

## **Aldabra Atoll: A guide to potentially invasive alien plants**



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## INTRODUCTION AND HOW TO USE THIS GUIDE

This document contains a list of invasive alien plants that are either

1. already present at a few sites on Aldabra, or
2. present on nearby Assumption Island, or
3. present elsewhere in the Seychelles,

and have the potential to be highly invasive on Aldabra or more widely across the atoll. Table 1 summarises the known distribution in the Seychelles for each listed species. Following this table, the guide then provides a brief description of each species, which are grouped by growth form, and also describes their distribution in the Seychelles and likely impacts on Aldabra.

This document is an initial identification guide and is not exhaustive. As introduced plants on Mahé number more than a thousand, including garden ornamental plants, it is not feasible to list all the possible species that could be accidentally transported to Aldabra via seeds or plant fragments and to predict their potential impacts. Therefore this guide contains plant species that are common in the Seychelles, are known to be invasive and are easily dispersed via their seeds or plant fragments so thus have the potential to become established on Aldabra if introduced. **It should not replace the need to urgently seek expert advice to confirm the identity of any possible invasive plant species or on how to deal with an incursion.**

For invasive plants already present on Aldabra, care should be taken to prevent further distribution to other places on the atoll due to their potential impacts on native plants and the increased difficulty of eradication if they become established at new sites. Invasive plants on Assumption are likely to also grow invasively on Aldabra due to their similar climate, terrain and substrate between these adjacent islands. Therefore particular care needs to be given to checking people and supplies transported from Assumption. Care should also be taken with cruise ships and flights as there are many opportunities for seeds or small plant fragments to be transported directly to Aldabra from Assumption or elsewhere in the Indian Ocean.

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## WHERE TO GET HELP

For help or confirmation of identification, the *Plant Conservation Action Group*, which manages the Seychelles National Herbarium and contains a number of experienced botanists, should be contacted in the first instance ([pca.seychelles@gmail.com](mailto:pca.seychelles@gmail.com)).

More detailed information for some species can be found in the book '*Invasive Alien Species in Seychelles: Why and how to eliminate them? Identification and management of priority species*' by Rocamora and Henriette (2015), and in '*Flora of the Seychelles: A field guide to selected plants*' by Hansen and Laboudallon (2013).

## SPECIES DISTRIBUTION SUMMARY

Table 1. A summary of the distribution in the Seychelles, as best currently known, of the invasive or potentially invasive alien plants listed in this guide. Further details are provided in the species profiles in this guide. Assomp. = Assumption Island. Outer islands = outer islands of the Seychelles other than Aldabra and Assumption. Inner islands = Mahé and other inner islands of the Seychelles. A '?' indicates species may no longer be present.

Species name	Common name	Present on			
		Aldabra	Assomp.	Outer islands	Inner islands
<i>Catharanthus roseus</i>	Madagascar periwinkle	✓	✓	✓	✓
<i>Stachytarpheta jamaicensis</i>	Rat's tail	✓	✓	✓	✓
<i>Turnera ulmifolia</i>	Yellow alder	✓	✓	✓	✓
<i>Amaranthus dubius</i>	Amaranth	✓?	✓	✓	✓
<i>Passiflora suberosa</i>	Wild passionfruit	✓	✓	✓	✓
<i>Ipomoea obscura</i>	Obscure morning glory	✓?		✓	✓
<i>Agave sisalana</i>	Sisal		✓	✓	✓
<i>Leucaena leucocephala</i>	Wild tamarind		✓	✓	✓
<i>Carica papaya</i>	Pawpaw/papaya		✓	✓	✓
<i>Gossypium hirsutum</i>	Cotton		✓	✓	✓
<i>Ricinus communis</i>	Castor oil plant		✓	✓	✓
<i>Tribulus cistoides</i>	Puncture vine		✓	✓	
<i>Passiflora foetida</i>	Stinking passion flower		✓		✓
<i>Alternanthera pungens</i>	Khaki weed		✓		
<i>Tabebuia pallida</i>	White cedar			✓	✓
<i>Lantana camara</i>	Lantana			✓	✓
<i>Kalanchoe pinnata</i>	Cathedral bells			✓	✓
<i>Achyranthes aspera var. aspera</i>	Devil's horsewhip			✓	✓
<i>Adenanthera pavonina</i>	Red sandalwood			✓	✓
<i>Desmodium incanum</i>	Creeping beggarweed				✓
<i>Chrysobalanus icaco</i>	Coco plum				✓
<i>Clidemia hirta</i>	Koster's curse				✓
<i>Alstonia macrophylla</i>	Devil tree				✓

## TREES

### DEVIL TREE (*ALSTONIA MACROPHYLLA*)

**French/Creole names:** bois juane/bwa zonn



**Description:** Fast-growing tree, up to 30m tall. Wind-dispersed seeds produced year-round. Species can reproduce from seeds, vegetative growth or by re-sprouting. Can grow on poor soils and is drought tolerant.

**Range:** On Mahé and most inner islands.

**Impacts:** Reproduces very rapidly due to massive seed production. Invades sites and dominates forests. Due to its height and high recruitment rate it can over-top native forest and shade it out.

### RED SANDALWOOD/CORAL WOOD (*ADENANTHERA PAVONINA*)

**French/Creole names:** bois de condor, bois noir de bourbon/lagati



**Description:** Fast-growing medium-sized tree (up to 20m) with compound leaves. Obvious seed pods with bright red seeds. Grows on a variety of soil types, including limestone and saline. Well adapted to hot humid climates.

**Range:** On almost all inner islands including Mahé. In the outer islands present on Alphonse, Coëtivy, D'Arros and Poivre but not the Aldabra group.

**Impacts:** It rapidly invades undisturbed native forest and forms open thickets. Overtops adjacent trees.

**Notes:** It is not fully clear if this species is native or introduced to the Seychelles inner islands. Is being eradicated from the Vallée de Mai.

## WHITE CEDAR (*TABEBUIA PALLIDA*)

**French/Creole names:** calice du pape/kalis dipap



**Description:** Fast-growing tall deciduous tree (up to 25m). Flowers produce a lot of nectar which is attractive to native pollinators such as sunbirds and insects. It can tolerate a wide variety of soils, including dry or infertile soils. It produces large amounts of winged seeds.

**Range:** Present on almost all the inner islands. On the outer islands, present on Coëtivy, Desroches, D'Arros, Alphonse, Farquhar and Astove.

**Impacts:** Shades out shorter native trees and shrubs.

**Notes:** White cedar seedlings were found in construction materials on Aldabra in 2014.

## WILD TAMARIND (*LEUCAENA LEUCOCEPHALA*)

**French/Creole names:** cassie/kasi



**Description:** Small tree or shrub up to 5m tall. Distinctive 'puffball' flowers and prolific numbers of large seed pods. Will readily establish in dry soils and especially in open, coastal or disturbed sites.

**Range:** Present on Assomption. Present widely throughout other Seychelles islands.

**Impacts:** Forms dense stands or thickets and displaces native plants. Seeds dispersed by rats and birds. Will coppice when cut back. Considered one of the 100 worst invasive species by the Invasive Species Specialist Group.

## PAWPAW/PAPAYA (*CARICA PAPAYA*)

**French/Creole names:** papayer/papay



**Description:** Tall (2-10m), fleshy, palm-like, tree with large fruits hanging off the top of the trunk just below the leaves. Fruit edible and cultivated on many tropical islands. Can grow in dry soils. Seeds germinate freely. Highly invasive in many arid islands.

**Range:** Present on Assomption. Found on many islands on the inner and outer Seychelles. Previously grown on Aldabra but no longer present.

**Impacts:** Easily established via seeds. Can quickly form dense stands, crowding and shading native trees.

## SHRUBS

### COCOPLUM (*CHRYSOBALANUS ICACO*)

**French/Creole names:** prune de france/prin de frans



**Description:** Evergreen shrub or small tree 1-5m tall. It is tolerant of nutrient poor and dry soils.

**Range:** On Mahé and most inner islands.

**Impacts:** Forms thickets that prevent the growth of native plants and suppresses regeneration.

## MADAGASCAR PERIWINKLE (*CATHARANTHUS ROSEUS*)

**French/Creole names:** roz anmer



**Description:** A long-lived perennial shrubby plant up to 1m tall. This species prefers drier sandy soils and coastal habitats such as sand dunes and cliff edges. It has obvious flowers, pollinated by butterflies and moths. Seeds are spread by ants, wind and water.

**Present:** Present on Aldabra, at the Research Station, Old Settlement and Back path, Malabar and Grande Terre. Care should be taken to not introduce this species to other Aldabra islands. Present on Assomption and most other islands of the Seychelles.

**Impacts:** Forms thick ground cover and crowds out low-growing native plants.

## RAT'S TAIL (*STACHYTARPHETA JAMAICENSIS*)

**French/Creole names:** queue de rat/zepi ble



**Description:** Rat's tail is a perennial woody herb with a strong tap root, up to 2m tall. It thrives in moist soils, but can survive seasonal drought and can grow on a wide range of soil types. It grows well in semi-shade to full sun. Common on disturbed sites and around buildings. It reproduces many seeds presented on a tall spike. Seeds are viable for at least 6 years in soil.

**Range:** Present on Aldabra, at Picard, Malabar and Grande Terre at Anse Mais and the along the two Dunes transects. Care needs to be taken to not distribute this species to other Aldabra islands. Also present on Assomption and most other Seychelles islands.

**Impacts:** Invasive species that can form thickets, crowding out native plants.



## COTTON (*GOSSYPIUM HIRSUTUM*)

**French/Creole names:** coton/koton



**Description:** Small shrub up to 2m tall. Obvious white flowers leading to fluffy white seed capsules. Grey-green foliage. Grows well in dry soils.

**Range:** Present (common) on Assumption. Previously present on Aldabra but since eradicated/died out. Present on Mahé as well as many other granitic and coralline islands of the Seychelles.

**Impact:** Crowds out low-growing native plants.

## LANTANA (*LANTANA CAMARA*)

**French/Creole names:** lantana/vyey fiy



**Description:** Lantana is a successful weed species across the tropics, where it colonises a variety of environments, including beach fronts and forest margins, and can tolerate a wide variety of conditions including arid climates, sea spray, high temperatures and many soil types. In open areas it grows up to 2m tall and often forms dense thickets. It is a prolific producer of fruit (up to 12,000 fruits per plant/year) which are popular with birds so it spreads quickly.

**Range:** Found on Mahé and several other granitic islands. Formerly present on Aldabra but may have been eradicated (as suggested in Fosberg & Renvoize 1980).

**Impacts:** Highly invasive once established. Out-competes native shrubs by forming dense stands and is readily dispersed by birds, often over large distances and between islands.

## CASTOR OIL PLANT (*RICINUS COMMUNIS*)

**French/Creole names:** ricin/tantan



**Description:** A fast-growing perennial shrub or small tree up to 12m tall. Glossy leaves on long stalks. Fruits are a spiny capsule containing a bean like seed. Seeds are highly poisonous. The rest of the plant is poisonous but less so. Can spread rapidly over sandy soils but prefers sites adjacent to fresh water.

**Range:** Present on Assumption where it grows very well. Once present on Aldabra but no longer present. Care needs to be taken to not re-introduce this plant to Aldabra.

**Impacts:** Can easily establish from seeds and competes with native pioneer plants on forest edges and open areas.

## YELLOW ALDER (*TURNERA ULMIFOLIA*)

**French/Creole names:** coquette/koket



**Description:** Yellow alder is a perennial, dense, compact shrub that reaches 1m high. It flowers sporadically throughout the year, which gives a high reproductive output. Seed dispersal is by ants. This short dispersal means it tends to form dense populations of plants. It is now widely dispersed in the tropics. It grows in a wide variety of soils and climates.

**Range:** On Aldabra, on Picard on the Back Path and possibly Anse Mais and Malabar. Found throughout the Seychelles. Care needs to be taken not to introduce to other Aldabra islands. Present on Assumption.

**Impacts:** Forms low thick groundcover that can shade out low-growing native plants and seedlings.

## WOODY HERBS

### PUNCTURE VINE (*TRIBULUS CISTOIDES*)

**French/Creole names:** herbe pagode/fagot



**Description:** Highly invasive sprawling perennial weed with a well-developed tap root. Mainly dispersed by attachment of spiny seeds to footwear, clothes, luggage and boxes. Prefers sandy and coastal soils. Seeds can withstand immersion in water so can be spread by ocean currents. Will set seed all year round. It grows rapidly and can form mats up to 1m in diameter.

**Range: Very common on Assumption Island.** Previously recorded as present on Aldabra (Fosberg & Renvoize 1980, Robertson 1989) where it was considered possibly native but has since appeared to have died out. Also present on Cosmoledo, Astove and islands of the Farquhar group.

**Impacts:** Forms low sprawling mats that can shade out low-growing plants and seedlings. Seeds have sharp spikes which can be very painful to stand on and penetrate thin-soled shoes.

**Notes:** All footwear, clothing and luggage bound for Aldabra from Assumption should be checked for seeds before leaving Assumption. Do not dispose of seeds in the sea. Any seeds discovered on shoes or clothing once on Aldabra should be burnt in secure incinerator.

## KHAKI WEED (*ALTERNANTHERA PUNGENS*)

**French/Creole names:** brède emballage/brede



**Description:** Prostrate creeper often found in disturbed sites and settlements. Forms dense mats in the wet season which die off during droughts by surviving on the reserves in tap root. Spread by seeds and vegetatively.

**Range:** Present on Assomption. Recorded once from Aldabra (Robertson 1989) but current status unknown.

**Impacts:** Forms dense mats that smother native seedlings.

## AMARANTH (*AMARANTHUS DUBIUS*)

**French/Creole names:** bred/payater



**Description:** An annual weedy plant preferring hot temperatures (22 - 30°C). Generally requires damp soil to become established but will then withstand drought conditions. It will grow on a wide range of soil types, but most common in cultivated sites and around settlements.

**Range:** Found on Assomption. May still be present on Aldabra at the old Settlement but may now be gone. Present on Mahé, many other inner islands and some outer islands.

**Impacts:** Forms thick covering, crowding out low-growing native plants.

## CATHEDRAL BELLS/AIR PLANT (*KALANCHOE PINNATA*)

**French/Creole names:** gros baume sans sentiment/grobonm san santiman



**Description:** Succulent herb up to 1.5m with fleshy leaves. Green-reddish, bell-shaped flowers. Fruit is a pod with numerous seeds although is rarely seen. Tiny, new plantlets develop in the leaf serrations and can grow immediately once they drop off the main plant.

**Range:** Present on Mahé and almost all the inner islands. In the outer islands, present on Alphonse, Coëtivy, D'Arros, Desroches and Farquhar.

**Impacts:** Forms dense stands that crowd out native vegetation. Salt and drought tolerant so establishes easily.

## CREeping BEGGARWEED (*DESMODIUM INCANUM*)

**French/Creole names:** gros tréfle/gro trefle



**Description:** Small shrub up to 1m, sometimes spreading. Hairy stems and trifoliate leaves (three leaflets). Can tolerate a wide range of conditions. Pink-purple flowers and hooked, sticky seeds.

**Range:** Present (and common) on Mahé and most other inner islands.

**Impacts:** Its dispersal is mediated by sticky seeds, which can adhere to people, animals and machinery. Its spreading low stature habit helps it to both dominate other low vegetation and persist within it.

## DEVIL'S HORSEWHIP (*ACHYRANTHES ASPERA* VAR. *ASPERA*)

**French/Creole names:** herbe sergent/serzan



**Description:** Erect herb/shrub up to 4m. Stems tough, slightly woody at base. Tall, narrow flower spikes up to 60 cm long. As the flowers age, they bend downwards and become pressed closely against the stem. The bracts surrounding the flowers in the fruiting stage have sharp, pointed tips making the heads spiny to the touch.

**Range:** Present on Mahé and most other inner islands. Present on many outer islands but not any in the Aldabra group.

**Impacts:** Its spiny fruits easily detach and stick to people, animals and machinery. Tolerates a wide variety of environmental conditions. Can overtop low growing native vegetation. On Aldabra it could compete with the native variety, *Achyranthes aspera* var. *fruticosa*, which can be distinguished from var. *aspera* by its much larger and woody creeping stems (up to 3cm diameter and 3-5m long).

## KOSTER'S CURSE (*CLIDEMIA HIRTA*)

**French/Creole names:** fo watouk



**Description:** Small, slightly woody shrub with thin hairy branches and large, hairy nettle-like leaves (to 12cm).

**Range:** Present (and increasing in abundance) on Mahé as well as Silhouette and North Island.

**Impacts:** Sticky fruits stick easily to shoes and clothes. Dominates clearings and smothers other plants.

## CREEPERS

### OBSCURE MORNING GLORY (*IPOMOEA OBSCURA*)

**French/Creole names:** liane maron/titoupi



**Description:** Twining creeper which prefers full sun and disturbed sites but also occurs in coastal dunes. Fruits contain four dark brown, angled, hairy seeds (4mm). Can reproduce from broken stems, which produce new roots, and can withstand drought conditions.

**Range:** Apparently present on Aldabra in shrubland around Settlement but current status unknown. Also present on other outer coralline islands. Present throughout Mahé and many inner islands.

**Impacts:** A long-lived perennial climber and will smother native forest with 15m high vines.

### WILD PASSIONFRUIT (*PASSIFLORA SUBEROSA*)

**French/Creole names:** ipeca



**Description:** A climber with tendrils. Leaves can be 3-lobed or entire. Flowers small and green. Fruit are small and purple. Tolerates dry and exposed conditions.

**Range:** Present on Aldabra in small numbers on Back Path and Ile Esprit. Also present on Assomption and Cosmoledo. Present on Mahé, Praslin and a few other inner islands.

**Impacts:** Smothers native plants. Usually invades disturbed or open sites.

## STINKING PASSION FLOWER (*PASSIFLORA FOETIDA*)

**French/Creole names:** passiflore/bonbon plim, poc-poc



**Description:** A perennial vine which can form a dense groundcover. It favours wetter sites but can survive arid conditions. Plant has an unpleasant smell but the fruits are edible.

**Range:** Present on Mahé, Praslin and Silhouette. The slightly hairier var. *hispida* is present on Assumption.

**Impacts:** Prevents or delays native plant regeneration. Will invade disturbed or open sites.

## NON-WOODY PLANTS

### SISAL (*AGAVE SISALANA*)

**French/Creole names:** sisal, agave/lalwa



**Description:** Large succulent with tall flower stems (6m tall). Leaves are a thick grey-green with a sharp spike at the end. Can reproduce by rhizomes and by plantlets.

**Range:** Present throughout the Seychelles and in large numbers on Assumption. Present on Aldabra in small numbers in three locations until 2016.

**Impacts:** Invades quickly and out-competes native plants. Maintains mono-dominant stands when established.

**Notes:** Sisal was recently eradicated on Aldabra where had become invasive. Control began in the 1970s and was resumed in 2013 in a full-scale eradication programme after trials of various methods identified a suitable technique (van Dinther et al. 2015). Eradication took three years and multiple site. Extreme care needs to be taken to not re-introduce the species from Assumption.



## REFERENCES AND FURTHER READING

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