

# Monitoring guide to detect new non-native invasive plant species

## Contents

1. Purpose .....	2
2. Where to look .....	2
2.1 Survey methods.....	3
3. What to look for.....	3
4. Data recording .....	4
5. Action plan.....	5
5.1 Surveys .....	6
5.2 On detection of a new species .....	6
6. Acknowledgments.....	7



Invasive African fountain grass (*Pennisetum setaceum*) in St Helena

## 1. Purpose

The purpose of this guide is to provide a methodology and action plan to rapidly detect newly introduced non-native potentially invasive plant species so that they can be eradicated before they have a chance to establish.

Once new plant species have become established and spread they become increasingly difficult to contain and eradicate. The most cost-effective approach is to detect them as soon as possible after introduction, so that the relatively small or confined populations can be quickly removed. In order to do this, you need to know where to look, how to carry out the surveillance, and what to look for.

It is important to note that monitoring as an early warning system to detect new arrivals is a continuous activity which needs to be done throughout the year or growing season, and in a range of critical habitats. This has resource implications. This guide is designed to provide a practical methodology which allows monitoring to be carried out with minimal additional funding requirements.

## 2. Where to look

The most likely pathways of entry are:

- As deliberate introductions (legally or smuggled) for the horticultural trade, as garden plants, for ornamental purposes, forestry or agroforestry.
- As unintentional contaminants of vehicles, machinery, shipping containers or clothing and footwear, as seeds or plant debris in mud or stuck to Velcro fastenings.
- As unintentional contaminants of sand, gravel or aggregate imported for construction purposes.
- As unintended contaminants of composts.

Invasive plant species are typically “weedy” and do well in disturbed land such as agricultural land, gardens and construction sites. Road sides and foot paths are vulnerable through the pathway of vehicle and footwear contaminant.

Surveillance should therefore be carried out at the following sites:

- Ports of entry
- Gardens, nurseries, garden centres
- Wasteland
- Agricultural land, particularly field edges
- Construction sites and nearby wasteland
- Along road verges
- Foot paths in conservation areas of high vulnerability

## 2.1 Survey methods

The proposed method is simple and practical, noting that staff and time for surveillance are limited.

- Linear road and path surveys should be taken along fixed routes, looking for any signs of new plant species. This should take place at least twice per growing season in the following locations:
  - Around ports of entry
  - Around areas where sand / aggregate / vehicles are deposited or stored
  - Agricultural land
  - Conservation areas
- Construction sites should be checked 2 to 4 weeks after each importation of goods (or at least twice per growing season for longer construction projects)

In addition to the routine transects, agricultural and environmental staff should carry out informal checks whenever their work takes them to other locations not routinely surveyed. All field workers should be aware of the risks and alert to the possible presence of new species.

The public also needs to be aware of the risks and alert to the possible presence of new species, in gardens, along road sides and on hiking trails. Regular walking groups can function as an early warning patrol, if suitably interested, and informed of what to do if they spot anything unusual. There are two approaches for volunteer groups;

1. General awareness for anything new or unusual. This is a suitable approach for regular walking groups or conservation volunteers. They will be familiar with many areas and make repeat visits.
2. Targeted alerts for specific new weeds. This is suitable for tourists or occasional walkers, who are not sufficiently familiar with the area to spot something unusual. A small number of specific weed species which are readily identifiable should be selected as targets.

## 3. What to look for

Any species not previously seen in a location is of concern. It might be a new introduction to the territory, or the first signs of an existing non-native species starting to spread from a restricted location and exhibit invasive characteristics.

The most likely new invasive species introductions can be identified by a horizon scanning process, or Biosecurity Alerts from countries of origin of goods or passengers.

Some examples of common weeds and the basic information required are given in Table 1.

Table 1. Examples of weed species identified for monitoring.

Scientific name	Common name	Status	Areas likely to be invaded
<i>Chromolaena odorata</i>	Siam weed	Not present	Cultivated lands, abandoned or neglected fields, forest clearings, wastelands, along forest trails, fence rows, roadsides and forest margins
<i>Clidemia hirta</i>	Kosters curse	Not present	Pastures, fields, open grasslands, plantations, roadsides, open woodlands, waterways, forests
<i>Cryptostegia grandiflora</i>	Indian rubber vine	Not present	Roadside ditches, and forests
<i>Cuscuta campestris</i>	Dodder	Not present	Cultivated land and roadsides
<i>Imperata cylindrica</i>	Cogon grass	Not present	Grassland, cultivated annual crops, plantations, abandoned farm land, roadsides, forests, recreational areas and deforested area
<i>Macfadyena unguis-cati</i>	Cat's claw creeper	Not present	Forests, orchards, and gardens, grasslands, open urban spaces, along roadsides and forest edges
<i>Melinis minutiflora</i>	Molasses Grass	Present only in area A	Roadsides, forest margins, open woodlands, pastures, disturbed sites, and wasteland
<i>Parthenium hysterophorus</i>	Famine weed	Confined to Port area.	Roadsides, in pastures, grasslands, open woodlands, waste areas, disturbed sites and lawns, gardens and crops
<i>Prosopis juliflora</i>	Mesquite	Present only in area B	Dry, or seasonally dry wasteland

## 4. Data recording

It is important to record every road or path survey carried out, despite the fact that in many cases no new species will have been detected. A negative result is an important datum. This allows you to know when any one site was last checked. In addition, in the event of detecting a new species at a location, knowing the time period during which it colonised helps to track back it's pathway of introduction or dispersal. Note that the public and other volunteers will normally only record new species actually detected.

An example of a data form is shown in Annex 1.

## 5. Action plan

This guide is designed to minimise the resource implications of carrying out monitoring as an early warning system for a particular territory or location within a territory, such as an offshore cay or island. It is anticipated that surveys can largely be carried out by staff as part of their normal work activities with relatively minor adjustments to normal practices. Departments and agencies likely to be involved are:

- Biosecurity
- Agriculture
- Forestry
- Livestock
- Veterinary
- Environment
- Conservation
- National Trust
- Public Health
- Public Works
- Planning Department
- Airport / port staff

Work needs to be coordinated by a small monitoring steering group consisting of representatives of the key agencies concerned (most likely to be Agriculture and Environment sector, government and non-government), with one person nominated as lead to chair the group and ensure work is done. Note that the lead should not be expected to be the one doing the actions in all cases, just for ensuring that someone is assigned to do it.

Responsibilities of the lead person are:

- Call periodic meetings (in person at least once a year, by email more frequently) of the steering group
- Ensure that all critical habitats are being covered
- Ensure that new staff are involved and understand their roles in the event of staff changes
- Ensure that appropriate training is given
- Ensure that new plant detections are processed and appropriate action is taken
- Assign someone to handle data records

Responsibilities of the coordination group are:

- Participate in the group
- Ensure that their department or agency carries out the assigned surveys, and that all records are passed to the appropriate person
- Participate as appropriate in any plant eradication actions

- Discuss and agree an appropriate training plan
- Discuss and agree a public awareness programme
- Ensure that if the lead person leaves, they are replaced

## 5.1 Surveys

Surveying the routine transects need to be incorporated into the work programme of agency staff. The aim is to cover all critical areas listed in Section 2 at least once a year:

- Agriculture staff to walk transects in areas with the greatest density of farms;
- Environment staff to walk transects in conservation areas;
- Biosecurity team to cover Ports of Entry, as appropriate, including:
  - Airport
  - Sea port
  - Marinas
- Public Health to cover urban areas;
- Public Works to cover road verges;
- New construction sites to be surveyed by Biosecurity / Agriculture / Environment team as appropriate.

Training needs to be provided on what to look out for and who to inform. The monitoring steering group will discuss and agree how this can best be achieved. The group will also agree on the development and delivery of a public awareness programme which includes:

- Posters (Alerts)
- Social media notices
- Articles in the local press and radio

## 5.2 On detection of a new species

In the event of detecting a potentially new non-native invasive species the procedure is as follows:

- Photographs to be taken of the plants in-situ for identification
- If the species is confirmed as a new non-native invasive species, a rapid response plan for exotic weeds should be implemented. This should include:
  - Carrying out a wider survey to determine the extent of the infestation.
  - Where possible, the plant should be eradicated from the entire area of infestation using appropriate methodology, such as:
    - Herbicide spraying
    - Uprooting
  - Record if the plant has flowered or fruited. If so, there may be a seedbank to deal with and post-eradication monitoring will need to continue for as

- long as the known life of the seed bank, or annually until no further seedlings are detected for at least 2 growing seasons.
- The area of infestation should be surveyed regularly (as appropriate, after rains, during the growing season etc.) for at least 2 years following removal of the last plants.
  - Surveys should also be conducted in suitable areas for outlying populations.

## **6. Acknowledgments**

This guide is based on one developed by Biosecurity, Agriculture, Environment and the National Trust of St Helena Island, with thanks for permission to adapt it for general use. I am very grateful for everyone in St Helena who contributed to its development, and also to Danielle Frohlich and Alan Tye who made very useful comments on early drafts.

**Annex 1. Example of a survey record form.**

Plant survey record form	
Date	
Area surveyed (give details of the start and end points of the survey, or area covered)	
Surveyers' names	
Department / agency	
New species detected	YES NO
If YES:	
Provisional identification	
Photo or sample taken	
Extent (number of plants or area colonised)	
Details of exact location	
Action taken	