

# **Introduced INVASIVE SPECIES - (Vanuatu)**

## **ANIMALS**

### **Preliminary list of invasive animals in Vanuatu**

Early settlers brought in animals (e.g. cattle, pigs, goats, cats, chickens and dogs) for food, pets and hunters for their survivals. Some of the animals were not well managed that they become wild (feral) and become problems. Feral pigs, cattle, goats tramp and graze on forest plants and garden crops that may result in desertification in some areas. Their manure deposits in water cause algal growth that makes water bodies look dirty. Feral and domesticated cats and dogs kill native birds, reptiles and insects, which leads to great loss of native wild life throughout the islands.

**Feral Cattle (*Bos taurus*)** - Originally native to Asia . Present in remote forests and destroys forest ecosystem

**Feral goat (*Capra hircus*)** - Originally native to Asia. Move in groups and destroys large areas of grasslands, scrub and forest.

**Feral pig (*Sus scrofa*)** - Originally native to Europe. Being regarded as the most destructive animal in native forest, by eating forests and uprooting young trees and eating the roots and damaging top soils.

**Dog -feral and domestic (*Canis familiaris*)** - Originally brought from Asia to Pacific by early Polynesians. Kill native birds (land and sea birds) and eat their eggs.

**House cat (*Felis catus*)** - Brought in the 18<sup>th</sup> and 19<sup>th</sup> centuries from Asia. Destroys surface-nesting seabirds by killing the young and adult birds and destroying the eggs.

**Pacific rat (*Rattus exulans*)** - Originated from Indo-Malaysian region. It is the smallest of the tree rats. Eats a wide range of foods including earthworms, centipedes, larvae of some butterflies and moths, ants, beetles, weevils, snails, spiders, lizards and birds. Also, it eats fleshy fruit and other seeds, flower stems, leaves, roots and other plant parts.

**Norway rat (*Rattus norvegicus*)** - Originally from Mongolia, reached the Pacific in the 19<sup>th</sup> century. It is the largest of the three rats. Eat a wide range of food such as eggs, young and adult ground birds and sea birds.

**Ship rat (*Rattus vattus*)** - Originated from India. Reached the Pacific and is also known as the black or roof rat. They are larger than the ship rats. Reached the Pacific islands with early navigators in the 17<sup>th</sup> century. Eat a wide range of food including snails, beetles, spiders, moths, insects, fruits of many plants, prey on eggs and young or adult of forest and sea birds. Identified as responsible for most of the decline of birds in general.

**House mice** - (*Mus musculus*) - Well-known animal, probably originated from Asia or Africa, is among the widespread of all mammals. Eat a variety of seeds, fungi, insects, spiders, lizards and eggs of small birds.

All rat species were accidentally introduced. They are pests to agricultural crops and carriers of diseases.

### **Ants**

- Little red fire ant (*Wasmannia awopunctata*)

A native of tropical America, this little red fire ants was another accidental introduction to Vanuatu from Solomon Islands and is spreading within the islands in the Banks. The ants gives horrible sting to people and cause blindness and even death to larger animals including native birds and invertebrates.

Other introduced ant species in Vanuatu are:

- Big headed ant (*Pheidole megacephala*)
- Long-legged or crazy ant (*Anoplolepis longipes*)

Both ants are thought to be originated from tropical Africa.

**Insects** - Insect pests that are accidentally introduced damages agricultural crops (e.g. rose beetles, fruit flies).

**Fungi, Bacteria and viruses** - There are reports within some islands in Vanuatu of fungal attack on taro and citrus plants. There is recent fungal attack on banana stem reported in New Caledonia. The fungi causes rot at the base of the banana stem and within weeks the plant dies. Fungal attacks on garden crops may affect food production.

**Land snail** - African snail - *Euglandina fulica*. This introduced African snail is a pest to garden crops and is now widespread in Vanuatu.

It's predator snail *Euglandina rosea* was introduced as a biological control however, feeds other native snails including those that are endemic, resulting in loss of native wild life and loss of biodiversity.

- Fish (freshwater)**
- Tilapia (mosquito fish) - (*Oreochromis sp*)
  - Gambusia (*Gambusia sp*)
  - *Poecilia sp*

A number of fishes were introduced for fishery (e.g. Tilapia, Carps) or to control malaria (e.g. mosquito fishes) took over water bodies causing turbidity in water and feed on native fresh water species.

**Green bellied frog** - now widespread throughout the islands and feed on native insects.

## **Birds**

**Indian minor bird** - *Acridothera tristis*. Native to India and S.E. Asia. Established in Vanuatu including Fiji, Cook Islands, Tubuai, Society Island, Marquesas Island, Solomon Islands, New Caledonia, Wallis and Futuna and Samoa. In Vanuatu, it is most widespread within the Southern and Central Islands. They take over native bird areas by destroying their nests and eggs.

## **PLANTS**

### **Preliminary list of invasive plants in Vanuatu**

Many others exist, but the species mentioned or listed below are considered to be significant threats to native vegetation and conservation values in Vanuatu.

- **Vines**

- Mile-a-minute (*Mikania*)
- Passion-fruit species (*Passiflora*)
- Big leaf - American rope (*Merremia*)

Mile-a-minute and big leaf vines were brought into Vanuatu during World War and are believed to be originated from South America. They are now widespread and formed major vegetation throughout the islands. All these vines suppress regrowth of tree forest and cause loss of wildlife.

- **Aquatic plants**

- Water hyacinth (*Eichhornia*)
- *Salvania sp*

A number of introduced water plants were used in home decorations. However those seen in the wild covered water bodies, reduce stream flow and disrupt water supplies to communities and causing turbidity in water (e.g. Blue hole on Santo).

- **Grasses for Improved pastures**

- nil grass
- elephant grass (*Pennisetum*)
- cotton flower grass

A variety of grasses (e.g. nil grass, elephant grass, cotton flower grass) were introduced to improve cattle pasture have grown out of cattle areas into gardens, playgrounds and residential areas that they become undesirable weeds.

- **Trees and shrubs**

- acacias
- African Tulip tree (*Spathodea*)
- wild tamarind (or lead) tree (*Leucaena*)
- guava species (*Psidium*)
- miconia (velvet tree)
- red sandalwood tree (*Adenanthera*)
- Koster's curse (*Clidemia*)
- *Lantana*
- Giant sensitive plant (*Mimosa*)
- Cordia (*Cordia allidora*)
- Elephant grass (*Panicum maximum*)
- Agriculture rope (*Cyrtolobos sp.*)

Some trees and shrubs introduced for forestry and agricultural purposes (e.g. wild peanut, wild guava, prickly pica plant, cassis, cordia) are now taking up agricultural areas and reduce native wild life. Some domesticated home gardens plants, such as orchids, were introduced and are potential invasive species.

Scientific name (Family name)	Common name(s)	Habitat/Life form	Habitat (Locations)
----------------------------------	----------------	-------------------	------------------------

**Dominant Invaders**

1. <i>Cordia allidora</i> ( <i>Boraginaceae</i> )	Ecuador Laurel, Salm wood	tree	
2. <i>Eichhornia crassipes</i> ( <i>Pontederiaceae</i> )	Water hyacinth	aquatic herb	
3. <i>Heteropogon contortus</i> ( <i>Gramineae</i> )		grass	
4. <i>Imperata cylindrica</i> ( <i>Gramineae</i> )	Cogon/Cotton grass	grass	
5. <i>Lantana camara</i> ( <i>Verbenaceae</i> )	Lantana	thorny shrub	
6. <i>Leucaena leucocephala</i>	Wild tamarind	small tree	

	<i>(Leguminosae)</i>	Lead tree		
7.	<i>Merremia peltata</i> <i>(Convolvulaceae)</i>	Merremia	vine	
8.	<i>Mikania micrantha</i> <i>(Compositae)</i>	Mile-a-minute	vine	
9.	<i>Panicum maximum</i> <i>(Gramineae)</i>	Guinea grass	grass	
10.	<i>Paspalum conjugatum</i> <i>(Gramineae)</i>	T-grass Sour paspalum	grass	forest margins
11.	<i>Salvinia molesta</i> <i>(Salviniaceae)</i>	Salvinia, Water fern Kariba weed	aquatic fern	forest margins

---

### **Moderate invaders**

1.	<i>Acacia farnesiana</i> <i>(Leguminosae)</i>	Ellington's curse, Cassie	shrub	
2.	<i>Furcraea foetida</i> <i>(Agavaceae)</i>	Mauritian hemp	succulent	dry lowlands
3.	<i>Psidium guajava</i> <i>(Myrtaceae)</i>	Common guava	tree	
4.	<i>Senna (Cassia) tora</i> <i>(Leguminosae)</i>	Foetid cassia, Peanut weed	tree	
5.	<i>Spathodea campanulata</i> <i>(Bignoniaceae)</i>	African tulip tree	large tree	
6.	<i>Tithonia diversifolia</i> <i>(Compositae)</i>	Mexican sunflower, Tree marigold	herb	

### **Potential invaders**

1.	<i>Clidemia hirta</i> <i>(Melastomataceae)</i>	Koster's curse	shrub	
----	---	----------------	-------	--

## **Other invasive species of significant threat to the environment in the Pacific region**

**Rabbit** - (*Oryctolagus cuniculus*) - Originated from Spain or Portugal. Reached the Pacific in the 18<sup>th</sup> and 19<sup>th</sup> centuries. Rabbits eat plants, cats, lizards and birds. They are also responsible for the reduction of most the plant species.

**Small Indian Mongoose** - (*Herpestes javanicus*) - Reached Fiji in 1883, and its distribution is still restricted to Fiji. Introduced there with intention of controlling rats in sugar-cane fields. Can live in both dry and wet conditions including forest, scrub, grassland and gardens. Eat birds, snakes, lizards, moths, grasshoppers, beetles, wasps, flies and spiders. Also responsible for spreading straw berry guava and other plants by eating their fruits and thus dispersing their seeds. Also responsible for reduction of bird species on some islands.

### **Prawns**

At least five species of fresh water crayfish or prawn-like species have been introduced to Pacific island freshwater systems.

- Malaysian Prawn
- Giant freshwater prawn

Both giant Malaysian prawn and the giant freshwater prawn have been introduced as aquaculture species. These and other species may escape into freshwater habitats through deliberate introductions, and this group of animals is known to carry diseases and parasites which are foreign to the native species and so may be devastating.

**Cane toad** (*Bufo marinus*) - Native to Mexico and Central America. Introduced to Hawaii, Fiji, Samoa, Guam, and Northern Marianas, and the Caroline and Solomon Islands groups. Early attempts to use biological control against various beetle pests of sugarcane, banana and other cash crops.

**Brown tree snake** (*Boiga irregularis*) - Native to Australia, Indonesia, New Guinea and Solomon Islands, but accidentally introduced to Guam, Mariana Islands in the 1940s. Resulting in an ecological devastation in Guam. A decline or extinction of 10 of the 11 species of native forest birds previously present. Also, causing an extinction of three species of skink and two species of gecko. The brown tree snake now has a high population density.

### **Other introduced ant species**

- Argentine ant (*Linepitherna humile*)
- Fire ant
- *Solenopsis papuana*
- Glaber ant

**Avian malaria mosquito; Southernhouse mosquito** (*Culex quinquefasciatus*)

This type of mosquito is the transmit agent of avian malaria on bird species. This mosquito is widespread throughout the Pacific region and is one of the leading causes of the reduction of bird species in some of the Pacific Island countries.

**Coconut rhinoceros beetle** (*Oryctes rhinoceros*) - A native to Asia (Southern India, Sri Lanka, Myanmar, Thailand, Malaysia, China, Taiwan and Phillipines). It has spreaded to American Samoa, Palau, Fiji, Papua new Guinea, Samoa, Tokelau, Tonga, and Wallis and Futuna.. One of the most serious pests of the coconut palm, including other native palm trees such as pandanus. The larvae of this beetle develop in dead palm trunks, logs and stumps. Adults cause damage by boring into the crowns of major palms and often killing them.

**Black twig borer** (*Xylosandrus compactus*) - Thought to be originated in Asia. Has spread to Hawaii, tropical Africa, Southern India, Indonesia, Japan, Malaysia, Mauritius, Sri Lanka, USA and Vietnam. Attacks healthy plants and kills them. It is potentially a very serious pest to native forest trees. It has now spreaded to American Samoa, Fiji, Papua New Guinea and Solomon Islands.