

6 TOTAL CONTROL PEST PLANTS

6.1. Introduction

Total Control Pest Plants are those pest plants that are of limited distribution or density within the Auckland region, or defined areas of the region, and are considered to be of high potential threat to the region, **for which the ARC shall assume responsibility for funding and implementing appropriate management programmes.** The aim is to eradicate these plants from the region or defined areas of the region, over a period of time, which may exceed the life of this RPMS. The reasons for the ARC assuming responsibility for the control of these plants are that:

- a) These plants require specialist expertise in identification and control; and/or
- b) It is more cost-effective for the ARC to control the plant than to enforce landowner/occupier control.

Plants will be treated by recognised methods, at intervals that will ensure the infestations are controlled, reduced and eventually eradicated. Total Control Pest Plants are banned from sale, propagation, distribution and exhibition throughout the region and landowners/occupiers will be encouraged to notify the ARC of their presence. The ARC will also disseminate technical advice and information on these plants.

Total Control may apply throughout the entire region, or only within defined areas. Species that are Total Control throughout the region are discussed in section 6.2 below, while species that are Total Control in defined areas are discussed in section 6.3. All Total Control species are listed in alphabetical order in Table 6.1a below with reference to the appropriate section of the Strategy.

Table 6.1a Summary of Total Control Pest Plants

Common Name	Scientific Name	Reference
African feather grass	<i>Pennisetum macrourum</i>	6.2.2
Asiatic knotweed	<i>Reynoutria japonica</i> syn. <i>Fallopia japonica</i> , <i>R. sachalinensis</i> syn. <i>F. sachalinensis</i> & hybrids	6.2.3
asparagus species	<i>Asparagus drepanophyllus</i> & <i>A. umbellatus</i>	6.2.4
balloon vine & small balloon vine	<i>Cardiospermum grandiflorum</i> & <i>C. halicacabum</i>	6.2.5
broomsedge	<i>Andropogon virginicus</i>	6.2.6
cathedral bells	<i>Cobaea scandens</i>	6.2.7

Common Name	Scientific Name	Reference
Chilean needle grass	<i>Nassella neesiana</i>	6.2.8
climbing spindle berry	<i>Celastrus orbiculatus</i>	6.2.9
devil's fig	<i>Solanum torvum</i>	6.2.10
devil's tail	<i>Persicaria perfoliata</i> syn. <i>Polygonum perfoliatum</i>	6.2.11
egeria	<i>Egeria densa</i>	6.3.1
great reedmace	<i>Typha latifolia</i>	6.2.12
green cestrum	<i>Cestrum parqui</i>	6.2.13
houltuynia	<i>Houttuynia cordata</i>	6.2.14
kudzu vine	<i>Pueraria montana</i> syn. <i>P. lobata</i>	6.2.15
lantana	<i>Lantana camara</i>	6.3.2
Madeira vine	<i>Anredera cordifolia</i>	6.3.3
Manchurian wild rice	<i>Zizania latifolia</i>	6.2.16
marshwort	<i>Nymphoides geminata</i>	6.2.17
Mexican feather grass	<i>Nassella tenuissima</i>	6.2.18
nassella tussock	<i>Nassella trichotoma</i>	6.2.19
needle grass	<i>Austrostipa rudis</i>	6.2.20
old man's beard	<i>Clematis vitalba</i>	6.2.21
purple loosestrife	<i>Lythrum salicaria</i>	6.2.22
rhamnus	<i>Rhamnus alaternus</i>	6.3.4
royal fern	<i>Osmunda regalis</i>	6.2.23
<i>Sagittaria</i> species	All <i>Sagittaria</i> spp. (except <i>S. teres</i>)	6.2.24
scrambling lily	<i>Geitonoplesium cymosum</i>	6.2.25
Senegal tea	<i>Gymnocoronis spilanthoides</i>	6.2.26
spartina	<i>Spartina alterniflora</i> , <i>S. anglica</i> & <i>S. x townsendii</i>	6.3.5
water poppy	<i>Hydrocleys nymphoides</i>	6.2.27
white-edged nightshade	<i>Solanum marginatum</i>	6.2.28
wild broom	<i>Cytisus scoparius</i> (excl. cultivated varieties)	6.3.6

6.2. Total Control Pest Plants (throughout the region)

6.2.1 Management Regime

The following section of the Strategy outlines relevant information for those species that are declared Total Control Pest Plants throughout the entire Auckland region. The objectives, principal measures of achievement and Rules for all of the Total Control Pest Plants (throughout the region) are identical and are therefore set out below to avoid repetition. Further information relating to individual species is given in sections 6.2.2 to 6.2.28.

(i) Objectives

- a) For the following Total Control Pest Plants, the objective is to eradicate all currently known sites over the duration of this Strategy, i.e. within five years:
- African feather grass
 - Asiatic knotweed
 - balloon vine & small balloon vine
 - Chilean needle grass
 - devil's fig
 - devil's tail
 - great reedmace
 - kudzu vine
 - houttuynia
 - marshwort
 - nassella tussock
 - purple loosestrife
 - scrambling lily
 - water poppy
 - white-edged nightshade

- b) For the following Total Control Pest Plants, the objective¹⁴ is to eradicate all currently known sites over the next 10 years:

- asparagus species
- broomsedge
- cathedral bells
- climbing spindle berry
- green cestrum
- Manchurian wild rice
- Mexican feather grass
- needle grass
- old man's beard
- royal fern
- Sagittaria species
- Senegal tea

(ii) Principal measures of achievement

Control	Enter any property where the above-mentioned Total Control Pest Plants (6.2.2–6.2.28) are present and carry out control work on these species.
Enforcement	Enforce restrictions on the sale, propagation, distribution and exhibition of above-mentioned Total Control Pest Plants (6.2.2–6.2.28).
Education & Advice	Provide information and advice on identification and threats.
Monitoring & Surveillance	Undertake inspections, monitoring and surveillance of key risk areas to determine presence of new infestations and status of existing and historical sites.

¹⁴ With respect to objectives 6.2.1(i)(a) and (b), eradicate means to remove or destroy all detectable plant matter of the species, whilst acknowledging that seed or propagule banks can remain undetected.

(iii) Rules**Rule 6.2.1.1**

No person shall:

- a) Cause or permit the above mentioned Total Control Pest Plants (6.2.2– 6.2.28) to be in a place where they are offered for sale or exhibited; or
- b) Sell or offer for sale the above mentioned Total Control Pest Plants (6.2.2– 6.2.28); or
- c) Propagate, distribute, breed, or multiply the above mentioned Total Control Pest Plants (6.2.2– 6.2.28) or otherwise act in such a manner as is likely to encourage or cause the propagation, distribution, breeding or multiplication of the above mentioned Total Control Pest Plants (6.2.2– 6.2.28).

A breach of these Rules will create an offence under section 154(r) of the Act, or may result in default work under section 128 of the Act, or both.

In addition to this Rule, powers under the Biosecurity Act 1993 allow Biosecurity Officers to inspect properties to control and remove these Total Control Pest Plants.

6.2.2 African feather grass

(Pennisetum macrourum)

(i) Description of the problem

African feather grass is a robust perennial grass with stout rhizomes. It is generally unpalatable to stock and is a threat to pasture production if left uncontrolled as it can completely suppress other low-growing plants.

Its dense clumps restrict the movement of animals, people and machinery, and it can impair drainage and visibility along roads. It invades poor pasture areas, roadsides and reserves. The plant is an aggressive invader of many habitats and can threaten native plant species in shrub and grasslands, wetlands and sand-dune areas.

(ii) Pest plant designation

African feather grass (*Pennisetum macrourum*) is declared a Total Control Pest Plant throughout the Auckland region.

(iii) Reason for strategy

African feather grass has very restricted distribution in the Auckland region. However, it has the ability to spread to new habitats, threatening a range of areas that have environmental, productive and recreational values. The plant is difficult to identify and, at the current low levels of infestation, the public may not fully recognise the threat it poses to the environment. A regionally co-ordinated control approach is necessary.

6.2.3 Asiatic knotweed

(*Reynoutria japonica* syn.
Fallopia japonica, *R. sachalinensis* syn.
F. sachalinensis & hybrids)

(i) Description of the problem



Asiatic knotweed is an upright, shrub like, herbaceous perennial that can rapidly grow to over 3 m in height. It can tolerate a wide range of environmental conditions, including shade, high temperatures, high

salinity and drought. Overseas it has naturalised in coastland, disturbed areas, riparian zones, urban areas, watercourses and wetlands. It spreads rapidly to form dense stands, excluding other vegetation and prohibiting regeneration, thus reducing species diversity and altering wildlife habitat. Once stands become established, they are extremely persistent and difficult to remove. This plant is considered by the World Conservation Union as one of 100 of the world's worst invasive alien species¹⁵.

(ii) Pest plant designation

Asiatic knotweed (*Reynoutria japonica* syn. *Fallopia japonica*, *R. sachalinensis* syn. *F. sachalinensis* & hybrids) is declared a Total Control Pest Plant throughout the Auckland region.

(iii) Reason for strategy

Asiatic knotweed is of extremely limited distribution within the Auckland region with only one verified naturalised site. The plant is extremely difficult to control, being resistant to many herbicides and able to regenerate rapidly from rhizome fragments. It is capable of spreading rapidly through plant fragments and wind dispersed seed. Control requires specialist knowledge for identification of the plant and its threat to the environment. As it is in the early stages of invasion, a regionally co-ordinated control programme is the most effective means of achieving eradication.

6.2.4 Asparagus species

(*Asparagus drepanophyllus* &
A. umbellatus)

(i) Description of the problem



Asparagus drepanophyllus and *A. umbellatus* are twining vines with the potential to smother and strangle their host plant. These plants are relatively new introductions to New Zealand, having been imported illegally. Impacts in New Zealand are not

quantified, however most exotic asparagus species have become serious environmental pests.

(ii) Pest plant designation

Asparagus drepanophyllus and *A. umbellatus* are declared Total Control Pest Plants throughout the Auckland region.

(iii) Reason for strategy

All asparagus species grown in New Zealand except *A. officianalis* have shown some weedy characteristics. These two species were introduced illegally into New Zealand and are of very limited distribution within the region. For these reasons it is considered appropriate to apply the precautionary principal and remove these plants before they become major pest issues.

¹⁵ Lowe S., Browne M., Boudjelas S., De Poorter M. (2000) *100 of the World's Worst Invasive Alien Species A selection from the Global Invasive Species Database*. Published by The Invasive Species Specialist Group (ISSG) a specialist group of the Species Survival Commission (SSC) of the World Conservation Union (IUCN), 12pp. First published as special lift-out in *Aliens 12*, December 2000. Updated and reprinted version: November 2004.

6.2.5 Balloon vine

(*Cardiospermum grandiflorum*)

& small balloon vine (*C. halicacabum*)

(i) Description of the problem



Both balloon vine and small balloon vine are vigorous climbers and are major invasive species in many of the Pacific Islands. Seeds are produced in papery capsules and are readily dispersed by wind or water. Once established the vine grows rapidly, resulting in the smothering or strangling of host plants.

(ii) Pest plant designation

Balloon vine (*Cardiospermum grandiflorum*) and small balloon vine (*Cardiospermum halicacabum*) are declared Total Control Pest Plants throughout the Auckland region.

(iii) Reason for strategy

The distribution and impacts of balloon vine (*Cardiospermum grandiflorum*) and small balloon vine (*Cardiospermum halicacabum*) in the Auckland region are currently very low. However, considering the biological characteristics of these plants and their ability to grow in a range of habitats, they could establish themselves in, and degrade areas of, high conservation value within the region. A regionally co-ordinated approach is therefore deemed necessary.

6.2.6 Broomsedge

(*Andropogon virginicus*)

(i) Description of the problem



This perennial grass can form continuous cover in boggy, open or dry habitats. It releases highly persistent allelopathic substances that inhibit competition. The dead material provides an excellent fuel for fires, and the plant itself is fire-stimulated, its cover increasing dramatically with each fire. The seed is well adapted to catch in wool, fur, clothing and mud on machinery. Seeds are also dispersed by wind, and readily establish on exposed soil.

(ii) Pest plant designation

Broomsedge (*Andropogon virginicus*) is declared a Total Control Pest Plant throughout the Auckland region.

(iii) Reason for strategy

Broomsedge is of very limited distribution in the Auckland region. It has the potential to have a serious impact on the region's wetlands and marginal and coastal environments, as well as posing a risk to production through competition with pasture or crop species. Due to difficulty in identifying and treating this plant, a regionally co-ordinated control programme is considered appropriate.

6.2.7 Cathedral bells

(*Cobaea scandens*)

(i) Description of the problem



Cathedral bells is a vigorous perennial vine that can climb to forest canopy height. The seeds are transported short distances by wind or longer distances in water, soil or gravel. Fragments of the vine are also spread by water and more commonly in dumped garden rubbish.

Cathedral bells can form dense mono-specific mats, which can suppress the growth of desirable species' seedlings and also damage or kill larger plants because of its blanket effect. It is very fast growing, spreads quickly and can seriously modify the structure of undisturbed and disturbed forest. Cathedral bells can grow in a range of soils and climatic conditions. Its potential habitats in the Auckland region include scrub, forest remnants, hedgerows, roadsides, riverbanks, gardens, shelterbelts, orchards and disturbed native bush.

(ii) Pest plant designation

Cathedral bells (*Cobaea scandens*) is declared a Total Control Pest Plant throughout the Auckland region.

(iii) Reason for strategy

The impacts of cathedral bells in the Auckland region are currently very low. However, considering the biological characteristics of the plant, its speed of spread and ability to grow in a range of habitats, it could establish itself in, and degrade areas of, High Conservation Value within the region. A regionally co-ordinated approach is therefore deemed necessary.

6.2.8 Chilean needle grass

(*Nassella neesiana*)

(i) Description of the problem



Chilean needle grass is an erect, tufted, perennial tussock-forming grass. The seeds are more than 90% viable, survive for several years in the soil and germinate in autumn and spring. Seeds are transported by stock, hay, clothing, machinery and water.

Chilean needle grass grows in dry, low fertile open habitats but does not normally establish itself in fertile and productive pastures where competition from other plants is too great. It is unpalatable to stock and can form dense stands in pasture, reducing productivity drastically. The sharp seeds damage pelts, blind livestock and become a serious wool contaminant. They can move through the animal's skin into the body muscles, causing abscesses and the downgrading of carcasses. This grass can also crowd out native grass species in dry coastal areas.

(ii) Pest plant designation

Chilean needle grass (*Nassella neesiana*) is declared a Total Control Pest Plant throughout the Auckland region.

(iii) Reason for strategy

Chilean needle grass is a pest of regional significance in spite of its current very low level of infestation. Its ability to thrive in a number of Auckland soil types, prolific seeding habit and invasive nature, make it a threat to agricultural production in the region. The plant is difficult to identify and at the current low levels of infestation the public may not be aware of the threat it poses. A regionally co-ordinated approach is therefore deemed necessary.

6.2.9 Climbing spindle berry

(*Celastrus orbiculatus*)

(i) Description of the problem



Climbing spindle berry is a deciduous, woody, perennial vine, which sometimes occurs as a trailing shrub. It invades agricultural areas, coastland, disturbed areas, natural forests, planted forests, grasslands, riparian zones, scrub/

shrublands and urban areas. It dominates gap and edge environments, but may also colonize undisturbed forest. Climbing spindle berry grows very rapidly (up to 3 m per year) and smothers other vegetation. It establishes under closed canopy forest conditions and persists indefinitely until suitable conditions occur. It can resprout rapidly from rhizome or stolon fragments.

(ii) Pest plant designation

Climbing spindle berry (*Celastrus orbiculatus*) is declared a Total Control Pest Plant throughout the Auckland region.

(iii) Reason for strategy

Climbing spindle berry is of extremely limited distribution in the Auckland region, though it is a serious problem in areas further south. It has been sold as an ornamental and may be present in gardens. Its characteristics of shade tolerance, rapid growth, prolific production of highly viable seed and adaptation to a wide range of environments make it highly competitive and potentially difficult to manage. Climbing spindle berry is difficult to identify and very difficult to control; therefore a regionally co-ordinated programme is required.

6.2.10 Devil's fig

(*Solanum torvum*)

(i) Description of the problem



Devil's fig is an erect, much-branching prickly shrub up to 4 m in height. It is a major weed in pastures, disturbed areas, roadsides and wasteland, and forms impenetrable thickets. It also occurs in plantations, but not significantly in cultivated

land. It prefers moist, fertile soil, but will tolerate drought. Devil's fig has a wide environmental range, and in its native environment grows from sea level to 600 m. All parts of this plant are toxic.

(ii) Pest plant designation

Devil's fig (*Solanum torvum*) is declared a Total Control Pest Plant throughout the Auckland region.

(iii) Reason for strategy

The impacts of devil's fig in the region are currently very low. However, considering the biological characteristics of the plant and its ability to grow in a range of habitats, it could have considerable impact on production and conservation areas through the formation of dense thickets and suppression of pasture and regenerating native species. A regionally co-ordinated approach is therefore deemed necessary.

6.2.11 Devil's tail

(*Persicaria perfoliata* syn. *Polygonum perfoliatum*)

(i) Description of the problem



Devil's tail is a rapidly growing annual vine and is also known as tear thumb. It has long highly-branched stems which climb over shrubs and small trees. The plant has only been found in one urban site within the region, and is currently believed to have

a very limited distribution. The dense leafy growth and potentially rapid rate of expansion of this plant make it a threat to a wide range of native habitats.

(ii) Pest plant designation

Devil's tail (*Persicaria perfoliata* syn. *Polygonum perfoliatum*) is declared a Total Control Pest Plant throughout the Auckland region.

(iii) Reason for strategy

The impacts of devil's tail in the Auckland region are currently very low. However, considering the biological characteristics of the plant, and ability to grow in a range of habitats, it could establish itself in, and degrade areas of, high conservation value within the region. A regionally co-ordinated approach is therefore deemed necessary.

6.2.12 Great reedmace

(*Typha latifolia*)

(i) Description of the problem



Great reedmace is an erect perennial aquatic herb. Its stems grow from thick underground rhizomes. It forms dense masses in shallow, sheltered waterbodies, displacing native vegetation.

(ii) Pest plant designation

Great reedmace (*Typha latifolia*) is declared a Total Control Pest Plant throughout the Auckland region.

(iii) Reason for strategy

The impacts of great reedmace in the Auckland region are currently very low, as ARC has been controlling the only known site within the region. However, considering the biological characteristics of the plant, and potential ability to hybridise with the native raupo (*Typha orientalis*), a regionally co-ordinated approach is deemed necessary.

6.2.13 Green cestrum

(*Cestrum parqui*)

(i) Description of the problem



Green cestrum is an erect perennial shrub reaching 1 m to 3 m tall, which reproduces from seeds as well as budding from creeping roots. It is usually spread by deliberate plantings in gardens, and also by birds and water.

Pieces of cut root, dragged by cultivation equipment, also help to establish new plants in clean areas.

It is extremely toxic to animals including cattle, sheep, horses, pigs and poultry. Where plants are accessible to grazing animals, they are readily browsed which has caused numerous deaths. The plant is also toxic to humans and causes oral or dermal poisoning. Dense infestations of this plant can also exclude virtually all other vegetation. This can occur in a number of habitats, including native ecosystems.

(ii) Pest plant designation

Green cestrum (*Cestrum parqui*) is declared a Total Control Pest Plant throughout the Auckland region.

(iii) Reason for strategy

Green cestrum is not currently a serious pest in the Auckland region because of its restricted distribution. However, its ability to spread to new habitats, by birds or fragments, makes it a threat to a wide range of areas with environmental, productive and recreational values. The plant can be difficult to identify. At its current low level of distribution, the public may not recognise the threat it poses to pastoral farming, human health and natural ecosystems. A regionally co-ordinated approach is therefore necessary.

6.2.14 Houttuynia

(*Houttuynia cordata*)

(i) Description of the problem



Houttuynia is a perennial, herbaceous deciduous ground cover that has slender rhizomes from which arise numerous thin erect stems. It is also known as chameleon plant. Of particular concern is the plant's ability to form seeds parthenogenetically (from an unfertilised egg cell).

The plant not only spreads by these seeds, but also through movement of plant fragments, either intentionally or on cultivation equipment and in garden refuse. These fragments can sprout roots and form new infestations. Localised spread also occurs through vegetative 'creeping', both by the aerial parts of the plant and its extensive rhizomes.

The aggressive and invasive spreading habit of houttuynia allows it to form dense colonies within a relatively short space of time, which can smother large areas of wetland marshes or forest floor, preventing native plant regeneration and growth. Its vigorous growth crowds out smaller plants, leading to a long-term modification of forest and wetland ecosystems.

(ii) Pest plant designation

Houttuynia (*Houttuynia cordata*) is declared a Total Control Pest Plant throughout the Auckland region.

(iii) Reason for strategy

Houttuynia could become a widespread pest in the Auckland region and seriously affect the integrity of many wetlands and native forest areas. Since the plant has yet to naturalise properly, and on first appearance looks like an attractive garden plant, the public may not recognise the threat it poses to the environment. A concentrated and regionally co-ordinated approach is therefore deemed necessary.

6.2.15 Kudzu vine

(*Pueraria montana* syn. *P. lobata*)

(i) Description of the problem



Kudzu vine is a twining, semi-woody vine, 10-30 m long, growing from semi-woody tuberous roots. It grows in agricultural areas, disturbed areas, exotic and indigenous forests, grasslands, riparian zones, scrub/shrublands and urban areas. Kudzu vine

is spread by birds and regenerates from root fragments transported by machinery, vehicles, water and garden waste dumping. It forms dense monocultures through rapid growth and suppression of desirable species. It can be difficult to control due to fast growth and masses of underground tubers.

(ii) Pest plant designation

Kudzu vine (*Pueraria montana* syn. *P. lobata*) is declared a Total Control Pest Plant throughout the Auckland region.

(iii) Reason for strategy

There are no known sites in the region, but naturalised sites occur in Northland and the Bay of Plenty. Considered by the World Conservation Union as one of 100 of the world's worst invasive alien species¹⁶, it is reported to infest about 2 to 3 million hectares in eastern USA, resulting in estimated losses of \$US500 million per year in land productivity and control costs. Because of its potential environmental and economic impacts and the proximity of infestation sites to the region, a regionally coordinated approach is deemed necessary.

¹⁶ Lowe S., Browne M., Boudjelas S., De Poorter M. (2000) *100 of the World's Worst Invasive Alien Species A selection from the Global Invasive Species Database*. Published by The Invasive Species Specialist Group (ISSG) a specialist group of the Species Survival Commission (SSC) of the World Conservation Union (IUCN), 12pp. First published as special lift-out in *Aliens 12*, December 2000. Updated and reprinted version: November 2004.

6.2.16 Manchurian wild rice

(*Zizania latifolia*)

(i) Description of the problem



Manchurian wild rice is a very tall (up to 3m), perennial, aquatic grass, which has very large, far-spreading rhizomes. Some seed dispersal occurs via birds and water, however, most spread is via rhizome fragments dispersed in water or by machinery and other human activities.

The plant can grow in both fresh and saline water on the margins of watercourses, as well as in swamps and pasture. Manchurian wild rice blocks drains and access to water, impedes water flow and increases the chance of flooding. It invades neighbouring pasture and cropland, causing arable land to become unusable and waterlogged. Rhizomes can also penetrate through stopbanks, opening them up and eventually destroying them. This plant species damages lakes and streamside plant communities by overtopping and suppressing other marginal species.

(ii) Pest plant designation

Manchurian wild rice (*Zizania latifolia*) is declared a Total Control Pest Plant throughout the Auckland region.

(iii) Reason for strategy

Manchurian wild rice is a very invasive plant, which could have detrimental economic and environmental impacts on drainage systems, farmland, and freshwater and estuarine ecosystems. Once established, it is extremely difficult and expensive to eradicate. Restrictions on the use of herbicide over water may cause further complications. Previous management strategies have been successful, with all known sites outside of the Lake Kereta-Karaka system area now eradicated. Ongoing action is now needed to eradicate this species from the Lake Kereta area, and thereby prevent its spread to other areas. A regionally coordinated approach is therefore needed to eradicate this species.

6.2.17 Marshwort

(*Nymphoides geminata*)

(i) Description of the problem



Marshwort is a robust bottom-rooted perennial, which has long, branched running stems that lie just beneath the water surface and extend for several metres across. While seeding has not been observed in New Zealand, marshwort can spread

rapidly from one area to another by fragmentation. The plant has the unusual ability to grow roots from detached leaves, which can themselves, form new infestations. Detached stems and leaves are spread by water currents, boats and in fishing nets.

The plant is primarily found in slow-flowing freshwater, up to 2m in depth. It can grow in a wide range of temperatures and survive in damp mud and swamps. It can impede drainage, block waterways, degrade water quality, be a nuisance to recreational activities, and, through its displacement of native plant species, threaten wetlands.

(ii) Pest plant designation

Marshwort (*Nymphoides geminata*) is declared a Total Control Pest Plant throughout the Auckland region.

(iii) Reason for strategy

Marshwort, being an invasive aquatic plant of very limited distribution, has the potential to become a more widespread pest in the Auckland region. This plant species requires specialist identification and control, and a regionally co-ordinated approach is therefore deemed necessary.

6.2.18 Mexican feather grass

(*Nassella tenuissima*)

(i) Description of the problem



Mexican feather grass is a perennial, drought-resistant tussock grass with fine wiry leaves. Each plant can produce up to 120,000 seeds annually. The only method of spread is by seed, which can be several kilometres away from the parent plant.

The seeds also cling to wool, bags and clothing and are spread by machinery, and in hay, water, mud and animal droppings.

Mexican feather grass is an extremely vigorous, invasive plant, which crowds out desirable pasture species, reducing stock carrying capacity. It forms indigestible balls in the stomach of stock and, if forced to graze it, they may lose condition or die. It can also crowd out low-growing vegetation in coastal or open areas.

(ii) Pest plant designation

Mexican feather grass (*Nassella tenuissima*) is declared a Total Control Pest Plant throughout the Auckland region.

(iii) Reason for strategy

Mexican feather grass is a pest of high regional significance, in spite of its current very low occurrence. Its ability to thrive in various soil types, prolific seeding habit and invasive nature make it a threat to agricultural production and coastal areas in the region. The plant is difficult to identify and the public may not be aware of the threat it poses. A regionally co-ordinated approach is therefore deemed necessary.

6.2.19 Nassella tussock

(*Nassella trichotoma*)

(i) Description of the problem



Nassella tussock is a perennial, drought-resistant tussock grass with fine wiry leaves. The only method of spread is by seed, either by machinery, or in hay, water, mud or animal droppings. It is an extremely vigorous, invasive plant, which

crowds out desirable pasture species, reducing stock carrying capacity by up to 90%. It forms indigestible balls in the stomachs of stock and if forced to graze it they may lose condition or die, as the plant has high fibre content and low nutritive value. It can also crowd out native grasses in coastal or open areas.

(ii) Pest plant designation

Nassella tussock (*Nassella trichotoma*) is declared a Total Control Pest Plant throughout the Auckland region.

(iii) Reason for strategy

Nassella tussock is a pest of regional significance in spite of its current very low level of infestation. Its ability to thrive in various soil types, prolific seeding habit and invasive nature make it a threat to agricultural production and conservation values in the region. The plant is difficult to identify and, at its current low levels, the public may not be aware of the threat it poses to the region. A regionally co-ordinated approach is therefore deemed necessary.

6.2.20 Needle grass

(*Austrostipa rudis*)

(i) Description of the problem



Needle grass is an erect, wiry, open perennial tussock-forming grass that grows up to 1m tall. Spread occurs through seeds being transported by stock, in hay, on clothing, by machinery and also in water.

Needle grass grows in dry, low fertility pasture, open woodlands and coastal areas. It does not normally establish in fertile pastures where competition from other species is too great, but forms dense stands in poor or dry pastures, reducing productivity. It is unpalatable to stock and the sharp seeds may damage pelts and contaminate wool. Needle grass could also be a roadside visibility hazard and can crowd out native plant species in dry coastal areas.

(ii) Pest plant designation

Needle grass (*Austrostipa rudis*) is declared a Total Control Pest Plant throughout the Auckland region.

(iii) Reason for strategy

Needle grass is a pest of regional significance in spite of its current very low level of infestation. Its ability to thrive in a number of Auckland soil types, prolific seeding habit and invasive nature make it a threat to agricultural production and conservation values in the region. The plant is difficult to identify and, at this low level of infestation, the public may not be aware of the threat it poses to the region. A regionally co-ordinated approach is therefore deemed necessary.

6.2.21 Old man's beard

(*Clematis vitalba*)

(i) Description of the problem



Old man's beard is a deciduous perennial, woody climbing vine. Its long stems climb around any available support in their search for light. It is spread mainly by seeds transported via wind, water and in soil or gravel.

Vine fragments are also spread by water and in dumped garden rubbish; these can take root and form new infestations.

Potential habitats include scrub, forest remnants, hedgerows, roadsides, riverbanks, gardens, shelterbelts and mature native forest. It is generally recognised as the most widespread and damaging introduced climber in cool-temperate New Zealand. It can outgrow and eventually destroy supporting plant life, and is particularly damaging in secondary growth or modified indigenous forests.

(ii) Pest plant designation

Old man's beard (*Clematis vitalba*) is declared a Total Control Pest Plant throughout the Auckland region.

(iii) Reason for strategy

The impacts of old man's beard in the Auckland region are currently very low, due mainly to the existing ARC eradication programme. However, the species' speed of spread and ability to grow in a range of habitats makes it a high threat to conservation values in the region. The plant is difficult for the public to identify. A regionally co-ordinated approach is therefore deemed necessary.

6.2.22 Purple loosestrife

(*Lythrum salicaria*)

(i) Description of the problem



Purple loosestrife is an erect, perennial herb that grows from 1 m to 3 m tall. It produces vast quantities of seed, sometimes up to 2-3 million per mature plant. Plants are also able to spread vegetatively via underground stems and stem fragments.

Purple loosestrife is a highly aggressive invader of natural or disturbed wetlands where it can form dense monocultures. The plant establishes in wetlands, drains, ditches and riparian areas; where it may impede water flow, prevent access for waterfowl and recreational users, out-compete native wetland vegetation, and decrease biodiversity.

(ii) Pest plant designation

Purple loosestrife (*Lythrum salicaria*) is declared a Total Control Pest Plant throughout the Auckland region.

(iii) Reason for strategy

Purple loosestrife is a very invasive plant and could become much more widespread in the Auckland region, seriously affecting the integrity of most natural and modified waterways and wetlands. The plant currently has a limited distribution, therefore the public may not recognise the threat it poses to the environment, primary production and infrastructure. A regionally co-ordinated approach is therefore deemed necessary.

6.2.23 Royal fern

(*Osmunda regalis*)

(i) Description of the problem



Royal fern is a deciduous fern whose rhizomes form a short woody trunk up to 1.5 m high, bearing large fronds up to 3 m long and 75 cm wide. Royal fern can naturalise and form dense colonies in a range of wetland types, especially in disturbed areas and under the shade of willows and/or manuka. It displaces other small-stature native wetland plants.

(ii) Pest plant designation

Royal fern (*Osmunda regalis*) is declared a Total Control Pest Plant throughout the Auckland region.

(iii) Reason for strategy

Royal fern has very restricted distribution in the Auckland region. The plant is difficult to identify and, at the current low levels of infestation, the public may not fully recognise the threat it poses to the environment. A regionally co-ordinated control approach is necessary.

6.2.24 Sagittaria species

(all *Sagittaria* spp. except *S. teres*)

(i) Description of the problem



Sagittaria species are emergent perennial aquatic plants that grow from short fleshy rhizomes. The plants spread locally by their creeping root systems, and to other areas via seed carried by water, machinery, wildlife and humans. New infestations can also form

via rhizome fragments transported by ditch cleaning machinery and spoil.

Sagittaria species normally grow in static or slow-moving fresh water such as that found in drains, streams and pond margins. They can form extensive infestations in shallow waterways (to a depth of 45 cm), seriously restricting water flow and increasing sedimentation, and thus aggravating flooding. They can also displace all other desirable or native flora in waterways and wetland areas, seriously impacting on the ecology of such ecosystems.

(ii) Pest plant designation

All *Sagittaria* species (except *S. teres*) are declared Total Control Pest Plants throughout the Auckland region.

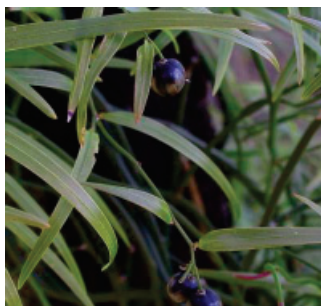
(iii) Reason for strategy

Sagittaria species are very invasive plants and could become much more widespread in the Auckland region, and seriously affect the integrity of most natural waterways. The plants are difficult to identify and, at the current low levels of infestation, the public may not recognise the threat they pose to the environment, primary production and infrastructure. A regionally co-ordinated approach is therefore deemed necessary.

6.2.25 Scrambling lily

(*Geitonoplesium cymosum*)

(i) Description of the problem



Scrambling lily is a vigorous climber with wiry green stems that wind around supporting host plants. The seeds are most likely spread by birds. It also grows from suckering and fragments of rhizomes. Scrambling lily grows well in shade

or full sunlight and has the potential to form dense infestations, resulting in the smothering and strangling of host plants. It is susceptible to frosts but could thrive in the warmer climates of Auckland, particularly in coastal areas.

(ii) Pest plant designation

Scrambling lily (*Geitonoplesium cymosum*) is declared a Total Control Pest Plant throughout the Auckland region.

(iii) Reason for strategy

The distribution and impacts of scrambling lily in the region are currently very low. However, considering the biological characteristics of the plant and its ability to grow in a range of habitats, it could establish itself in, and degrade areas of, high conservation value within the region. A regionally co-ordinated approach is therefore deemed necessary.

6.2.26 Senegal tea

(*Gymnocoronis spilanthoides*)

(i) Description of the problem



Senegal tea is a perennial semi-aquatic herb, growing to 1.5m when flowering. It is spread by vegetative fragments and seed. Stem fragments may be spread by water movement, deliberate planting or by machinery. Dispersal of seed is by water

movement or in mud stuck to animals or machinery.

Senegal tea is found in warm temperate regions. Plants are dormant in winter, producing shoots in spring from protected buds in the nodes and crown. This species grows in marshy soils and still or flowing water, where it can form floating mats on the margins of waterbodies. These mats can quickly cover waterbodies, excluding other species and impeding water flow, navigation and recreational activities. This plant can seriously affect the ecology of freshwater ecosystems.

(ii) Pest plant designation

Senegal tea (*Gymnocoronis spilanthoides*) is declared a Total Control Pest Plant throughout the Auckland region.

(iii) Reason for strategy

Senegal tea, being a very invasive plant, could become a more widespread pest in the Auckland region and seriously affect the integrity of most natural waterways. The plant is difficult to identify and, at the current low levels of infestation, the public may not recognise the threat it poses to the environment. A regionally co-ordinated approach is therefore deemed necessary.

6.2.27 Water poppy

(*Hydrocleys nymphoides*)

(i) Description of the problem



Water poppy is a perennial aquatic with floating and emergent flowers and leaves. It only spreads by vegetative means in New Zealand. Dispersal occurs when a portion of stem with a node or plantlets break off and are moved

by water, machinery, boats or people. Plantlets or stem fragments soon take root at new sites, forming new infestations.

Water poppy is primarily a plant of still or slow flowing water up to 2m deep. Although a sub-tropical plant, it thrives in a warm temperate climate. This species is extremely invasive and can cover large areas of freshwater quickly. It has the ability to block access to water, be a nuisance to recreational activities, degrade water quality and displace native species.

(ii) Pest plant designation

Water poppy (*Hydrocleys nymphoides*) is declared a Total Control Pest Plant throughout the Auckland region.

(iii) Reason for strategy

Water poppy, an invasive aquatic plant, currently has a limited distribution, but could become more widespread in the Auckland region. Because the plant is still occasionally distributed by gardeners and requires specialist identification and control, a regionally co-ordinated approach is deemed necessary.

6.2.28 White-edged nightshade

(*Solanum marginatum*)

(i) Description of the problem



White-edged nightshade is a much-branched perennial shrub or small tree, which grows to 5m. This species spreads mainly through movement of fruit in water flowing over the soil surface, or through movement of soil contaminated with seeds.

White-edged nightshade is mainly found in scrub, on poor pastoral land, wasteland or forest margins in warm situations in higher rainfall areas. It has the ability to form impenetrable scrub communities. It is a threat to pasture production on marginal land and has the ability to displace native species in bush margins, sand dunes and coastal areas. The plant can inhibit human access in recreational areas and the fruit is toxic. It could become a problem in coastal areas and on the islands of the Hauraki Gulf.

(ii) Pest plant designation

White-edged nightshade (*Solanum marginatum*) is declared a Total Control Pest Plant throughout the Auckland region.

(iii) Reason for strategy

The ability of white-edged nightshade to become much more widespread throughout the Auckland region means a regional pest management strategy is required. As this species has almost been eradicated by the ARC over the past 20 years, it is advisable to continue the eradication programme.

6.3. Total Control Pest Plants (defined areas only)

The following section of the Strategy outlines relevant information for those species that are declared Total Control Pest Plants only within defined areas. Objectives, principal measures of achievement and Rules are given separately for each species, as these relate to the different areas in which they are declared Total Control Pest Plants.

6.3.1 Egeria

(*Egeria densa*)

(i) Description of the problem



Egeria is a submerged, much-branched, perennial freshwater aquatic herb, commonly known as oxygen weed. This species spreads solely by vegetative fragments, either naturally via water; accidentally via boats,

trailers and fishing nets; or deliberately with fish introduction. This species thrives to depths of 7m in the turbid and enriched waters of freshwater ponds, lakes, reservoirs and slowly flowing streams of warm-temperate regions.

Egeria is widespread in waterbodies around the Auckland region, although there are still a number of uninfested areas. Extremely dense growth of egeria seriously retards water flow, interfering with irrigation and urban water supplies. Infestations also restrict water traffic and recreational activities such as boating, swimming and fishing. The plant increases sedimentation rates and causes fluctuations in the chemical and physical parameters of waterbodies. This species also replaces communities of submerged native plants. The plant can also be a drowning risk because of entanglement.

(ii) Pest plant designation

Egeria (*Egeria densa*) is declared a:

- a) Total Control Pest Plant on Great Barrier Island; and a
- b) Surveillance Pest Plant throughout the remainder of the Auckland region.

(iii) Reason for strategy

The relatively widespread distribution of egeria and its ability to further spread and colonise new habitats make it an ongoing threat to the region. It is necessary to provide information to educate the public on the plant's potential effects and the methods of preventing its spread. It is also necessary to eradicate the sole infestation on Great Barrier Island.

(iv) Objectives

- a) To eradicate egeria from Great Barrier Island over the next five years; and
- b) To prevent the spread of egeria to freshwater bodies in the region currently free from infestation over the next five years.

(v) Principal measures of achievement

Control	Enter any property on Great Barrier Island where egeria is present and carry out control work on this species. ARC may, at its discretion, undertake control in other areas.
Enforcement	Enforce restrictions on the sale, propagation, distribution and exhibition of egeria throughout the region.
Education & Advice	Provide information and advice on identification and control.
Monitoring & Surveillance	Undertake inspections, monitoring and surveillance of waterbodies currently free of egeria.

(vi) Rules**Rule 6.3.1.1**

No person shall:

- a) Cause or permit egeria (*Egeria densa*) to be in a place where it is offered for sale or is exhibited; or
- b) Sell or offer egeria (*Egeria densa*) for sale; or
- c) Propagate, distribute, breed, or multiply egeria (*Egeria densa*) or otherwise act in such a manner as is likely to encourage or cause the propagation, distribution, breeding or multiplication of egeria (*Egeria densa*).

A breach of these Rules will create an offence under section 154(r) of the Act, or may result in default work under section 128 of the Act, or both.

In addition to this Rule, powers under the Biosecurity Act 1993 allow Biosecurity Officers to inspect properties to remove these plants and carry out control.

6.3.2 Lantana

(*Lantana camara*)

(i) Description of the problem

Lantana is an aromatic perennial shrub, which grows to 3 m tall. It increases the size and density of existing colonies by suckering and seedling growth within thickets. Longer distance spread is by birds. The plant has also been spread by intentional plantings.

Lantana prefers warm climates and richer soils in lowlands, mountain slopes and valleys at altitudes below 1800m. Its potential habitats include coastal scrubland, islands, cliffs, foreshores, consolidated dunes, forest margins, gumland, wasteland, exotic plantations and gardens. Lantana is a well-documented pest throughout the Pacific and sub-tropical or tropical places worldwide.

Lantana rapidly forms impenetrable thickets, suppressing lower vegetation types and regenerating native bush, assisted by its allelopathic properties. It is thorny and can obstruct stock and humans in many situations including poor pastures and recreational areas. It is poisonous to stock and humans and is a major weed of crops overseas.

(ii) Pest plant designation

Lantana (*Lantana camara*) is declared a:

- a) Total Control Pest Plant in the rural areas (as defined in Appendix 1) of the Auckland region; and a
- b) Surveillance Pest Plant throughout the remainder of the Auckland region.

(iii) Reason for strategy

Lantana could rapidly become much more widespread throughout the region, so a regional management strategy is required. The plant was still available for sale in some areas until recently and public perception of it as a pest is low. Evidence from other countries shows that lantana can become a significant pest plant, imposing high economic and environmental costs.

(iv) Objective

- a) To eradicate known sites of lantana in the rural areas (as defined in Appendix 1) of the Auckland region, over the next five years.

(v) Principal measures of achievement

Control	Enter any property in rural areas (as defined in Appendix 1) where lantana is present and carry out control work on this species.
Enforcement	Enforce restrictions on the sale, propagation, distribution and exhibition of lantana.
Education & Advice	Provide information and advice.
Monitoring & Surveillance	Undertake inspections, monitoring and surveillance in key areas of the region, e.g. peri-urban sites.

(vi) Rules

Rule 6.3.2.1

No person shall:

- a) Cause or permit lantana (*Lantana camara*) to be in a place where it is offered for sale or is exhibited; or
- b) Sell or offer lantana (*Lantana camara*) for sale; or
- c) Propagate, distribute, breed, or multiply lantana (*Lantana camara*) or otherwise act in such a manner as is likely to encourage or cause the propagation, distribution, breeding or multiplication of lantana (*Lantana camara*).

A breach of these Rules will create an offence under section 154(r) of the Act, or may result in default work under section 128 of the Act, or both.

In addition to this Rule, powers under the Biosecurity Act 1993 allow Biosecurity Officers to inspect properties to remove these plants and carry out control.

6.3.3 Madeira vine

(Anredera cordifolia)

(i) Description of the problem



Madreia vine (also known as mignonette vine) is a vigorous perennial creeper growing from a fleshy rhizome. It reproduces through the shedding and spread of warty-like stem tubers that break off easily to form new plants. Spread usually occurs via the dumping of garden refuse

or relocation of topsoil containing tubers. Water can also disperse tubers.

Madreia vine prefers fertile soils in warm moist climates, and needs high light intensity to establish itself, quickly climbing into the canopy. Its preferred habitats include forest margins, disturbed or low forest, and coastal areas, as well as waste places, urban gardens and rocky places. It can block native plant succession and regeneration, and can topple and kill small trees due to the weight of the growth. It is also a problem in urban reserves and gardens where it can become the dominant species.

Madreia vine is widespread throughout urban areas of the Auckland region, but has not yet invaded many areas of High Conservation Value outside these areas.

(ii) Pest plant designation

Madreia vine (*Anredera cordifolia*) is declared a:

- a) Total Control Pest Plant in areas where it threatens High Conservation Value sites, as determined by ARC staff; and a
- b) Surveillance Pest plant throughout the remainder of the Auckland region; and a
- c) Community Initiative Pest Plant throughout the entire Auckland region (refer section 9 of this Strategy).

(iii) Reason for strategy

The rapid spread of Madeira vine throughout the urban areas of the region and its potential to colonise new habitats in natural areas make this species a threat to the region. A regionally co-ordinated approach is deemed necessary to minimise the plant’s impacts on native ecosystems, especially those that are not yet affected by the plant (e.g. the Waitakere and Hunua Ranges and Great Barrier Island) and to eradicate Madeira vine from sites which threaten areas of High Conservation Value.

(iv) Objectives

- a) To eradicate Madeira vine from sites within and adjacent to areas of High Conservation Value, as defined by ARC staff; and
- b) To restrict the further spread of Madeira vine by humans over the next 10 years.

(v) Principal measures of achievement

Control	Enter any property within or adjacent to High Conservation Value sites where Madeira vine is present and carry out control work on this species.
Enforcement	Enforce restrictions on the sale, propagation, distribution and exhibition of Madeira vine.
Education & Advice	Provide information and advice.
Monitoring & Surveillance	Undertake inspections, monitoring and surveillance of key areas within the region to detect new infestations.

(vi) Rules

Rule 6.3.3.1

No person shall:

- a) Cause or permit Madeira vine (*Anredera cordifolia*) to be in a place where it is offered for sale or is exhibited; or
- b) Sell or offer Madeira vine (*Anredera cordifolia*) for sale; or
- c) Propagate, distribute, breed, or multiply Madeira vine (*Anredera cordifolia*) or otherwise act in such a manner as is likely to encourage or cause the propagation, distribution, breeding or multiplication of Madeira vine (*Anredera cordifolia*).

A breach of these Rules will create an offence under section 154(r) of the Act, or may result in default work under section 128 of the Act, or both.

In addition to this Rule, powers under the Biosecurity Act 1993 allow Biosecurity Officers to inspect properties to remove these plants and carry out control.

6.3.4 Rhamnus

(*Rhamnus alaternus*)

(i) Description of the problem



Rhamnus (also known as evergreen or Italian buckthorn) is an evergreen tree, growing up to 10 m tall. The seeds are dispersed by birds and possums (possibly also other animals), which eat the fruit. Humans have also cultivated and spread the plant in the past.

Rhamnus prefers growing in areas with a Mediterranean type climate (e.g. summer drought and intermittent rain in winter) and does particularly well in coastal areas and barren sites (e.g. cliffs, lava). It can also grow on the margins of streams, forests, disturbed forests and undisturbed alluvial forests. Rhamnus occurs mostly on the islands of the inner Hauraki Gulf in the Auckland region, and also in coastal locations on the mainland (e.g. cliffs along Tamaki Drive, Takapuna and Musick Point).

The main problem caused by rhamnus is its ability to form dense colonies, smothering young native plants and preventing seedling establishment. It can completely dominate coastal cliff habitats, altering the form and structure of the ecosystem and killing off coastal pohutukawa. It can also alter the structure of other native ecosystems due to its ability to achieve 80-100% cover in a relatively short period of time.

(ii) Pest plant designation

Rhamnus (*Rhamnus alaternus*) is declared a:

- a) Total Control Pest Plant in the Hauraki Gulf Controlled Area (refer section 17.2), excluding on Crown land administered by DoC, where it is subject to DoC control programmes; and a
- b) Containment Pest Plant on mainland sites as identified in Map 4 of Appendix 3 (also refer to section 7.2.8 below); and a
- c) Surveillance Pest Plant throughout the remainder of the Auckland region; and a

- d) Community Initiative Pest Plant throughout the entire Auckland region (refer Section 9 of this Strategy).

(iii) Reason for strategy

Rhamnus, although well established in parts of the inner Hauraki Gulf, has the potential to spread even further throughout the Auckland region, and become an extremely serious pest of native ecosystems. The plant is similar in appearance to a number of native species and, because of this, the public may not recognise the threat it poses to the environment. Regional intervention is therefore deemed necessary to eradicate this plant from selected areas of the region where it is causing significant harm (i.e. the Hauraki Gulf islands), ensure control of the plant in major infestation areas on the mainland and prevent its long-term establishment in unaffected areas of the region.

(iv) Objectives

- a) To eradicate rhamnus from Noises, Crusoe, and Rakino Islands within the next five years; and
- b) To eradicate rhamnus from Waiheke Island within the next ten years; and
- c) Within the next five years, ensure control of all known infestations of rhamnus within the areas shown on Map 4 of Appendix 3; and
- d) To restrict the further spread of rhamnus by humans.

(v) Principal measures of achievement

Control	Enter any property on the inner gulf islands (Waiheke, Noises, Crusoe, and Rakino Islands) where rhamnus is present and carry out control and eradication work.
Enforcement	Enforce restrictions on the sale, propagation, distribution and exhibition of rhamnus.
Education & Advice	Provide information and advice.
Monitoring & Surveillance	Undertake inspections, monitoring and surveillance of key areas within the region to detect new infestations.

(vi) Rules**Rule 6.3.4.1**

Landowners/occupiers of the properties shown in Map 4 of Appendix 3 must successfully destroy all adult and juvenile plants of rhamnus (*Rhamnus alaternus*) on land they occupy.

Rule 6.3.4.2

No person shall:

- a) Cause or permit rhamnus (*Rhamnus alaternus*) to be in a place where it is offered for sale or is exhibited; or
- b) Sell or offer rhamnus (*Rhamnus alaternus*) for sale; or
- c) Propagate, distribute, breed, or multiply rhamnus (*Rhamnus alaternus*) or otherwise act in such a manner as is likely to encourage or cause the propagation, distribution, breeding or multiplication of rhamnus (*Rhamnus alaternus*).

A breach of these Rules will create an offence under section 154(r) of the Act, or may result in default work under section 128 of the Act, or both.

In addition to these Rules, powers under the Biosecurity Act 1993 allow Biosecurity Officers to inspect properties to remove these plants and carry out control.

6.3.5 Spartina

(*Spartina alterniflora*, *S. anglica* & *S. x townsendii*)

(i) Description of the problem

Spartina is a robust, erect, rhizomatous grass up to 1 m tall, with a massive root system. The common name, spartina, refers to the three naturalised taxa in New Zealand, only one of which produces seed (*Spartina anglica*).

All three taxa propagate readily by rhizomes or plant fragments.

Spartina has become a weed in several countries. In New Zealand it occupies shallow saline habitats largely unfilled by native species. It is capable of taking over large areas of the coastal marine area, resulting in a loss of natural habitat (for wading birds and spawning fish), recreational fisheries and seafood sources. Excessive growth can also cause navigational problems and exacerbate flooding in low-lying coastal areas.

Spartina has been planted in a number of marine areas to assist in bank stabilisation and erosion control. Other alternative species that do not exhibit invasive characteristics are available for this purpose.

(ii) Pest plant designation

Spartina (*Spartina alterniflora*, *S. anglica*, *S. x townsendii*) is declared a:

- a) Total Control Pest Plant in the Waitemata and Manukau Harbours, and all waterbodies of the east coast of the Auckland region; and a
- b) Surveillance Pest Plant throughout the remainder of the Auckland region.

(iii) Reason for strategy

Spartina is an invasive plant, which can seriously affect estuarine ecosystems. Once established, it is difficult to eradicate. Chemical control is the most effective means. Spartina can destroy intertidal ecosystems

and compromise economic and environmental values. Ongoing action is needed to restrict its spread from the current areas of infestation (e.g. Kaipara and Manukau Harbours). A regionally co-ordinated approach is therefore needed to prevent its spread and establishment in unaffected areas of the region.

(iv) Objectives

- a) To eradicate spartina from all harbours and coastlines, other than the Kaipara Harbour, over the next 5 years; and
- b) To restrict the further spread of spartina by humans over the next five years and progressively control spartina in the Kaipara Harbour.

(v) Principal measures of achievement

Control	Enter any property where spartina is present in the Manukau and Waitemata Harbours, or any waterbody of the east coast and carry out control work on it.
Enforcement	Enforce restrictions on the sale, propagation, distribution and exhibition of spartina.
Education & Advice	Provide information and advice on management of spartina infestations and appropriate alternative species for stabilisation purposes.
Monitoring & Surveillance	Undertake inspections, monitoring and surveillance of key areas within the region to detect new infestations.

(vi) Rule

Rule 6.3.5.1

No person shall:

- a) Cause or permit spartina (*Spartina alterniflora*, *S. anglica*, *S. x townsendii*) to be in a place where it is offered for sale or is exhibited; or
- b) Sell or offer spartina (*Spartina alterniflora*, *S. anglica*, *S. x townsendii*) for sale; or
- c) Propagate, distribute, breed, or multiply spartina (*Spartina alterniflora*, *S. anglica*, *S. x townsendii*) or otherwise act in such a manner as is likely to encourage or cause the propagation, distribution, breeding or multiplication of spartina (*Spartina alterniflora*, *S. anglica*, *S. x townsendii*).

A breach of these Rules will create an offence under section 154(r) of the Act, or may result in default work under section 128 of the Act, or both.

In addition to these Rules, powers under the Biosecurity Act 1993 allow Biosecurity Officers to inspect properties to remove these plants and carry out control.

6.3.6 Wild broom

(*Cytisus scoparius*)

(i) Description of the problem



Broom is an erect perennial shrub, most commonly growing to 2m in height. The plant is spread solely by seeds, through water action, on machines and animals, or in agricultural produce, gravel and mud.

Broom normally grows in areas of high rainfall, on acid soils. It tolerates a wide range of soil conditions. It is a very invasive weed of waste areas, forestry and lightly grazed pasture. It rapidly forms large infestations, which reduce stock carrying capacity on farms or smother new tree plantings in forestry. It is unpalatable to stock and can harbour animal pests such as rabbits and possums. Broom can also affect native ecosystems by replacing desirable vegetation. It is a visibility hazard on roadsides.

(i) Pest plant designation

Broom (*Cytisus scoparius*) is declared a:

- a) Total Control Pest Plant throughout the rural areas (as defined in Appendix 1) of the Auckland region; and a
- b) Surveillance Pest Plant throughout the remainder of the Auckland region.

(iii) Reason for strategy

The invasive nature of broom and its ability to affect production and regionally important ecosystems makes it a threat to the Auckland region. Farmland, plantation forestry, and natural ecosystems need to be kept free of the plant to avoid its adverse impacts. A regional approach to control is necessary.

(iv) Objective

- a) For broom, the objective is to eradicate all currently known sites in rural areas (as defined in Appendix 1) of the Auckland region, over the next 5 years.

(v) Principal measures of achievement

Control	Enter any property in a rural area (as defined in Appendix 1) where broom is present and carry out control work on this species.
Enforcement	Enforce restrictions on the sale, propagation, distribution and exhibition of broom. This does not apply to cultivated forms (e.g. <i>C.scoparius</i> var. <i>andreasus</i>).
Education & Advice	Provide information and advice.
Monitoring & Surveillance	Undertake inspections, monitoring and surveillance.

(vi) Rules

Rule 6.3.6.1

No person shall:

- a) Cause or permit broom (*Cytisus scoparius*) to be in a place where it is offered for sale or is exhibited; or
- b) Sell or offer broom (*Cytisus scoparius*) for sale; or
- c) Propagate, distribute, breed, or multiply broom (*Cytisus scoparius*) or otherwise act in such a manner as is likely to encourage or cause the propagation, distribution, breeding or multiplication of broom (*Cytisus scoparius*).

The above Rules shall not apply to cultivated forms (e.g. *Cytisus scoparius* var. *andreasus*).

A breach of these Rules will create an offence under section 154(r) of the Act, or may result in default work under section 128 of the Act, or both.

In addition to these Rules, powers under the Biosecurity Act 1993 allow Biosecurity Officers to inspect properties to remove these plants and carry out control.