Streptopelia senegalensis*, a small population has become established in the west of the island during the 1990s from birds released about 1989 around Cascavelle.

Pheasant *Phasianus colchicus*, several introductions, mainly in the west and south, during the last ten years.

Golden Apple Snail *Pomacea bridgesii*, a very damaging highly invasive species established since about 2000 and likely to increase dramatically and damage freshwater ecosystems and impact negatively upon aquatic plants including those of economic value.

Australian Red-back Spider (Australian Black Widow Spider) *Latrodectus hasselti*, a small population of this highly poisonous spider found on Gunner's Quoin in 2008, may now have been eradicated.

Australian Red-clawed Crayfish *Cherax quadricarinatus*, introduced for aquaculture in the mid-1990s, now invasive in our fresh water systems.

Red Drum (Ombrine) *Sciaenopus ocellatus*, marine fish introduced for aquaculture in the 2000s, and has escaped into our lagoons, potential to become invasive.

Catfish an as yet unidentified species established in small numbers in our rivers since about 2005.

Mauritian Wildlife Foundation 21 May 2013

