

PART II: PEST MANAGEMENT PROGRAMMES

INTRODUCTION

Part II of the Strategy details the pest management programmes in relation to each pest to which the Strategy applies.

Sections 4, 5, 6, 7, 8 and 9 of the Strategy set out management programmes for individual pests according to their designation. The Councils have determined that individual pests warrant different types and levels of regional intervention. For the purposes of the Strategy, the Councils have adopted the following terminology for pest designations that reflect the objectives to be achieved:

Total Control Pests (Section 4)

are pests of limited distribution or density in a region, or part of a region, and for which the ultimate goal is eradication.

Progressive Control Pests (Section 5)

are pests that are unlikely to be eradicated because of their biological characteristics (such as long-term seed viability) but it is still feasible to reduce the density and distribution of the pest.

Containment Pests (Section 6)

are pests that are abundant in a region, or a part of a region, where the long-term goal is to prevent the pest spreading to new areas or neighbouring properties.

Boundary Control Pests (Section 7)

are pests of generally widespread distribution and for which the goal is to control the spread of the pest to land that is clear, or being cleared of the pest.

Regional Surveillance Pests (Section 8)

are mostly pests that may pose a high potential risk but there is limited information on their regional distribution and/or their impact. These pests are banned from sale, propagation, or distribution, but there are no Strategy rules requiring the land occupier to undertake control measures. These pests will be monitored by the Management Agency, which will gather information and keep records on their distribution and impact, provide information and advice to land occupiers, and promote voluntary control.

Pest Control in Sites of High Public Value (Section 9)

are the pests that need to be controlled in order to adequately protect sites of high public value. These sites are where the pests are likely to have the greatest impact and where the greatest benefits can be achieved.

4 TOTAL CONTROL PESTS

Total Control Pests refer to pests that are of limited distribution or density in a region, or part of a region. The long-term goal is eradication of these pests.

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- 4.1 African Feather Grass
- 4.2 Bathurst Bur
- 4.3 Boxthorn
- 4.4 Cathedral Bells
- 4.5 Climbing Spindleberry
- 4.6 Egeria
- 4.7 Entire Marshwort
- 4.8 Hornwort
- 4.9 Madeira Vine
- 4.10 Phragmites
- 4.11 Saffron Thistle
- 4.12 Senegal Tea
- 4.13 Spartina

4.1 AFRICAN FEATHER GRASS (*Pennisetum macrourum*)



4.1.1 Description

African Feather Grass is an aggressive, rhizomatous, perennial grass that forms dense tussocks up to 2 metres high. It resembles a small pampas grass when not flowering. The plant has a distinctive flower, being a narrow panicle stem up to 300 millimetres long, and yellow to purple in colour, with flowering occurring from November to April. It spreads either by seeds, which are distributed by wind, water and animals, or by vegetative spread through their rhizomes (root system).

4.1.2 Reasons for the Strategy

African Feather Grass is an aggressive, unpalatable plant that excludes desirable vegetation, and in some situations out-competes pasture. It is highly invasive, capable of displacing blackberry, and has a high potential to damage natural areas and become a major pest of roadsides, wasteland, and urban areas. Once established, it can inhibit movement by people, farm animals and small machinery, block drains, and restrict roadside vision. It is very persistent and difficult to eradicate.

African Feather Grass is assessed at “2” on the infestation curve. There are five known sites in the Grampians, Atawhai, Foxhill and Hiwipango areas with only one active. The low incidence of African Feather Grass in the Tasman-Nelson region, extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of total control far outweigh the costs.

4.1.3 Objective

To contribute to the eradication of African Feather Grass by ensuring that all known sites in the Tasman-Nelson region are inspected annually and all live plants are destroyed during the term of the Strategy.

4.1.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations of African Feather Grass.
- Enforce rules requiring land occupiers to destroy all African Feather Grass plants.
- Advise the public on the identification and control of African Feather Grass.
- Carry out surveillance for African Feather Grass.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of eradication, and will result in significant additional costs to the community with respect to lost production and the increased cost of control in the future.

4.1.5 Strategy Rule for African Feather Grass

The occupier shall destroy all adult and juvenile forms of African Feather Grass on land that they occupy.

A breach of Strategy Rule 4.1.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

4.1.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display African Feather Grass, under Sections 52 and 53 of the Act.



4.2 BATHURST BUR (*Xanthium spinosum*)



4.2.1 Description

Bathurst Bur is a shrubby annual herb that grows to 1 metre high. It has well-branched, upright stems that are armed with triple spines grouped in opposite pairs. Flowers are inconspicuous, and fruits are bur-like, with hooked spines. They contain two seeds that are spread mainly by attachment to animals, by water, and in produce.

4.2.2 Reasons for the Strategy

Bathurst Bur seedlings are toxic to cattle, goats, poultry, sheep and, in particular, horses and pigs. Burs and spines irritate the skin of shearers, devaluing wool, and the burs damage the feet of livestock. Contact with the plant causes dermatitis in some people. The plant competes strongly with summer crops, and preferred pasture species.

Bathurst Bur is assessed at “2” (long seed viability) on the infestation curve. There are known sites in Nelson City, Richmond and Wai-iti, but all are historic. The low incidence of Bathurst Bur in the Tasman-Nelson region, extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of total control far outweigh the costs.

4.2.3 Objective

To contribute to the eradication of Bathurst Bur by ensuring that all known sites in the Tasman-Nelson region are inspected annually and all live plants are destroyed during the term of the Strategy.

4.2.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations of Bathurst Bur.
- Enforce rules requiring land occupiers to destroy all Bathurst Bur plants.
- Advise the public on the identification and control of Bathurst Bur.
- Carry out surveillance for Bathurst Bur.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of eradication, and will result in significant additional costs to the community with respect to lost production and the increased cost of control in the future.

4.2.5 Strategy Rule for Bathurst Bur

The occupier shall destroy all adult and juvenile forms of Bathurst Bur on land that they occupy.

A breach of Strategy Rule 4.2.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

4.2.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Bathurst Bur, under Sections 52 and 53 of the Act.





4.3 BOXTHORN (*Lycium ferocissimum*)

4.3.1 Description

Boxthorn is a densely-branched, erect, woody, evergreen perennial that grows up to 6 metres high. The leaves are green, narrow and oblong. The flowers are white or pale mauve, followed by 10 millimetre wide orange-red berries. The plant has been used for hedges and shelter in coastal areas, as it tolerates salt-spray and trimming. The orange-red berries are produced freely and distributed by birds but can be poisonous. It has strong spines at the tips of the branches.

4.3.2 Reasons for the Strategy

Boxthorn invades sand dunes and coastal environments and can exclude all other species. It forms dense, thorny barriers and harbours vermin. Leaves are suspected to be poisonous, and the extremely sharp, stiff and numerous spines can injure stock and people. Boxthorn provides a threat to extensively managed land and waste spaces, especially where rainfall is light. It is capable of invading both production land and indigenous shrubland.

Boxthorn is assessed at “3” on the infestation curve and found in coastal areas throughout the region. The low incidence of Boxthorn in the Tasman-Nelson region, extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of total control far outweigh the costs.

4.3.3 Objective

To contribute to the eradication of Boxthorn by ensuring that the remaining sites in the Tasman-Nelson region are inspected annually and all live plants are destroyed during the term of the Strategy.

4.3.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations of Boxthorn.
- Enforce rules requiring land occupiers to destroy all Boxthorn plants.

- Advise the public on the identification and control of Boxthorn.
- Carry out surveillance for Boxthorn.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of eradication, and will result in significant additional costs to the community with respect to lost production and the increased cost of control in the future. However, the only remaining known infestation of Boxthorn will take some time to eradicate, as it is providing shelter in an exposed coastal situation and fulfilling a soil conservation role.

4.3.5 Strategy Rule for Boxthorn

The occupier shall destroy all adult and juvenile forms of Boxthorn on land that they occupy.

A breach of Strategy Rule 4.3.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

4.3.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Boxthorn, under Sections 52 and 53 of the Act.



4.4 CATHEDRAL BELLS (*Cobaea scandens*)



4.4.1 Description

Cathedral Bells is a vigorous perennial climber. It has large bell-shaped flowers that are green at first, becoming purple in colour after pollen production. Flowers are produced in summer and autumn. Egg-shaped fruit are produced, bearing many large-winged seeds.

4.4.2 Reasons for the Strategy

Cathedral Bells is very fast growing and smothers ground and tree vegetation. It suppresses native plant regeneration in disturbed or low forest, forest margins and open coastal forest. It has the potential to become a major problem in forests, scrub, and recreation areas.

Cathedral Bells is assessed at “4” on the infestation curve. There are known garden sites of Cathedral Bells throughout the region. The low incidence of Cathedral Bells in the Tasman-Nelson region, extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of total control far outweigh the costs.

4.4.3 Objective

To contribute to the eradication of Cathedral Bells by ensuring that all known sites in the Tasman-Nelson region are inspected annually and all live plants are destroyed during the term of the Strategy.

4.4.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations of Cathedral Bells.
- Enforce rules requiring land occupiers to destroy all Cathedral Bell plants.
- Advise the public on the identification and control of Cathedral Bells.
- Carry out surveillance for Cathedral Bells.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of eradication, and will result in significant additional costs to the community with respect to lost natural values and the increased cost of control in the future.

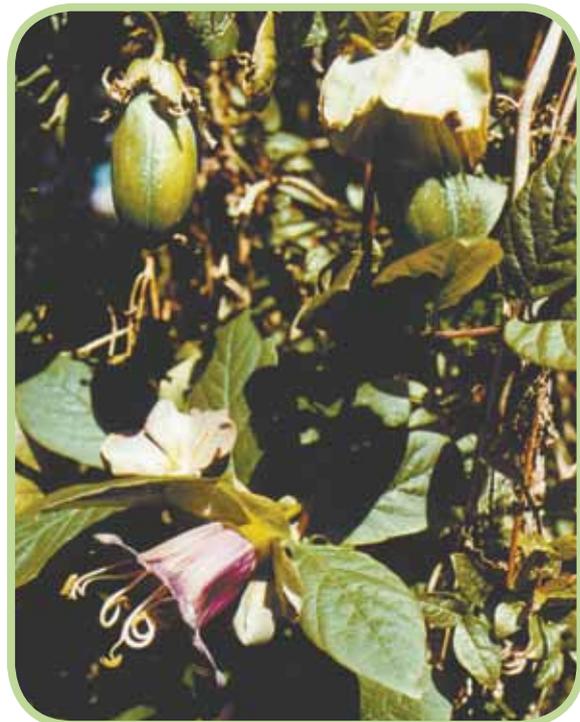
4.4.5 Strategy Rule for Cathedral Bells

The occupier shall destroy all adult and juvenile forms of Cathedral Bells on land that they occupy.

A breach of Strategy Rule 4.4.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

4.4.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Cathedral Bells, under Sections 52 and 53 of the Act.





4.5 CLIMBING SPINDLEBERRY (*Celastrus orbiculatus*)

4.5.1 Description

Climbing Spindleberry is a vigorous perennial climber that can grow up to 12 metres high. It is conspicuous in autumn when the leaves turn a bright yellow colour before dropping. Flowers are green and inconspicuous but the plant produces showy orange fruit, attracting birds to disperse its seed.

4.5.2 Reasons for the Strategy

Climbing Spindleberry has the ability to kill trees by smothering them due to its shade tolerance and rampant growth. It is one of the few climbers with the potential to invade cooler areas. In the last 15 years, it has had a major impact on native vegetation in the Taupo-Tongariro area and on pine plantations in the Bay of Plenty.

Climbing Spindleberry is assessed at “4” on the infestation curve. There are a number of known sites throughout the region. The low incidence of Climbing Spindleberry in the Tasman-Nelson region, extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of total control far outweigh the costs.

4.5.3 Objective

To contribute to the eradication of Climbing Spindleberry by ensuring that all known sites in the Tasman-Nelson region are inspected annually and all live plants are destroyed during the term of the Strategy.

4.5.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations of Climbing Spindleberry.
- Enforce rules requiring land occupiers to destroy all Climbing Spindleberry plants.
- Advise the public on the identification and control of Climbing Spindleberry.
- Carry out surveillance for Climbing Spindleberry.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of eradication, and will result in significant additional costs to the community with respect to lost natural values and the increased cost of control in the future.

4.5.5 Strategy Rule for Climbing Spindleberry

The occupier shall destroy all adult and juvenile forms of Climbing Spindleberry on land that they occupy.

A breach of Strategy Rule 4.5.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

4.5.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Climbing Spindleberry, under Sections 52 and 53 of the Act.



4.6 EGERIA (*Egeria densa*)



4.6.1 Description

Egeria is a vigorous, submerged, aquatic perennial that can grow to 5 metres tall in still water. The leaves are dark green, up to 4 centimetres long, in whorls of four to six. It has white flowers, conspicuously protruding just above the surface, up to 20 millimetres in diameter. It spreads through shoot fragments, a process often aided by humans.

4.6.2 Reasons for the Strategy

Egeria can form extremely dense stands that reduce water flow. It is very effective at suppressing other aquatic species, including natives, degrading the natural character of rivers and lakes. It restricts water traffic and interferes with recreational activities. It also impedes irrigation, water supplies and hydroelectricity operations.

Egeria is assessed at “3” on the infestation curve. There are a small number of known sites in garden ponds in the Tasman-Nelson region, but no known active sites. The low incidence of Egeria in the Tasman-Nelson region, extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of total control far outweigh the costs.

4.6.3 Objective

To contribute to the eradication of Egeria by ensuring that all known sites in the Tasman-Nelson region are inspected annually and all live plants are destroyed during the term of the Strategy.

4.6.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations of Egeria.
- Enforce rules requiring land occupiers to destroy all Egeria plants.
- Advise the public on the identification and control of Egeria.
- Carry out surveillance for Egeria.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of eradication, and will result in significant additional costs to the community with respect to lost natural values and the increased cost of control in the future.

4.6.5 Strategy Rule for Egeria

The occupier shall destroy all adult and juvenile forms of Egeria on land that they occupy.

A breach of Strategy Rule 4.6.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

4.6.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Egeria, under Sections 52 and 53 of the Act.





4.7 ENTIRE MARSHWORT (*Nymphoides geminata* (R. Br.) Kuntze)

4.7.1 Description

Entire Marshwort is a bottom-rooted, aquatic perennial. It is most clearly distinguished from other aquatic plants with floating leaves by its bright yellow, five-lobed, frilly flowers, which are borne above the water margin. The flowers have a 2.5–3.5 centimetre span, and can be observed from November to April, although they only last one day. It grows on sediments ranging from fine gravel and sand to fine organic silt in depths of up to 2.5 metres. It is characterised by persistent regrowth and spread by fragmentation.

4.7.2 Reasons for the Strategy

Entire Marshwort's ability to spread rapidly means it poses a significant threat of obstructing water bodies, and to the natural character of streams and lakes in the Tasman-Nelson region. Entire Marshwort will out-compete water lilies and native species.

Entire Marshwort is assessed at "1" on the infestation curve. There are several known sites but only one active site at present. The low incidence of Entire Marshwort in the Tasman-Nelson region, extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of total control far outweigh the costs.

4.7.3 Objective

To contribute to the eradication of Entire Marshwort by ensuring that all known sites in the Tasman-Nelson region are inspected annually and all live plants are destroyed during the term of the Strategy.

4.7.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations of Entire Marshwort.
- Enforce rules requiring land occupiers to destroy all Entire Marshwort plants.

- Advise the public on the identification and control of Entire Marshwort.
- Carry out surveillance for Entire Marshwort.

Alternative Measures

The alternative option of "do nothing" or relying on voluntary control will not achieve the objective of eradication, and will result in significant additional costs to the community with respect to lost natural values and the increased cost of control in the future.

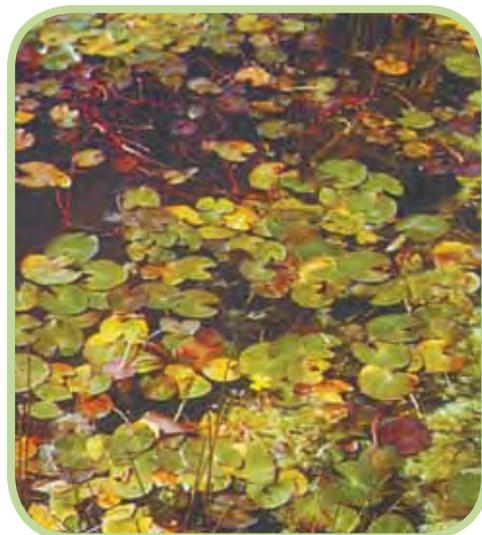
4.7.5 Strategy Rule for Entire Marshwort

The occupier shall destroy all adult and juvenile forms of Entire Marshwort on land that they occupy.

A breach of Strategy Rule 4.7.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

4.7.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Entire Marshwort, under Sections 52 and 53 of the Act.



4.8 HORNWORT (*Ceratophyllum demersum*)



4.8.1 Description

Hornwort is a vigorous, invasive, submerged, aquatic perennial found in freshwater down to 16 metres in very clear water, once used as an aquarium and ornamental pond plant. Lacking roots, Hornwort is often free-floating, although its modified base leaves can act as roots, anchoring the plant in sediment or around obstructions in flowing waters. The stems are up to 7 metres long, branched and brittle. The green, forked leaves with toothed edges are arranged in whorls of 7–12. The flowers are minute and no seed is set in New Zealand, but the stem fragments can grow to form new plants. It is considered to be one of the worst introduced water weeds in New Zealand.

It was introduced into the North Island in 1961; the first South Island infestation was found in the Moutere Stream in 2001 and it was subsequently found in a number of other freshwater ponds in the Tasman-Nelson region. An active campaign of eradication has been conducted by the Department of Conservation and Tasman District Council, with support from occupiers.

4.8.2 Reasons for the Strategy

Hornwort grows rapidly and forms dense rafts of weed that can choke waterways, disrupting fishing, boating and other water-based recreational activities, affecting water intakes for irrigation and dams, and severely impacting on other aquatic organisms. It is spread by stem fragments; plants are easily transported to other waterways by machinery, boats, trailers and nets. It is difficult to eradicate. As such, it represents a major threat to South Island rivers and lakes, as well as to irrigation schemes and hydroelectric dams. In the Tasman-Nelson region, prompt action by the Department of Conservation over a number of years, assisted by the Management Agency, appears to have eradicated it. Hornwort's ability to regenerate from vegetative fragments means that intensive monitoring is essential. It is classified as an unwanted organism and the Management Agency is currently contracted by the Ministry for Primary Industries to undertake surveillance. The Ministry for Primary Industries is committed to its eradication in the South Island.

Hornwort is assessed at "2" on the infestation curve. It has been recorded in the Moutere Stream and in a small number of ponds on privately owned land in Tasman District. The Management Agency believes that it has been eliminated from these sites. The low incidence of Hornwort in the Tasman-Nelson region, extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of total control far outweigh the costs.

4.8.3 Objective

To contribute to the eradication of Hornwort by ensuring that all known sites in the Tasman-Nelson region are inspected annually and any live plants are reported to the Ministry for Primary Industries during the term of the Strategy.

4.8.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations of Hornwort.
- Advise the Ministry for Primary Industries of infestation.
- Advise the public on the identification and control of Hornwort.
- Encourage occupiers to advise the Agency of a suspected infestation.
- Carry out surveillance for Hornwort.



Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of eradication, and will result in significant additional costs to the community with respect to lost natural values and the increased cost of control in the future.

4.8.5 Strategy Rule for Hornwort

The Management Agency will work with the Ministry for Primary Industries (MPI) for the surveillance and control of Hornwort in water bodies.

A breach of Strategy Rule 4.8.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

Funding Responsibility

As Hornwort is an unwanted organism and this is the first known infestation in the South Island, MPI has accepted responsibility for the costs of its surveillance and control.

4.8.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Hornwort, under Sections 52 and 53 of the Act.

4.9 MADEIRA VINE (*Anredera cordifolia*)



4.9.1 Description

Madeira Vine is a perennial climber arising from a fleshy rhizome. The plant may grow up to 7 metres in height. The plant has bright green, fleshy leaves and long racemes of cream flowers from January to April. Madeira Vine reproduces through the shedding and spread of stem tubers. The dumping of garden refuse containing Madeira Vine tubers has the potential to spread it well beyond the parent tree.

4.9.2 Reasons for the Strategy

Madeira Vine displaces native species in riparian and forest margins, especially in coastal areas. Once established, the plant is very difficult to control and becomes invasive. The plant forms dense colonies that out-compete with, or exclude, other plant species. Madeira Vine affects the regeneration of indigenous plants. It also has the ability to topple and kill small trees due to the weight of its growth.

Madeira Vine is assessed at “4” on the infestation curve. There are a number of known sites in the Tasman-Nelson region but the results to date, with intensive control and ongoing surveillance, have encouraged its promotion to Total Control. The low incidence of Madeira Vine in the Tasman-Nelson region, extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of total control far outweigh the costs.

4.9.3 Objective

To contribute to the eradication of Madeira Vine by ensuring that all known sites in the Tasman-Nelson region are inspected annually and all live plants are destroyed during the term of the Strategy.

4.9.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations of Madeira Vine.
- Enforce rules requiring land occupiers to destroy all Madeira Vine plants.

- Advise the public on the identification and control of Madeira Vine.
- Carry out surveillance for Madeira Vine.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of eradication of Madeira Vine, and will result in significant additional costs to the community with respect to lost natural values and the increased cost of control in the future.

4.9.5 Strategy Rule for Madeira Vine

The occupier shall destroy all adult and juvenile forms of Madeira Vine on land that they occupy.

A breach of Strategy Rule 4.9.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

4.9.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Madeira Vine, under Sections 52 and 53 of the Act.





4.10 PHRAGMITES (*Phragmites australis*)

4.10.1 Description

Phragmites is a tall perennial rhizomatous grass producing annual cane-like stems up to 6 metres tall and 10 mm in diameter. Its rhizomes (thick underground roots) are far-reaching, forming dense mats that can extend down to 2 metres and much further horizontally. The leaves are alternate and sheath around the stem, growing up to 70 cm long and 5 cm wide. The seed head is large and conspicuous, silky purple and up to 40 cm long. Flowering occurs from summer to early winter. Dispersal can occur by seed or by rhizomes. The plant is usually found adjacent to, or in, water and encroaches into pasture. Cattle will graze the plant.

4.10.2 Reasons for the Strategy

Phragmites has the potential to spread and block waterways, causing drainage problems. It poses a severe risk to waterways in the Tasman-Nelson region and is very difficult to control.

Phragmites is assessed at “1” on the infestation curve. There is only one known site 500 metres south of Murchison; it has proven exceedingly difficult to eradicate. The low incidence of Phragmites in the Tasman-Nelson region, extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of total control far outweigh the costs.

4.10.3 Objective

To contribute to the eradication of Phragmites by ensuring that the known site in the Tasman-Nelson region is inspected annually and all live plants are destroyed during the term of the Strategy.

4.10.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations of Phragmites.
- Enforce rules requiring land occupiers to destroy all Phragmites plants.
- Advise the public on the identification and control of Phragmites.
- Carry out surveillance for Phragmites.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of eradication, and will result in significant additional costs to the community with respect to lost production and natural values and the increased cost of control in the future.

4.10.5 Strategy Rule for Phragmites

The Management Agency shall destroy all adult and juvenile forms of Phragmites on land that they occupy.

A breach of Strategy Rule 4.10.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

4.10.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Phragmites, under Sections 52 and 53 of the Act.



4.11 SAFFRON THISTLE (*Carthamus lanatus*)



4.11.1 Description

Saffron Thistle is a prickly annual to biennial herb with woody stems. The plant is well-branched, carrying prominent spines and small yellow flower heads. The leaves of the plant have a greyish appearance. The seed life of Saffron Thistle is greater than 20 years; eradication is a long-term goal.

4.11.2 Reasons for the Strategy

If uncontrolled, Saffron Thistle can form impenetrable, dense stands and can potentially devalue fibre, injure stock and can interfere with cereal harvesting. It is not browsed, and is a threat to pastoral arable production.

Saffron Thistle is assessed at “2” on the infestation curve. There are known sites at Eighty-Eight Valley, Pig Valley, Pangatotara, Cable Bay, and the Maitai Valley. The low incidence of Saffron Thistle in the Tasman-Nelson region, extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of total control far outweigh the costs.

4.11.3 Objective

To contribute to the eradication of Saffron Thistle by ensuring that all known sites in the Tasman-Nelson region are inspected annually and all live plants are destroyed during the term of the Strategy.

4.11.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations of Saffron Thistle.
- Enforce rules requiring land occupiers to destroy all Saffron Thistle plants.
- Advise the public on the identification and control of Saffron Thistle.
- Carry out surveillance for Saffron Thistle.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of eradication, and will result in significant additional costs to the community with respect to lost production and the increased cost of control in the future.

4.11.5 Strategy Rule for Saffron Thistle

The occupier shall destroy all adult and juvenile forms of Saffron Thistle on land that they occupy.

A breach of Strategy Rule 4.11.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

4.11.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Saffron Thistle, under Sections 52 and 53 of the Act.





4.12 SENEGAL TEA (*Gymnocoronis spilanthoides*)

4.12.1 Description

Senegal Tea is a semi-aquatic, perennial herb. When flowering, the plant may grow up to 1.5 metres in height. The plant has dark green leaves and white flowers. The plant flowers in summer and autumn. Senegal Tea has been sold as a pond plant. Distribution occurs by human or machinery movement, or through vegetative fragments being spread by water.

4.12.2 Reasons for the Strategy

Senegal Tea is an extremely aggressive, freshwater weed that inhabits wetlands, and still and flowing water. It forms dense floating mats that can quickly cover waterways and exclude submerged native flora species. It can impact on the habitat of fish, and heavy infestations reduce oxygen available to fish. It also impedes the flow of water and interferes with recreation activities.

Senegal Tea is assessed at “2” on the infestation curve. There are three known sites of Senegal Tea in ponds in Upper Moutere and Motueka, none of which are active. The low incidence of Senegal Tea in the Tasman-Nelson region, extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of total control far outweigh the costs.

4.12.3 Objective

To contribute to the eradication of Senegal Tea by ensuring that all known sites in the Tasman-Nelson region are inspected annually and all live plants are destroyed during the term of the Strategy.

4.12.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations of Senegal Tea.
- Enforce rules requiring land occupiers to destroy all Senegal Tea plants.

- Advise the public on the identification and control of Senegal Tea.
- Carry out surveillance for Senegal Tea.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of eradication, and will result in significant additional costs to the community with respect to lost natural values and the increased cost of control in the future.

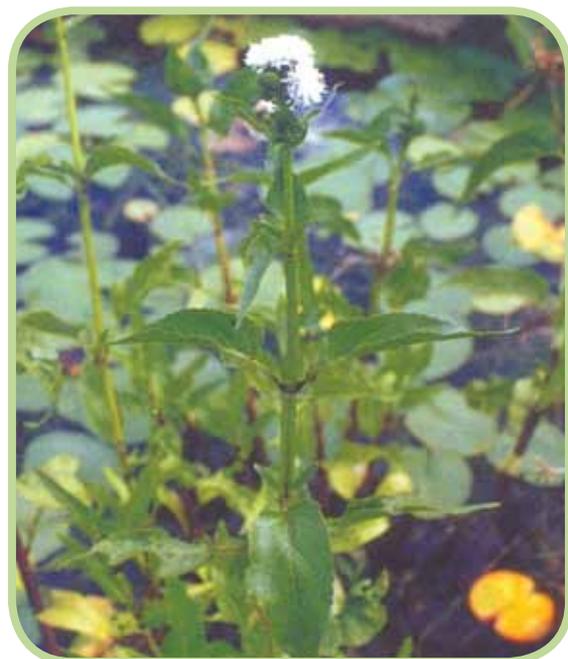
4.12.5 Strategy Rule for Senegal Tea

The occupier shall destroy all adult and juvenile forms of Senegal Tea on land that they occupy.

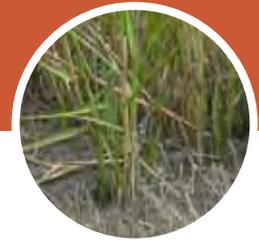
A breach of Strategy Rule 4.12.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

4.12.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Senegal Tea, under Sections 52 and 53.



4.13 SPARTINA – CORD GRASS (*Spartina spp.*)



4.13.1 Description

Spartina is an aquatic, perennial grass, growing 60–80 cm high, which inhabits estuaries and other coastal areas. It has short rhizomes and forms dense mats in intertidal zones. It was originally planted to assist reclamation of tidal flats through its ability to trap sediment. Dispersal and establishment occurs mainly from vegetative fragments and rhizomes in seawater, and infrequently by seed.

4.13.2 Reasons for the Strategy

Sedimentation trapped by Spartina can lead to flooding and the restriction of bird and flatfish habitat. Spartina can alter the hydrodynamics of important fish spawning and nursery areas and change the scenic and recreational values of foreshores. Raising silt levels can alter drainage on adjacent flats and leads to deterioration of their native plant cover. There are substantial areas of sheltered beaches throughout the Tasman-Nelson region that are vulnerable to invasion.

Spartina is assessed at “2” on the infestation curve. It was widely distributed through a number of estuaries, but it is only active on numerous sites along the edges of the Waimea Inlet and Westhaven Inlet. Control of Spartina started in the 1970s and was greatly assisted in the 1990s by the introduction of a new salt-tolerant herbicide. As a result, the area of Spartina has been greatly reduced. The benefit of maintaining a low incidence of Spartina far outweighs the cost. Spartina occurs on publicly owned land. Control will therefore be undertaken by the Management Agency and



the Department of Conservation, and this forms the basis of the Strategy rule. If Spartina is found on private land, the Management Agency will arrange to carry out control. The low incidence of Spartina in the Tasman-Nelson region, extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of total control far outweigh the costs.

4.13.3 Objective

To contribute to the eradication of Spartina by ensuring that all known sites in the Tasman-Nelson region are inspected annually and all live plants are destroyed during the term of the Strategy.

4.13.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect all known sites of Spartina and destroy any live plants.
- Advise the public on the identification of Spartina.
- Carry out surveillance for Spartina.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of eradication, and will result in significant additional costs to the community with respect to lost natural values and the increased cost of control in the future.

The Management Agency will arrange and carry out control.

4.13.5 Strategy Rule for Spartina

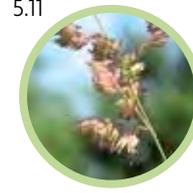
The Management Agency and the Department of Conservation shall destroy all adult and juvenile plants.

4.13.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Spartina, under Sections 52 and 53 of the Act.

5 PROGRESSIVE CONTROL PESTS

Progressive Control Pests refer to pests that are unlikely to be eradicated from a region because of their biological characteristics (such as long-term seed viability) but it is still feasible to reduce the density and distribution of the pest.



5.1 Banana Passionvine

5.2 Boneseed

5.3 Chinese Pennisetum

5.4 Climbing Asparagus (eastern Golden Bay)

5.5 Gambusia

5.6 Koi Carp

5.7 Nassella Tussock

5.8 Old Man's Beard (Golden Bay, Kaiteriteri and Upper Buller Catchment)

5.9 Perch

5.10 Purple Loosestrife

5.11 Reed Canary Grass

5.12 Reed Sweet Grass

5.13 Rooks

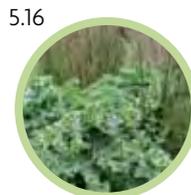
5.14 Rudd

5.15 Tench

5.16 Variegated Thistle

5.17 White-edged Nightshade

5.18 Wild Ginger Species (Golden Bay to Kaiteriteri)



5.1 BANANA PASSION VINE (*Passiflora mollissima/mixta*) (Golden Bay)



5.1.1 Description

Banana Passion Vine is a large vigorous, scrambling, evergreen climbing vine with clinging tendrils, capable of climbing to 10 metres high or higher. The flowers are pink and up to 7 centimetres in diameter, appearing in December. The fruit are yellow when ripe, up to 12 centimetres long, cylindrical with a sweet-flavoured orange pulp containing seeds.

5.1.2 Reasons for the Strategy

Banana Passion Vine smothers native trees and shrubs on forest margins and adjoining light wells; it can topple shallow-rooted trees and its dense vegetation prevents natural regeneration. Viable seed is produced within two years and this is distributed by birds, possums and pigs. It has the potential to invade much of the lowland area and represents a significant threat to indigenous biodiversity in Golden Bay.

Banana Passion Vine is assessed at “4” in Golden Bay on the infestation curve. Given the limited distribution of Banana Passion Vine and the enthusiasm of many Golden Bay land occupiers for its inclusion in the Strategy, an operational plan will be developed by the Management Agency with input from an independent expert and from landowners. Outside Golden Bay, investment in biological controls and promoting the voluntary control of Banana Passion Vine will provide benefits that outweigh the costs.

5.1.3 Objective

To reduce the distribution and density of Banana Passion Vine in Golden Bay during the term of the Strategy.

5.1.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations in Golden Bay
- Enforce rules requiring land occupiers to destroy all Banana Passion Vine in Golden Bay
- Advise the public on the identification and control of Banana Passion Vine
- Carry out surveillance for Banana Passionvine on land at

risk from infestation in or close to infested areas.

- Invest in the development of Biological Control agents.

Alternative Measures

The option of “do nothing” or relying on voluntary control will not achieve the objective of reducing the density and distribution of Banana Passion Vine in Golden Bay, and will result in significant loss of indigenous biodiversity and increased costs of control in the future. Boundary control is not an option with the seed distribution that follows from consumption of the fruit by birds, possums and pigs. Outside of Golden Bay, requiring the occupier to undertake some form of control is considered to be too onerous and expensive, given its widespread distribution and the impact of the plant compared to other environmental pests.

5.1.5 Strategy Rule for Banana Passion Vine

The occupier shall destroy all adult and juvenile forms of Banana Passion Vine on land in Golden Bay that they occupy.

A breach of Strategy Rule 5.1.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

5.1.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release or display commercially, Banana Passion Vine, under Sections 52 and 53 of the Act.





5.2 BONESEED (*Chrysanthemoides monilifera*)

5.2.1 Description

Boneseed is a perennial shrub growing to 3 metres. Stems are woody, with many branches. Leaves are bright to dark green, with a mealy/powdery surface, alternate, toothed and hairless. The flowers are bright yellow and daisy-like, with 8-12 petals clustered at the ends of the branches. Boneseed flowers in September to February. It produces black berries that are spread by birds but can also be water-distributed.

5.2.2 Reasons for the Strategy

Boneseed is an aggressive coloniser and competes with native species, especially in coastal areas. It is considered a serious environmental weed in other parts of New Zealand, such as Canterbury and Manawatu. It has the potential to displace native species in the Tasman-Nelson region on coastal cliffs, sand dunes, and in salt marshes.

Boneseed is assessed at “3” on the infestation curve. It is widespread on the Port Hills of Nelson. Outside this area, known sites include Cable Bay, Kina, Kaiteriteri, Pohara, Collingwood and Jackett and Rabbit Islands. This control programme focuses on the infestations that pose the greatest risk to the coastal environment and those that could increase its spread. The widespread distribution, number of property owners involved, and the difficult terrain of the Port Hills make the provision of advice, monitoring, and investment in biological control (biocontrol) the most cost-effective measures to contain the infestation in this area. A biocontrol agent (a defoliating caterpillar) was trialled but it failed to establish. Outside the Port Hills, the low incidence of Boneseed in the Tasman-Nelson region, extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of progressive control far outweigh the costs.

5.2.3 Objective

- 1 To reduce the density and distribution of Boneseed outside of the Port Hills as defined on the map below by ensuring that all known sites in the Tasman-Nelson region are inspected annually and all live plants are destroyed during the term of the Strategy.
- 2 To introduce a biocontrol agent into the Port Hills during the term of the Strategy and monitor its effectiveness in reducing Boneseed’s distribution and density.

5.2.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations of Boneseed.
- Enforce rules requiring land occupiers to destroy all Boneseed plants.
- Advise the public on the identification and control of Boneseed.
- Introduce the biocontrol agent for Boneseed and monitor its effectiveness.
- Carry out surveillance for Boneseed.



Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of eradication, and will result in significant additional costs to the community with respect to lost natural values and the increased cost of control in the future. Requiring total control of Boneseed is not practical given its widespread distribution in the Port Hills area, and the difficulty of eradicating it from areas where it is providing a soil stabilisation function.

5.2.5 Strategy Rule for Boneseed

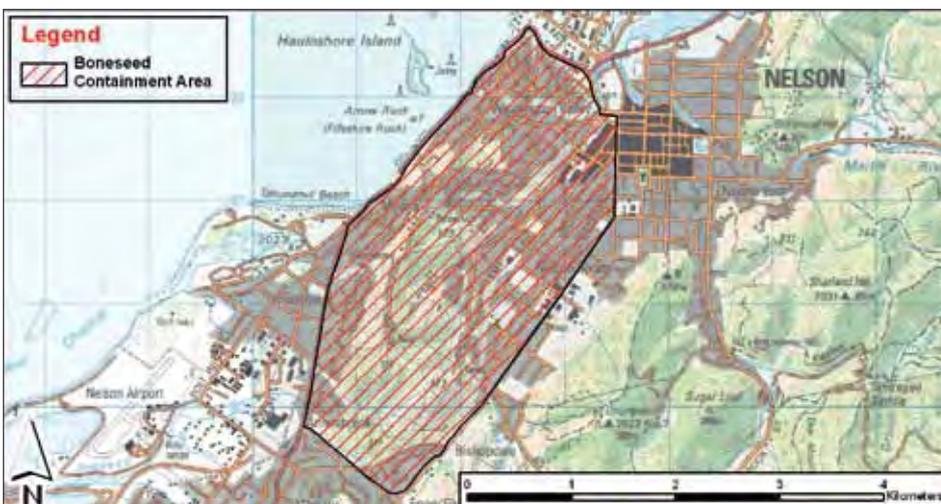
The occupier shall destroy all adult and juvenile forms of Boneseed on land that they occupy except within the Boneseed Containment Area as defined on the map below.

A breach of Strategy Rule 5.2.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

5.2.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Boneseed, under Sections 52 and 53 of the Act.

Map showing Port Hills Boneseed Containment Area





5.3 CHINESE PENNISETUM (*Cenchrus purpurascens*)

5.3.1 Description

Chinese Pennisetum is a tufted, perennial grass that forms large tussocks around 1 metre in height. It has long, hairless, wiry leaves. Flower heads are purplish, bristly, cylindrical spikes that look like small bottlebrushes.

5.3.2 Reasons for the Strategy

Chinese Pennisetum is generally unpalatable to stock. It is capable of invading productive pasture land and reducing pasture productivity. It is difficult to identify, especially in young plantation forests.

Chinese Pennisetum is assessed at “3” on the infestation curve. Most of the sites are in the Lee, Sherry, and Slippery catchments. The low incidence of Chinese Pennisetum in the Tasman-Nelson region, extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of progressive control far outweigh the costs.

5.3.3 Objective

To reduce the distribution and density of Chinese Pennisetum in the Tasman-Nelson region during the term of the Strategy.

5.3.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations of Chinese Pennisetum.
- Enforce rules requiring land occupiers to destroy all Chinese Pennisetum plants.
- Advise the public on the identification and control of Chinese Pennisetum.
- Carry out surveillance for Chinese Pennisetum.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of reducing the distribution and density of Chinese Pennisetum, and will result in significant additional costs to the community

with respect to lost production and the increased cost of control in the future. Requiring total control is not practical, even given the low number of sites. There are a number of Chinese Pennisetum infestations in plantation forests that will continue to be difficult to eradicate.

5.3.5 Strategy Rule for Chinese Pennisetum

The occupier shall destroy all adult and juvenile forms of Chinese Pennisetum on land that they occupy.

A breach of Strategy Rule 5.3.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

5.3.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Chinese Pennisetum, under Sections 52 and 53 of the Act.



5.4 CLIMBING ASPARAGUS (*Asparagus scandens*)



5.4.1 Description

Climbing asparagus, a native of South Africa, is a vine with thin wiry branching stems that wrap around small trees and saplings. It has a fine, feathery foliage with small leaves, similar in appearance to the native Club Mosses (*Lycopodium* species). It has tiny white flowers in spring time that produce green berries that ripen in autumn to bright orange.

5.4.2 Reasons for the Strategy

This shade-tolerant vine will establish in forest and scrubland understory. It can carpet the forest floor and prevent native seedling regrowth, as well as ring-barking trees and saplings. It is spread by birds and by vegetative propagation from its tuberous roots.

It is thought to have a limited distribution within the region but is common throughout the containment area. The extensive areas of suitable habitat and its potential to significantly impact on biodiversity, mean the benefits of containment control within the zone far outweigh the costs.

The containment area in eastern Golden Bay has been proposed for treatment by a local weedbuster's group undertaking intensive weed control on a range of pest plants.

5.4.3 Objective

To address the adverse effects of Climbing Asparagus by reducing its density and distribution in the containment area during the term of the Strategy

5.4.4 Means of Achievement

The principal means of achievement will be for the Management Agency to:

- Carry out surveillance, in conjunction with 'Rocklands Road Weedbusters'(RRW), for Climbing Asparagus in the containment area
- Inspect properties in conjunction with RRW with known or suspected infestations of Climbing Asparagus in the containment area
- Advise on identification and methods of control for Climbing Asparagus
- Enforce rules requiring landowners to destroy all Climbing Asparagus plants

Alternative Measures

The alternative option of "do nothing" or relying on voluntary control will not achieve the objective of reducing the distribution and density of Climbing Asparagus in the containment area and will result in significant additional costs to the community with respect to increased costs of control in the future. Requiring total control in the containment area would not be cost-effective, given its distribution and persistence.

5.4.5 Strategy Rule for Climbing Asparagus

The occupier in the eastern Golden Bay containment area shall destroy all adult and juvenile forms of Climbing Asparagus on land that they occupy.

A breach of Strategy Rule of 5.4.5 is an offence under the Section 154(r) of the Biosecurity Act 1993.

5.4.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Climbing Asparagus, under Sections 52 and 53 of the Act.





5.5 GAMBUSIA (*Gambusia affinis*)

5.5.1 Description

Gambusia are small, silvery-green fish (males up to 3.5 centimetres, females up to 6 centimetres long) that were introduced into North Island waterways from the south-east United States in the 1930s in the mistaken belief that they could control mosquito larvae. They are intermittently widespread in the upper North Island; the first South Island populations were discovered in the Tasman-Nelson region in 2000 and an active campaign has been conducted against them, along with other pest fish, in the Tasman-Nelson region by the Department of Conservation.

5.5.2 Reasons for the Strategy

Gambusia has the ability to rapidly increase population numbers. It matures at six weeks old and gives birth to live young; one pregnant female can start a new population. Although they are small fish, they can be very aggressive and attack fish much larger than themselves. They attack native fish by nipping their fins and eyes, and preying on their eggs. Whitebait and mudfish species are especially vulnerable to Gambusia, as they inhabit similar habitats. They prefer the shallow margins of slow-flowing ponds, wetlands and streams, especially around aquatic plants. They can tolerate poor water quality and a wide range of water temperatures. They are considered to pose a major threat to aquatic organisms throughout the Tasman-Nelson region.

Gambusia is assessed at “2” on the infestation curve. It has been recorded in a small number of ponds in the Tasman-Nelson region. The low incidence of Gambusia in the Tasman-Nelson region, extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of progressive control far outweigh the costs.

5.5.3 Objective

To reduce the distribution and density of Gambusia in the Tasman-Nelson region during the term of the Strategy.

5.5.4 Means of Achievement

The principal means of achieving the objective will be for the Department of Conservation, through a Memorandum of Understanding with the Management Agency, to:

- Inspect properties with known or suspected infestations of Gambusia.
- Enforce rules requiring land occupiers to report suspected sightings and to provide access to the Management Agency and the Department of Conservation to undertake control of Gambusia.
- Advise the public on the identification and control of Gambusia.
- Carry out surveillance for Gambusia.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of reducing the distribution and density of Gambusia, and will result in significant additional costs to the community with respect to lost natural values and the increased cost of control in the future.

5.5.5 Strategy Rule for Gambusia

The occupier shall report any suspected sightings of Gambusia and allow access to the Management Agency, the Department of Conservation or their agents, to destroy all adult and juvenile forms of Gambusia in water bodies on land that they occupy.

A breach of Strategy Rule 5.5.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

5.5.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Gambusia, under Sections 52 and 53 of the Act.



5.6 KOI CARP (*Cyprinus carpio*)



5.6.1 Description

Koi Carp are an ornamental strain of carp that were accidentally introduced into New Zealand in the 1960s. They resemble large goldfish, reaching 75 centimetres in length and up to 10 kilograms. They can be distinguished by the presence of two barbels (feelers) at each corner of their mouths. They are highly variable in colour and often have irregular blotches of black, red, orange or white. They were first recorded in the Tasman-Nelson region in 2002 and an active campaign has been conducted against them, along with other pest fish, in the Tasman-Nelson region by the Department of Conservation.

5.6.2 Reasons for the Strategy

Koi Carp are omnivorous, feeding on insects, spawn, juvenile fish, plants and other organic material. They operate like vacuum cleaners, sucking up mud off the bottom and then discharging the unwanted material. They dislodge plants and other bottom-dwellers, destroying aquatic habitat and muddying waterways. They are classified as a “noxious fish” under the Freshwater Fisheries Regulations 1982 and an “unwanted organism” under the Biosecurity Act 1993. They grow rapidly and from two years of age, the females can produce several hundred thousand eggs. They are tolerant of a wide range of temperatures, low oxygen levels, high turbidity and the presence of pollutants.

Koi Carp is assessed at “2” on the infestation curve. It has been recorded in a small number of ponds on privately-owned land in Tasman District. The low incidence of Koi Carp in the Tasman-Nelson region, extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of progressive control far outweigh the costs.

5.6.3 Objective

To reduce the distribution and density of Koi Carp in the Tasman-Nelson region during the term of the Strategy.

5.6.4 Means of Achievement

The principal means of achieving the objective will be for the Department of Conservation, through a Memorandum of Understanding with the Management Agency, to:

- Inspect properties with known or suspected infestations of Koi Carp.
- Enforce rules requiring land occupiers to report suspected sightings and to provide access to the Management Agency and the Department of Conservation to undertake control of Koi Carp.
- Advise the public on the identification and control of Koi Carp.
- Carry out surveillance for Koi Carp.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of reducing the distribution and density of Koi Carp, and will result in significant additional costs to the community with respect to lost natural values and the increased cost of control in the future.

5.6.5 Strategy Rule for Koi Carp

The occupier shall report any suspected sightings of Koi Carp and allow access to the Management Agency, the Department of Conservation or their agents, to destroy all adult and juvenile forms of Koi Carp in water bodies on land that they occupy.

A breach of Strategy Rule 5.6.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

5.6.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Koi Carp, under Sections 52 and 53 of the Act.





5.7 NASSELLA TUSSOCK (*Nassella trichotoma*)

5.7.1 Description

Nassella Tussock is a tufted perennial plant, which when mature forms dense tussocks with deep, fibrous roots. Fully grown tussocks usually grow up to 70 centimetres tall, with a leaf spread of up to 70 centimetres. Leaves are narrow, fibrous, drooping, rough and unpalatable. The plant can be distinguished from other tussocks by the whitish-green, densely packed and swollen leaf bases. The plant produces numerous, openly branched, slender stalks carrying seeds. Flowers and seeds are purplish, making Nassella Tussock easy to recognise during the flowering period (October to December). A mature plant can produce up to 120,000 seeds, which have a very long viability in the soil. Seeds can be spread by wind up to a kilometre from the parent plant. Seed dispersal can otherwise occur by water, animals, machinery, vehicles, agricultural produce, humans, and on the bark of harvested trees.

5.7.2 Reasons for the Strategy

Nassella Tussock is generally unpalatable to stock. It is well adapted to invade and smother other grassland species, thereby reducing stock carrying capacity. It is capable of invading moderate-and-low-producing pastures. The biological attributes of Nassella Tussock make it a real threat to pastoral land in the Tasman-Nelson region. The scale of the threat is demonstrated by severe infestations in other parts of the country, including Marlborough.

Nassella Tussock is assessed at “3” on the infestation curve. There are known sites of Nassella Tussock in the Richmond Hills, and in Cape Soucis. The low incidence of Nassella Tussock in the Tasman-Nelson region, extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of progressive control far outweigh the costs.

5.7.3 Objective

To reduce the distribution and density of Nassella Tussock in the Tasman-Nelson region during the term of the Strategy.

5.7.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations of Nassella Tussock.
- Enforce rules requiring land occupiers to destroy all Nassella Tussock plants.
- Advise the public on the identification and control of Nassella Tussock.
- Introduce biocontrol agents for Nassella Tussock.
- Carry out surveillance for Nassella Tussock.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of reducing the distribution and density of Nassella Tussock, and will result in significant additional costs to the community through lost production and the increased cost of control in the future. Requiring total control is not practical. The long seed life of Nassella Tussock makes eradication extremely difficult, along with the difficulty of controlling it within forest plantations.

5.7.5 Strategy Rule for Nassella Tussock

The occupier:

- shall destroy all adult and juvenile forms of Nassella Tussock on land that they occupy;
- shall take all reasonable precautions to avoid its spread on animals, machinery, vehicles, agricultural produce, humans, and on the bark of harvested trees;
- shall advise the Management Agency of any activity that may increase the risk of seed spread.

A breach of Strategy Rule 5.7.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

5.7.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Nassella Tussock, under Sections 52 and 53 of the Act.



5.8 OLD MAN'S BEARD (*Clematis vitalba*) (Golden Bay to Kaiteriteri and Upper Buller Catchment)



5.8.1 Description

Old Man's Beard is a deciduous, woody, climber that may reach 25 metres in height. It has conspicuous flowers that are without true petals, but have white sepals, which bloom in late summer. In autumn, a dense down takes the place of flowers. The down consists of long, fluffy tails on the seeds, which lasts well into winter. The down assists during dispersal via wind and water. One plant is capable of blanketing an area of 180 square metres and seeds are produced at the rate of 10,000 per square metre.

5.8.2 Reasons for the Strategy

Old Man's Beard has the potential to invade most lowland areas (below 750 metres above sea-level) of the Tasman-Nelson region, so accordingly represents an extraordinary threat to natural values. The plant will outgrow and eventually destroy supporting plant life. It is a particularly troublesome plant in second growth or damaged indigenous forests, being very persistent, with a lifespan of greater than 30 years. Heavily infested sites may impede human movement through forests and along riparian margins and prevent the establishment of indigenous seedlings.

Old Man's Beard is assessed at "4" on the infestation curve for the Golden Bay to Kaiteriteri and Upper Buller Catchment areas, and "7" for the rest of the Tasman-Nelson region. The low incidence of Old Man's Beard in the Golden Bay to Kaiteriteri and Upper Buller Catchment areas, extensive areas of suitable habitat, high natural values of these areas, and the potential for it to cause significant adverse effects, mean the benefits of progressive control far outweigh the costs. For the rest of the Tasman-Nelson region, the Management Agency will focus on providing advice to the public on controlling Old Man's Beard, continue investment in biocontrol agents, and carry out control at sites of high public value (refer Section 9). The Management Agency will promote the use of a variety of management regimes for riparian areas, including the use of poplars and the use of controlled grazing, for the management of Old Man's Beard.

5.8.3 Objective

To reduce the distribution and density of Old Man's Beard in the Golden Bay to Kaiteriteri and Upper Buller Catchment areas during the term of the Strategy.

5.8.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations of Old Man's Beard in the Golden Bay to Kaiteriteri and Upper Buller Catchment areas.
- Enforce rules requiring land occupiers to destroy all Old Man's Beard plants in the Golden Bay to Kaiteriteri and Upper Buller Catchment areas.
- Advise the public on the identification and control of Old Man's Beard.
- Introduce biocontrol agents for Old Man's Beard.
- Carry out surveillance for Old Man's Beard on land at risk from infestation in or adjacent to the control areas.



Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of reducing the distribution and density of Old Man’s Beard in the Golden Bay to Kaiteriteri and Upper Buller Catchment areas, and will result in significant additional costs to the community through lost natural values and the increased cost of control in the future. Requiring total control for the Golden Bay to Kaiteriteri and Upper Buller Catchment areas is not practical. The prolific seeding of Old Man’s Beard and its seven to nine year seed life makes eradication extremely difficult. Requiring progressive control over the whole Tasman-Nelson region is not practical given the widespread distribution of Old Man’s Beard.

5.8.5 Strategy Rule for Old Man’s Beard

An occupier in the Golden Bay to Kaiteriteri or Upper Buller Catchment areas shall destroy all adult and juvenile forms of Old Man’s Beard on land that they occupy.

A breach of Strategy Rule 5.8.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

5.8.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Old Man’s Beard, under Sections 52 and 53 of the Act.

5.9 PERCH (*Perca fluviatilis*)



5.9.1 Description

Perch are an attractive olive-green fish with prominent stripes, growing up to 60 cm in length and up to 2 kg in weight. A native of Europe, they were introduced in 1868 from Tasmanian stock that was originally imported from England and are well established in Otago and Wellington. They prefer still or slow-moving waterbodies containing good quality water. They are generally not recognised in New Zealand as quality sporting fish but are valued by European anglers and are part of a group described as coarse fish.

5.9.2 Reasons for the Strategy

Perch are predators, feeding on insects, small fish and their larvae. They are considered to pose a significant threat to native aquatic fauna in the Tasman-Nelson region and to recreational trout fisheries. An active campaign has been conducted by the Department of Conservation in recent times against illegal releases of perch.

Sports fish are defined in the Conservation Act 1987 and the Freshwater Fisheries Regulations 1983. Schedule 1 of the Regulations lists perch as sports fish. However, Fish and Game NZ have responsibility for management of the sports fish resource for the recreational interests of anglers and the recent arrival of perch in the Tasman-Nelson region was not authorised by the Nelson-Marlborough Council. They have developed policies that may allow a limited population of perch to be established in an appropriate area as a sports fish.

They are assessed at “2” on the infestation curve. At present, they have a very limited distribution in the region, having been recorded in a number of small ponds. The low incidence, extensive areas of habitat, and the potential for it to cause significant adverse effects mean the benefits of progressive control far outweigh the cost.

5.9.3 Objective

To reduce the distribution and density of Perch in the Tasman-Nelson region during the term of the Strategy, except for any area that is legally sanctioned by the Director-General of Conservation and the Nelson-Marlborough Council of Fish and Game NZ and granted an exemption by the Management Agency.

5.9.4 Means of achievement

The principal means of achievement will be for the Department of Conservation, through a Memorandum of Understanding with the Management Agency, to:

- Inspect properties with known or suspected infestations of Perch
- Enforce rules requiring land occupiers to report suspected sightings and to provide access to the Management Agency and the Department of Conservation to undertake control of Perch
- Advise the public on identification and control of Perch
- Carry out surveillance for Perch

Alternative measures

The alternative of doing nothing or relying on voluntary control will not achieve the objective of reducing the distribution and density of Perch and will result in significant additional costs to the community with respect to lost natural values and the increased cost of control in the future.

5.9.5 Strategy rule for Perch

The occupier shall report any suspected sightings of Perch and allow access to the Management Agency, the Department of Conservation or their agents, to destroy all adult and juvenile forms of Perch in waterbodies on land that they occupy, except for legally sanctioned areas.

A breach of Strategy Rule 5.9.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

5.9.6 Biosecurity Act requirements

No person shall knowingly sell, propagate, breed, release or commercially display Perch under Sections 52 and 53 of the Act.

Note: *The unauthorised release of Perch without the approval of the Director-General of Conservation and Fish and Game NZ is also an offence under the Conservation Act.*





5.10 PURPLE LOOSESTRIFE (*Lythrum salicaria*)

5.10.1 Description

Purple Loosestrife is an erect perennial herb, with a woody four-sided stem, with leaves in whorls, growing up to 3 metres high. It reproduces prolifically by both seed dispersal and vegetative propagation. Mature plants can have up to 50 stems emerging from a single rootstock and produce as many as 3 million seeds annually. The magenta-coloured flowers, carried on a long spike, with five to seven petals, are produced throughout most of the summer. The woody stems remain standing during the winter, when the plant is readily identified by its brownish colour and spiral-shaped capsule clusters.

5.10.2 Reasons for the Strategy

Purple Loosestrife is capable of invading a variety of wetland habitats, including marshes, river and stream banks, pond edges, lakes, roadside ditches, and reservoirs. Disturbed areas are more prone to invasion because exposed soil is ideal for germination. It can out-compete and replace native grasses, sedges, and other flowering plants that provide a higher quality food source and habitat for wildlife. Its dense stands can deleteriously impact wildlife habitat used by birds. If left untreated, it can almost entirely eliminate open water habitat. The recreational and aesthetic values of wetlands and waterways diminish as they become choked by dense stands of Purple Loosestrife and biodiversity decreases. The seeds are distributed by wind, water, wildlife and by construction vehicles and can remain viable in the soil for many years.

Purple Loosestrife is assessed at “1” on the infestation curve. The low incidence of Purple Loosestrife in the Tasman-Nelson region, extensive areas of suitable habitat, high natural values of wetland habitats, and the potential for it to cause significant adverse effects, mean the benefits of progressive control far outweigh the costs.

5.10.3 Objective

To reduce the distribution and density of Purple Loosestrife where it has become naturalised in wetland habitat in the Tasman-Nelson region during the term of the Strategy.

5.10.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Enforce rules requiring land occupiers to destroy all Purple Loosestrife plants where they have become naturalised in wetland habitat.
- Advise the public on the identification and control of Purple Loosestrife.
- Carry out surveillance for Purple Loosestrife on wetland at risk from infestation.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of reducing the distribution and density of Purple Loosestrife, and will result in significant additional costs to the community through lost production, and the increased cost of control in the future. Requiring total control is not practical given the uncertainty about its distribution.

5.10.5 Strategy Rule for Purple Loosestrife

The occupier shall destroy all adult and juvenile forms of Purple Loosestrife that threatens wetlands.

A breach of Strategy Rule 5.10.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

5.10.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Purple Loosestrife, under Sections 52 and 53 of the Act.



5.11 REED CANARY GRASS (*Phalaris arundinacea*)



5.11.1 Description

Reed Canary Grass is a tall perennial grass often found on the edge of waterbodies and growing up to 2 m tall with leaves up to 0.5 m long. The flowers are arranged in dense branched panicles up to 20 cm in length. It forms dense mats of rhizomes which produce large numbers of shoots. A native of North America, it has spread through parts of New Zealand where wet moist conditions prevail; it is tolerant of freezing conditions.

5.11.2 Reasons for the Strategy

Reed Canary Grass is an internationally renowned weed of wetlands, where it forms dense sprawling stands up to 1m tall that smother and impede the regeneration of other vegetation. The dense mats that impede access and drainage, causing silt accumulation and flooding. It can replace other aquatic margin vegetation and degrade habitat for aquatic fauna. It has the potential to take over wetland margins and the margins of other waterbodies and drains and represents a significant threat to wetlands in the Tasman-Nelson region. It can be spread by seed or rhizome fragments in mud on machinery, footwear, and livestock or in water.

Reed Canary Grass is tentatively assessed at “2” on the infestation curve. Given its limited distribution, the importance of remnant wetlands, and its potential impact on wetlands, placing it into Progressive Control will provide benefits that outweigh the costs.

5.11.3 Objective

To reduce the distribution and density of Reed Canary Grass in the Tasman-Nelson region during the term of the Strategy.

5.11.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations
- Enforce rules requiring land occupiers to destroy all Reed Canary Grass
- Advise the public on the identification and control of Reed Canary Grass

- Carry out surveillance for Reed Canary Grass on land at risk from infestation in or close to infested areas.

Alternative Measures

The option of “do nothing” or relying on voluntary control will not achieve the objective of reducing the density and distribution of Reed Canary Grass, and could result in significant loss of indigenous biodiversity and increased costs of control in the future. Requiring total control is not considered appropriate at this time with limited information on its distribution.

5.11.5 Strategy Rule for Reed Canary Grass

The occupier shall destroy all adult and juvenile forms of Reed Canary Grass on land in the Tasman-Nelson region that they occupy.

A breach of Strategy Rule 5.11.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

5.11.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release or display commercially, Reed Canary Grass, under Sections 52 and 53 of the Act.





5.12 REED SWEET GRASS (*Glyceria maxima*)

5.12.1 Description

Reed Sweet Grass is a tall grass on the edge of waterbodies growing up to 1.8 m tall with light green leaves up to 50cm long that may be upright or floating. The flowers are green, maturing to purplish-brown and carried on tall multi-branched heads with numerous spikelets. It forms dense mats of rhizomes which produce vast numbers of shoots. A native of Europe and Asia, it has spread throughout the Waikato, the Hauraki Plains and parts of Otago.

5.12.2 Reasons for the Strategy

Reed Sweet Grass can form dense impenetrable mats that impede access and drainage, causing silt accumulation and flooding. It replaces other aquatic margin vegetation and degrades habitat for aquatic fauna. It has been implicated in cyanide poisoning of livestock. It has the potential to take over wetland margins and the margins of other waterbodies and drains and represents a significant threat to wetlands and stock in the Tasman-Nelson region. It can be spread by seed or rhizome fragments in mud on machinery, footwear, livestock or in water. Most seed will germinate immediately but some will remain dormant for several years.

Reed Sweet Grass is tentatively assessed at “2” on the infestation curve. Given its limited distribution, the importance of remnant wetlands, and its potential impact on wetlands and stock, placing it into Progressive Control will provide benefits that outweigh the costs.

5.12.3 Objective

To reduce the distribution and density of Reed Sweet Grass in the Tasman-Nelson region during the term of the Strategy.

5.12.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations
- Enforce rules requiring land occupiers to destroy all Reed Sweet Grass
- Advise the public on the identification and control of Reed Sweet Grass

- Carry out surveillance for Reed Sweet Grass on land at risk from infestation in or close to infested areas.

Alternative Measures

The option of “do nothing” or relying on voluntary control will not achieve the objective of reducing the density and distribution of Reed Sweet Grass, and could result in significant loss of indigenous biodiversity or loss of stock and increased costs of control in the future. Requiring total control is not considered appropriate at this time with limited information on its distribution.

5.12.5 Strategy Rule for Reed Sweet Grass

The occupier shall destroy all adult and juvenile forms of Reed Sweet Grass on land in the Tasman-Nelson region that they occupy.

A breach of Strategy Rule 5.12.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

5.12.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release or display commercially, Reed Sweet Grass, under Sections 52 and 53 of the Act.



5.13 ROOKS (*Corvus frugilegus*)



5.13.1 Description

Rooks are large, black birds with a violet-blue, glossy sheen. Nests are generally built in large trees, such as pine, eucalyptus, poplar and walnut trees. Where these are established, rookeries can rapidly build up in numbers to several hundred birds.

5.13.2 Reasons for the Strategy

Large flocks of Rooks can cause serious damage to agricultural crops, including cereals, nuts, fruit and vegetables. They also cause physical damage to pasture while foraging for invertebrates.

Rooks are assessed at “1” on the infestation curve. There are intermittent sightings of birds around Eighty-Eight Valley, St Arnaud and Golden Bay. Uncontrolled shooting at Rooks can make the birds much more difficult to locate and destroy. This makes Council intervention essential. The low incidence of Rooks in the Tasman-Nelson region, extensive areas of suitable habitat, and the potential for them to cause significant adverse effects, mean the benefits of progressive control far outweigh the costs. The Management Agency will undertake control of Rooks, given the challenges of controlling them. Therefore, no Strategy rule requiring occupier control is needed.

5.13.3 Objective

To follow up all Rook sightings and implement appropriate controls to prevent any rookeries being established in the Tasman-Nelson region during the term of the Strategy.

5.13.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Request land occupiers to inform them of any Rook sightings.
- Inspect and control Rooks.
- Carry out surveillance for Rooks.
- Immediately follow up any Rook sightings and implement appropriate control measures.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of eradication, and will result in significant additional costs to the community with respect to lost production and the increased cost of control in the future.

5.13.5 Strategy Rule for Rooks

The Management Agency will undertake the control of Rooks to prevent the establishment of rookeries.

5.13.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Rooks, under Sections 52 and 53 of the Act.





5.14 RUDD (*Scardinius erythrophthalmus*)

5.14.1 Description

Rudd is a stocky, deep bodied fish, with an olive back, silver-green sides, a white belly and red-gold fins. They can grow up to 25 centimetres long and weigh up to 500 grams. Females are mature by two years of age and can lay tens of thousands of eggs. They were introduced illegally into the North Island. They were first detected in the Tasman-Nelson region in 2000. An active campaign has been conducted against them, along with other pest fish, in the Tasman-Nelson region by the Department of Conservation.

5.14.2 Reasons for the Strategy

Adult Rudd are predominantly herbivorous and feed preferentially on aquatic plants, while juvenile Rudd feed voraciously on zooplankton (tiny aquatic animals). These feeding habits endanger native plant species, destroy indigenous habitat, remove food sources for native fish and invertebrate species, and potentially impact negatively on water quality by stirring up bottom sediments and muddying water. They are classified as a “noxious fish” under the Freshwater Fisheries Regulations 1982 outside the Auckland and Waikato region.

Rudd is assessed at “2” on the infestation curve. It has been recorded in a small number of ponds on privately-owned land in Tasman District. The low incidence of Rudd in the Tasman-Nelson region, extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of progressive control far outweigh the costs.

5.14.3 Objective

To reduce the density and distribution of Rudd in the Tasman-Nelson region during the term of the Strategy.

5.14.4 Means of Achievement

The principal means of achieving the objective will be for the Department of Conservation, through a Memorandum of Understanding with the Management Agency, to:

- Inspect properties with known or suspected infestations of Rudd.

- Enforce rules requiring land occupiers to report suspected sightings and to provide access to the Management Agency and the Department of Conservation to undertake control of Rudd.
- Advise the public on the identification and control of Rudd.
- Carry out surveillance for Rudd.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of eradication, and will result in significant additional costs to the community with respect to lost natural values and the increased cost of control in the future.

5.14.5 Strategy Rule for Rudd

The occupier shall report any suspected sightings of Rudd and allow access to the Management Agency, the Department of Conservation or their agents, to destroy all adult and juvenile forms of Rudd in water bodies on land that they occupy.

A breach of Strategy Rule 5.14.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

5.14.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Rudd, under Sections 52 and 53 of the Act.



5.15 TENCH (*Tinca tinca*)



5.15.1 Description

Tench are olive-green fish whose colour varies from dark to light green. They have a single small barbel at each corner of the mouth. The fins tend to be thick and fleshy and the body is covered in small scales. Their most distinctive characteristic is their bright orange eyes. A native of Europe, they were introduced to New Zealand in 1867. Although imported as a sports fish, they are generally not recognised in New Zealand as quality sporting fish but can grow up to 4 kg and are valued by European anglers. Part of a group described as coarse fish, they have been present near Oamaru for many years. They are most common in the Auckland area but have also been found during recent surveys in isolated locations in Northland, Bay of Plenty, Wellington, Tasman-Nelson, Marlborough, and Canterbury.

5.15.2 Reasons for the Strategy

Tench generally live in still or slow-flowing waters and are able to tolerate high levels of turbidity. They are carnivorous, feeding on insect larvae, crustaceans and molluscs. They are prolific breeders and a large female may produce hundreds of thousands of small eggs. They are considered to pose a significant threat to native aquatic fauna in the Tasman-Nelson region and are associated with reductions in water clarity. An active campaign has been conducted by the Department of Conservation in recent times against illegal releases of tench.

Sports fish are defined in the Conservation Act 1987 and the Freshwater Fisheries Regulations 1983. Schedule 1 of the Regulations lists tench as sports fish. However, Fish and Game NZ has responsibility for management of the sports fish resource for the recreational interests of anglers and the recent arrival of tench in the Tasman-Nelson region was not authorised by Fish and Game NZ. It has developed policies that may allow a limited population of tench to be established in an appropriate area as a sports fish.

They are assessed at “2” on the infestation curve. At present, they have a very limited distribution in the region, having been recorded in a number of small ponds. The low incidence, extensive areas of habitat, and the potential for it to cause significant adverse effects mean the benefits of progressive control far outweigh the cost.

5.15.3 Objective

To reduce the distribution and density of Tench in the Tasman-Nelson region during the term of the Strategy, except for any area that is legally sanctioned by the Director-General of Conservation and the Nelson-Marlborough Council of Fish and Game NZ, and granted an exemption by the Management Agency.

5.15.4 Means of achievement

The principal means of achievement will be for the Department of Conservation, through a Memorandum of Understanding with the Management Agency, to:

- Inspect properties with known or suspected infestations of Tench
- Enforce rules requiring land occupiers to report suspected sightings and to provide access to the Management Agency and the Department of Conservation to undertake control of Tench
- Advise the public on identification and control of Tench
- Carry out surveillance for Tench



Alternative measures

The alternative of doing nothing or relying on voluntary control will not achieve the objective of reducing the distribution and density of Tench and will result in significant additional costs to the community with respect to lost natural values and the increased cost of control in the future.

5.15.5 Strategy rule for Tench

The occupier shall report any suspected sightings of Tench and allow access to the Management Agency, the Department of Conservation or their agents, to destroy all adult and juvenile forms of Tench in waterbodies on land that they occupy, except for legally sanctioned areas.

A breach of Strategy Rule 5.15.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

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5.15.6 Biosecurity Act requirements

No person shall knowingly sell, propagate, breed, release or commercially display Tench under Sections 52 and 53 of the Act.

Note: The unauthorised release of Tench without the approval of the Director-General of Conservation and Fish and Game NZ is also an offence under the Conservation Act.

5.16 VARIEGATED THISTLE (*Silybum marianum*)



5.16.1 Description

Variegated Thistle is a very conspicuous, robust, spiny annual or biennial plant, with stems up to 100 millimetres in diameter. Its leaves have white veins and blotches that give it a variegated look. Its stems are up to 2 metres high and dominated by solitary red-purple flowers. The plants are found in pasture and wasteland and will form dense stands. The seed is spread by machinery and animals, and remains viable for over 20 years.

5.16.2 Reasons for the Strategy

Variegated Thistle will suppress and often exclude desirable pasture. Its spines can cause injury to animals and can be toxic. Dense clumps obstruct stock movement and provide habitat for vermin. Plants are poisonous to cattle, and to a lesser extent sheep, due to the high nitrate content of plants growing on high nitrogen soil. Variegated Thistle has the potential to have a significant impact on pastoral and crop production.

Variegated Thistle is assessed at “4” on the infestation curve. There are sites throughout Tasman District, excluding the Upper Buller. Plant numbers have reduced during the time of the last Strategy. The low incidence of Variegated Thistle in the Tasman-Nelson region, extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of progressive control far outweigh the costs.

5.16.3 Objective

To reduce the distribution and density of Variegated Thistle in the Tasman-Nelson region during the term of the Strategy.

5.16.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations of Variegated Thistle.
- Enforce rules requiring land occupiers to destroy all Variegated Thistle plants.

- Advise the public on the identification and control of Variegated Thistle.
- Carry out surveillance for Variegated Thistle.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of reducing the distribution and density of Variegated Thistle, and will result in significant additional costs to the community with respect to lost production, and the increased cost of control in the future. Requiring total control is not practical given the long period of seed viability.

5.16.5 Strategy Rule for Variegated Thistle

The occupier shall destroy all adult and juvenile forms of Variegated Thistle on land that they occupy.

A breach of Strategy Rule 5.16.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

5.16.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Variegated Thistle, under Sections 52 and 53 of the Act.





5.17 WHITE-EDGED NIGHTSHADE (*Solanum marginatum*)

5.17.1 Description

White-edged Nightshade is a shrubby perennial that can grow up to 5 metres high. Plants are conspicuous by spiky, white-ribbed leaves, and fruit being yellow and tomato-like in appearance. Plants are usually found in warm situations in higher rainfall areas on poor, rough land and wasteland.

5.17.2 Reasons for the Strategy

White-edged Nightshade is a pest of disturbed land, waste areas, and scrub and will invade regenerating shrubland and bush margins. It displaces pasture and forms dense thickets that are impenetrable to humans and stock. The plant also has the ability to invade forest margins and displace native species. The plant is toxic and people have become ill after tasting fruit.

White-edged Nightshade is assessed at “3” on the infestation curve. The known sites are confined to the Richmond Hills, Wairoa Gorge, and the foothills around Nelson. The low incidence of White-edged Nightshade in the Tasman-Nelson region, extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of progressive control far outweigh the costs.

5.17.3 Objective

To reduce the distribution and density of White-edged Nightshade in the Tasman-Nelson region during the term of the Strategy.

5.17.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations of White-edged Nightshade.
- Enforce rules requiring land occupiers to destroy all White-edged Nightshade plants.
- Advise the public on the identification and control of White-edged Nightshade.
- Carry out surveillance for White-edged Nightshade.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of reducing the distribution and density of White-edged Nightshade, and will result in significant additional costs to the community with respect to lost production and natural values, and the increased cost of control in the future. Requiring total control is not practical given the long seed viability of White-edged Nightshade.

5.17.5 Strategy Rule for White-edged Nightshade

The occupier shall destroy all adult and juvenile forms of White-edged Nightshade on land that they occupy.

A breach of Strategy Rule 5.17.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

5.17.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display White-edged Nightshade, under Sections 52 and 53 of the Act.



5.18 WILD GINGER (two species) (Golden Bay to Kaiteriteri): KAHILI GINGER (*Hedychium gardnerianum*) and YELLOW GINGER (*H. flavescens*)



5.18.1 Description

These two species of Wild Ginger share many of the same features. The leaves of both species are wide and smooth and both grow up to 2 metres high or more, producing massive, branching rhizomes that can form a dense layer up to 1 metre thick, preventing any regeneration. Both species are frost-sensitive, but their shade-tolerance allows them to grow under an overhead canopy, which provides protection from light frosts. These plants have invaded indigenous forest and regenerating shrublands in the North Island and in coastal areas at the top of the South Island. However, Kahili Ginger produces lemon-yellow flowers with red centre stamens in late summer and early autumn that generate fertile seed. Yellow Ginger produces cream-coloured flowers in late autumn and early winter but does not produce seed.

5.18.2 Reasons for the Strategy

The Wild Ginger species are popular garden plants that have escaped and invaded large areas of indigenous forest and coastal margin in many parts of New Zealand. The plants can suppress indigenous regeneration by up to 90%. They can block streams and drains, and restrict access to recreation and conservation areas. Once established, the plants are extremely difficult to control.

Wild Ginger is assessed at “3” on the infestation curve for the Golden Bay to Kaiteriteri areas and “6” for the rest of the Tasman-Nelson region. Wild Ginger is well distributed throughout most of the Tasman-Nelson region but has a much more limited distribution around Golden Bay to Kaiteriteri. The low incidence of Wild Ginger in the Golden Bay to Kaiteriteri areas, extensive areas of suitable habitat, high natural values of these areas, and the potential for it to cause significant adverse effects, mean the benefits of progressive control far outweigh the costs.

5.18.3 Objective

To reduce the distribution and density of Wild Ginger in the Golden Bay to Kaiteriteri areas during the term of the Strategy.

5.18.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations of Wild Ginger.
- Enforce rules requiring land occupiers to destroy all Wild Ginger plants.
- Advise the public on the identification and control of Wild Ginger.
- Carry out surveillance for Wild Ginger.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of reducing the distribution and density of Wild Ginger in the Golden Bay to Kaiteriteri areas, and will result in significant additional costs to the community with respect to lost natural values, and the increased cost of control in the future. Requiring progressive control throughout the region would not be cost-effective given the widespread distribution of Wild Ginger outside the Golden Bay to Kaiteriteri areas.

5.18.5 Strategy Rule for Wild Ginger

An occupier in the Golden Bay to Kaiteriteri areas shall destroy all adult and juvenile forms of Wild Ginger on land that they occupy.

A breach of Strategy Rule 5.18.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

5.18.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Wild Ginger, under Sections 52 and 53 of the Act.



6 CONTAINMENT PESTS

Containment Pests refer to pests that are abundant in parts of a region. The long-term goal is to prevent the spread of these pests to adjoining properties or other parts that are not currently infested.

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6.11



- 6.1 Argentine Ants
- 6.2 Australian Magpie
- 6.3 Broom (Howard - St.Arnaud)
- 6.4 Brushtail Possum
- 6.5 Darwin's Ants
- 6.6 Feral Cats
- 6.7 Feral Rabbits and Hares
- 6.8 Gorse (Howard - St.Arnaud)
- 6.9 Lagarosiphon
- 6.10 Mustelids – Ferrets,
Stoats and Weasels
- 6.11 Purple Pampas

6.1 ARGENTINE ANTS (*Linepithema humile*)



6.1.1 Description

Argentine Ants were first recorded as established in New Zealand in 1990 in Auckland. Since then, Argentine Ants have spread rapidly throughout the North Island and into Nelson and Christchurch. They were first recorded at Port Nelson in 2001 and controlled but not eliminated. The wingless worker ant, the one most commonly seen, is light to dark honey-brown in colour and 2–3 millimetres long; most other common household ants are black. Argentine Ants move very quickly and move along trails five or more ants wide when searching for food; they can lead up trees or buildings. If an Argentine Ant is squashed, there is no strong formic acid smell as there is with some ants (eg, Darwin's Ants).

6.1.2 Reasons for the Strategy

Argentine Ants are easily spread by human-related activities (eg, movement of pot plants, vehicles, etc). Argentine Ants rank highly as a domestic nuisance species. They invade houses and are capable of penetrating food containers. They infest gardens, making outdoor dining difficult. When nests are disturbed, foraging ants will run up legs and arms, and some people are sensitive to their bite. Argentine Ants have the potential to spread disease around buildings, including hospitals, and are pests in rest homes. Argentine Ants also negatively impact on invertebrate communities through predation, competition, and interference. Ecosystem processes, such as soil formation and decomposition, are likely to be negatively affected. Argentine Ants feed extensively on the honeydew produced by sap-sucking bugs, such as aphids and scale insects, and actively disperse them and protect them from predation. This can increase the number of introduced sap-sucking bugs in native habitats and in domestic and commercial orchards, interfere with predators of sap-sucking bugs, and aid transmission of diseases between plants. There are numerous potential impacts of Argentine Ants on the commercial sector in urban environments; including ants invading food processing plants and becoming important pests of the hospitality industry. Argentine Ants have been found predominantly in urban areas and on the margins of native habitats. There is concern about their spread into coastal shrublands, especially in areas like Abel Tasman National Park. Their potential impact on

native ecosystems in New Zealand remains largely unknown. The development of new control methods has made it possible for land occupiers to reduce ant numbers to very low levels, but eradication seems impossible to achieve in urban settings. The strategy aims to slow the spread of Argentine ants to areas that are currently uninfested by requiring occupiers (including local authorities) to control ants.

Argentine Ants are assessed at "4" on the infestation curve. Extensive areas of suitable habitat, and the potential for them to cause significant adverse effects, mean the benefits of containment control far outweigh the costs.

6.1.3 Objective

To address the adverse effects of Argentine Ants during the term of the Strategy by:

- Slowing the spread of Argentine Ants.
- Containing Argentine Ants in the infested urban areas.
- Keeping uninfested areas clear of Argentine Ants.

6.1.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations of Argentine Ants.
- Require occupiers to control Argentine Ants on infested land.



- Advise land occupiers on methods of controlling Argentine Ants:
- Carry out surveillance for Argentine Ants.
- Assist land occupiers with identification of ants.
- Advise the public on means of minimising the spread of Argentine Ants.
- Undertake control of Argentine Ants on nominated sites of high public value.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of containing Argentine Ants, and will result in significant additional costs to the community with respect to lost production and natural values, and the increased cost of control in the future.

6.1.5 Strategy Rule for Argentine Ants

1. The Management Agency will promote and encourage control of Argentine Ants.
2. The occupier of land (which includes local authorities) containing Argentine Ants will be required to undertake treatment to control Argentine Ants.
3. The occupier shall take all reasonable precautions to prevent the spread of Argentine Ants in pot plants, rubbish, landscape materials, equipment, fittings and vehicles.

A breach of Strategy Rule 6.1.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

6.1.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Argentine Ants, under Sections 52 and 53 of the Act.

6.2 AUSTRALIAN MAGPIE – BLACK-BACKED (*Gymnorhina tibicen tibicen*), WHITE-BACKED (*Gymnorhina tibicen hypoleuca*)



6.2.1 Description

There are two sub-species of Australian Magpie, the Black-Backed Magpie and the White-Backed Magpie, in New Zealand. They were introduced from Australia during the mid-to-late 1800s, with the aim of controlling invertebrate pasture pests. Both species of Australian Magpie commonly interbreed, producing birds with intermediate markings. They feed mainly on the ground, taking a wide variety of invertebrate prey.

6.2.2 Reasons for the Strategy

Australian Magpies restrict native birds moving between patches of native vegetation, and have been known to kill smaller birds. They compete with and displace other birds for nesting sites because of their territorial behaviour. Australian Magpies act aggressively toward intruders when nesting, and defend areas of up to 5 hectares.

Australian Magpies are assessed at “5” on the infestation curve. They are widespread in low numbers throughout the region, apart from Golden Bay, where occasional colonising birds have been trapped in the Takaka Valley. Given the widespread distribution of Australian Magpies, the best option is for the Management Agency to provide advice and assistance to the public to control Australian Magpies, especially in areas of high conservation value, such as Golden Bay and the Upper Buller. Assistance to land occupiers will include instruction in the field on control techniques. Extensive areas of suitable habitat, and the potential for them to cause significant adverse effects, mean the benefits of containment control far outweigh the costs.

6.2.3 Objective

To address the adverse effects of Australian Magpies in the Tasman-Nelson region during the term of the Strategy.

6.2.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Advise and assist the public in the control of Australian Magpies.

Alternative Measures

The principal alternative measure is to adopt a greater level of regional intervention, such as requiring land occupiers to control Australian Magpies. However, this option is considered inappropriate, given the widespread distribution of Australian Magpies and the difficulty in controlling them.

6.2.5 Strategy Rule for Australian Magpie

The Management Agency will promote and encourage control, and provide traps on request.

6.2.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Australian Magpies, under Sections 52 and 53 of the Act.





6.3 BROOM (*Cytisus scoparius*) – Howard - St Arnaud

6.3.1 Description

Broom is a fast-growing, perennial shrub growing to 3.5 metres high. It has sparse, green, trifoliate leaves; yellow pea-like flowers and conspicuous seed-pods. The black seeds are dispersed by a ballistic mechanism and remain viable for many years. They are dispersed along waterways and redistributed in river gravels, and in dirt on machinery and vehicles.

6.3.2 Reasons for the Strategy

Broom is regarded as a serious production and environmental pest in the Tasman-Nelson region. It is an aggressive competitor for light, nutrients and moisture; dense stands of Broom can shade out most species. It is very competitive in lightly grazed pastoral situations, forming thickets that obstruct grazing. Broom can invade plantation forests, often from gravel brought in for roading, and re-establish after forests have been harvested from seed that has been lying dormant. It is capable of smothering native species in regenerating shrublands and remaining as the dominant species for many years. In many people's perception, Broom degrades amenity values.

Broom is assessed at "4" on the infestation curve for the Howard-St Arnaud area and "7" for the rest of the Tasman-Nelson region. Broom is widespread throughout most of the Tasman-Nelson region, except in the Howard-St Arnaud area. The low incidence of Broom in the Howard-St Arnaud area, extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of containment far outweigh the costs. Elsewhere, the distribution of Broom has reached a level where the most cost-effective form of control is to require boundary control, and to invest in biocontrol. This will assist in protecting land clear, or being cleared of Broom, from invasion by Broom growing on adjacent land.

6.3.3 Objective

To address the adverse effects of Broom in the Howard-St Arnaud area by preventing any increase in its distribution and density during the term of the Strategy.

6.3.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations of Broom in the Howard-St Arnaud area.
- Enforce rules requiring land occupiers to destroy all Broom plants.
- Advise the public on the identification and control of Broom.
- Carry out surveillance for Broom in the Howard-St Arnaud area.

Alternative Measures

The alternative option of "do nothing" or relying on voluntary control will not achieve the objective of reducing the distribution and density of Broom in the Howard-St Arnaud area, and will result in significant additional costs to the community with respect to lost production, and the increased cost of control in the future. Requiring progressive control in the Howard-St Arnaud area would not be cost-effective, given its distribution and persistence.

6.3.5 Strategy Rules for Broom

The occupier in the Howard-St Arnaud area shall destroy all adult and juvenile forms of Broom on land that they occupy.

A breach of Strategy Rule 6.3.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

6.3.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Broom, under Sections 52 and 53 of the Act.



6.4 BRUSHTAIL POSSUM (*Trichosurus vulpecula*)



6.4.1 Description

The Brushtail Possum originates from Australia and was released in New Zealand in the late 1800s to establish a fur trade similar to that flourishing in Australia at the time. They are opportunist feeders, preying upon invertebrates and small birds, and browsing the foliage of a wide range of plant species.

6.4.2 Reasons for the Strategy

Brushtail Possums cause extensive canopy defoliation in native forest. They also cause economic damage in exotic forest plantations. Research indicates that Brushtail Possums will prey on ground-and-tree-nesting birds and their eggs. They are a recognised vector in the spread of the disease bovine tuberculosis to domestic livestock. As a vector for tuberculosis, they pose a threat to the Tasman-Nelson region's pastoral economy.

Brushtail Possums are assessed at "8" on the infestation curve. The Councils already contribute significant funds to the Animal Health Board's control of Brushtail Possums. The best option for complementing this work is for the Management Agency to provide advice and instruction to the public on the control of Brushtail Possums, targeting landowners not involved in Animal Health Board operations. They may also be controlled in sites of high public value (see Section 9). Assistance to land occupiers will include instruction in the field on control techniques. Extensive areas of suitable habitat, and the potential for them to cause significant adverse effects, mean the benefits of containment control far outweigh the costs.

6.4.3 Objective

To address the adverse effects of Brushtail Possums in the Tasman-Nelson region during the term of the Strategy.

6.4.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Advise and assist the public in the control of Brushtail Possums.

Alternative Measures

The principal alternative measure is to adopt a greater level of regional intervention, such as requiring land occupiers to control Brushtail Possums. However, this option is considered inappropriate, given the existing control work being carried out, and the widespread distribution of Brushtail Possums.

6.4.5 Strategy Rule for Brushtail Possum

The Management Agency will promote and encourage control.

6.4.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Brushtail Possums, under Sections 52 and 53 of the Act.





6.5 DARWIN'S ANTS (*Doleromyrma darwiniana*)

6.5.1 Description

Darwin's Ants are light to dark honey-brown, and about 2 millimetres long. They are similar in appearance to Argentine Ants but give off a strong odour when crushed; there is little or no odour for Argentine Ants, to whom they are closely related. Darwin's Ants are native to Australia and were first recorded in Christchurch in the 1970s. They are now found widely scattered through the northern and eastern parts of the North Island and in the upper South Island. Darwin's Ants in New Zealand form extremely large colonies and behave similarly to Argentine Ants.

6.5.2 Reasons for the Strategy

Darwin's Ants are easily spread by human-related activities (eg, movement of pot plants, vehicles, etc). They are not capable of stinging but will enter houses in large numbers foraging for sweet foods. They are a major pest for householders in areas where they are established. They can reach large densities in urban gardens, becoming a nuisance and may displace other invertebrates. Darwin's Ants tend aphids and mealy bugs and may also spread disease in the same manner as Argentine Ants. There are numerous potential impacts of Darwin's Ants on the commercial sector in urban environments; including ants invading food processing plants and becoming important pests of the hospitality industry. Darwin's Ants have been found predominantly in urban areas and on the margins of native habitats. There is concern about their spread into coastal shrublands, especially in areas like Abel Tasman National Park. Their potential impact on native ecosystems in New Zealand remains largely unknown. The development of new control methods has made it possible for land occupiers to reduce ant numbers to very low levels, but eradication seems impossible to achieve in urban settings.

The aim of the strategy is to slow the spread of Darwin's ants to areas that are currently uninfested by requiring occupiers (including local authorities) to control ants

Darwin's Ants are assessed at "3" on the infestation curve. Extensive areas of suitable habitat, and the potential for them to cause significant adverse effects, mean the benefits of containment control far outweigh the costs.

6.5.3 Objective

To address the adverse effects of Darwin's Ants during the term of the Strategy by:

- Containing Darwin's Ants in the infested urban areas.
- Keeping uninfested areas clear of Darwin's Ants.
- Slowing the spread of Darwin's Ants.

6.5.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations of Darwin's Ants.
- Require occupiers to control Darwin's Ants on infested land.
- Advise land occupiers on methods of controlling Darwin's Ants.
- Carry out surveillance for Darwin's Ants.
- Assist land occupiers with identification of ants.
- Advise the public on means of minimising the spread of Darwin's Ants.
- Undertake control of Darwin's Ants on nominated sites of high public value.



Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of containing Darwin’s Ants, and will result in significant additional costs to the community with respect to lost production and natural values, and the increased cost of control in the future.

6.5.5 Strategy Rule for Darwin’s Ants

1. The Management Agency will promote and encourage control of Darwin’s Ants.
2. The occupier of land (including local authorities) containing Darwin’s Ants will be required to undertake treatment to control Darwin’s Ants.
3. The occupier shall take all reasonable precautions to prevent the spread of Darwin’s Ants in pot plants, rubbish, landscape materials, equipment, fittings and vehicles.

A breach of Strategy Rule 6.5.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

6.5.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Darwin’s Ants, under Sections 52 and 53 of the Act.



6.6 FERAL CATS (*Felis catus*)

6.6.1 Description

Cats were brought to New Zealand in the ships of early European explorers, from 1769 onwards. Despite their early introduction into New Zealand, they did not become feral here until at least 50 years later. Feral Cats predate on possums, rodents, rabbits, birds and reptiles. They also feed on invertebrates to a lesser extent. Native and introduced birds form a large part of their diet.

6.6.2 Reasons for the Strategy

Feral Cats are a major predator of native birds and animals, and are having a significant impact on the biodiversity values of the Tasman-Nelson region. They can carry bovine tuberculosis, and can spread disease to sheep (toxoplasmosis), resulting in the abortion of lambs.

Feral Cats are assessed at “8” on the infestation curve. Given the widespread distribution of Feral Cats, the best option is to educate and advise the public about their impact and control. The Strategy will only target Feral Cats outside residential areas. The control of domesticated cats in residential areas for nuisance purposes is not part of this Strategy. Assistance to land occupiers will include instruction in the field on control techniques. Extensive areas of suitable habitat, and the potential for them to cause significant adverse effects, mean the benefits of containment control far outweigh the costs.

6.6.3 Objective

To address the adverse effects of Feral Cats in the Tasman-Nelson region during the term of the Strategy.

6.6.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Educate the public about the impact of releasing cats into the wild.
- Advise and assist the public in the control of Feral Cats.

Alternative Measures

The principal alternative measure is to adopt a greater level of regional intervention, such as requiring land occupiers to control Feral Cats. However, this option is considered inappropriate, given the widespread distribution of Feral Cats.

6.6.5 Strategy Rule for Feral Cats

The Management Agency will promote and encourage control.

6.6.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Feral Cats, under Sections 52 and 53 of the Act.



6.7 FERAL RABBITS (*Oryctolagus cuniculus*) and HARES (*Lepus europaeus*)



6.7.1 Description

Rabbits were first introduced by European settlers for food. Rabbits quickly became pests throughout the country. Hares were released in the mid-1800s for game. They are largely solitary, generally nocturnal and tend to range over large areas.

6.7.2 Reasons for the Strategy

Feral Rabbits damage crops and pasture. Feral Hares damage young trees in plantation forests, and crops and oversown pasture. Both Feral Rabbits and Hares have a detrimental impact on economic production and increase the risk of soil erosion.

Feral Rabbits and Hares are assessed at “8” on the infestation curve. Given their widespread distribution, the best option is to provide advice to land occupiers on the control of Feral Rabbits and Hares. Assistance to land occupiers will include instruction in the field on control techniques. Extensive areas of suitable habitat, and the potential for them to cause significant adverse effects, mean the benefits of containment control far outweigh the costs.

6.7.3 Objective

To address the adverse effects of Feral Rabbits and Hares in the Tasman-Nelson region during the term of the Strategy.

6.7.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Advise and assist the public in the control of Feral Rabbits and Hares.

Alternative Measures

The principal alternative measure is to adopt a greater level of regional intervention, such as requiring land occupiers to control Feral Rabbits and Hares. This option was rejected, as the cost of monitoring and enforcing such a requirement across the whole region would outweigh the benefit to

the region, given that the principal benefit of Feral Rabbit and Hare control accrues to the individual land occupiers carrying out the control.

6.7.5 Strategy Rule for Feral Rabbits and Hares

The Management Agency will promote and encourage control.

6.7.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Feral Rabbits and Hares, under Sections 52 and 53 of the Act.





6.8 GORSE (*Ulex europaeus*) – Howard - St Arnaud

6.8.1 Description

Gorse is a fast-growing woody perennial, with deep, extensive, lateral roots. It forms dense, spiny thickets up to 2.5 m high. The flowers are deep yellow and form pods that disperse seeds ballistically. They are also spread by water, animals, in gravel extracted from waterways and in mud on machinery and vehicles. Seeds remain viable for many years. Gorse will regrow if cut or burnt.

6.8.2 Reasons for the Strategy

Gorse is a serious production and environmental pest in the Tasman-Nelson region. It is an aggressive competitor for light, nutrients, and moisture. Gorse restricts grazing by displacing preferred pasture species and its prickly nature impedes stock access. Spiny twigs lower the value of wool and foraging by sheep amongst Gorse pulls fleeces. The plant provides habitat to animal pests such as possums and rabbits, and in places presents a serious fire hazard. Short or open non-forest communities can become overwhelmed by Gorse, and it impacts on natural and recreational areas through obstruction or degradation of amenity values. It competes aggressively with native plants and will remain as the dominant species for many years. On extensively grazed areas, plants can spread from infested sites to adjacent clear land.

Gorse is assessed at “4” on the infestation curve for the Howard-St Arnaud area and “7” for the rest of the Tasman-Nelson region. Gorse is widespread throughout most of the Tasman-Nelson region, except in the Howard-St Arnaud area. The low incidence of Gorse in the Howard-St Arnaud area, extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of containment far outweigh the costs. Elsewhere, the distribution of Gorse has reached a level where the most cost-effective form of control is to require boundary control, and to invest in biocontrol. This will assist in protecting land clear, or being cleared of Gorse, from invasion by Gorse growing on adjacent land.

6.8.3 Objective

To address the adverse effects of Gorse in the Howard-St Arnaud area by preventing any increase in its distribution and density during the term of the Strategy.

6.8.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations of Gorse in the Howard-St Arnaud area.
- Enforce rules requiring land occupiers to destroy all Gorse plants.
- Advise the public on the identification and control of Gorse.
- Carry out surveillance for Gorse in the Howard-St Arnaud area.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of reducing the distribution and density of Gorse in the Howard-St Arnaud area, and will result in significant additional costs to the community through lost production, and the increased cost of control in the future. Requiring progressive control throughout the Howard-St Arnaud area would not be cost-effective given its distribution and persistence.

6.8.5 Strategy Rule for Gorse

An occupier in the Howard-St Arnaud area shall destroy all adult and juvenile forms of Gorse on land that they occupy.

A breach of Strategy Rule 6.8.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

6.8.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Gorse, under Sections 52 and 53 of the Act.



6.9 LAGAROSIPHON (*Lagarosiphon major*)



6.9.1 Description

Lagarosiphon is also known as oxygen weed. It is a perennial plant, which grows fully submerged in water to depths of 6.5 metres. The plant has spiralled, green leaves on slender, brittle stems up to 5 metres long. It forms large mats of interwoven stems below the water surface. It has an exceptional ability to reproduce and spread. The plant is spread by vegetative fragmentation. Dispersal of fragments is by water flow, or by people transporting fragments on their boats, trailers and fishing nets.

6.9.2 Reasons for the Strategy

Lagarosiphon is an aggressive freshwater weed that shades out native aquatic plants. By modifying habitats and smothering other useful species, Lagarosiphon may displace food sources of value to Maori such as watercress. Dense stands will impede water flow and interfere with water utilisation. Surface beds spoil water for aesthetic and recreational purposes. Lagarosiphon liberates oxygen as it grows, but heavy infestations diminish oxygen available to fish by reducing water circulation and through the decomposition of dead plants.

Lagarosiphon is assessed at “4” on the infestation curve. There are numerous sites in garden and farm ponds and some waterways in Tasman District, including Golden Bay. Extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of containment control far outweigh the costs. As Lagarosiphon is so difficult to control, the focus will be on educating the public and continuing to investigate effective control methods for existing infestations. A rule requiring control of Lagarosiphon is inappropriate, given how difficult it is to control.

6.9.3 Objective

To address the adverse effects of Lagarosiphon in the Tasman-Nelson region during the term of the Strategy.

6.9.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations of Lagarosiphon.
- Manage Lagarosiphon infestations to prevent any increase in its density or distribution.
- Educate the public about the adverse effects of Lagarosiphon; not to use it in ponds, and to notify suspected sightings.
- Carry out surveillance for Lagarosiphon.
- Investigate more effective control methods.
- Promote the cleaning of boats and water-related equipment.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of containing Lagarosiphon, and will result in significant additional costs to the community with respect to lost natural values, and the increased cost of control in the future. Requiring total control is not practical, as the control methods may not be effective in every situation.

6.9.5 Strategy Rule for Lagarosiphon

The occupier shall manage Lagarosiphon to prevent it spreading to other water bodies.

6.9.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Lagarosiphon, under Sections 52 and 53 of the Act.





6.10 MUSTELIDS – FERRETS (*Mustela furo*), STOATS (*Mustela erminea*) and WEASELS (*Mustela nivalis vulgaris*)

6.10.1 Description

Mustelids are a large group of small-to-medium-sized carnivores that originate from Europe. Three species of Mustelid, the Ferret, the Stoat, and the Weasel were introduced into New Zealand in the late 1880s to control rabbits. They will prey on birds, feral mice, rabbits, hares, rats, possums and insects. Ferrets have adapted so well to New Zealand that we now have the largest known population of feral Ferrets.

6.10.2 Reasons for the Strategy

All three Mustelids are active hunters and have a detrimental effect on our indigenous fauna. Ferrets are also a recognised vector in the spread of the disease bovine tuberculosis to domestic livestock. Consequently, they pose a threat to the biodiversity values of the Tasman-Nelson region, and to the region's pastoral industries.

Mustelids are assessed at "8" on the infestation curve. Given their widespread distribution, the best option is to promote the voluntary control of Ferrets, Stoats, and Weasels. Assistance to land occupiers will include instruction in the field on control techniques. Extensive areas of suitable habitat, and the potential for them to cause significant adverse effects, mean the benefits of containment control far outweigh the costs.

6.10.3 Objective

To address the adverse effects of Mustelids - Ferrets, Stoats, and Weasels in the Tasman-Nelson region during the term of the Strategy.

6.10.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Advise and assist the public in the control of Ferrets, Stoats, and Weasels.

Alternative Measures

The principal alternative measure is to adopt a greater level of regional intervention, such as requiring land occupiers to control Ferrets, Stoats, and Weasels. However, this option is considered inappropriate, given the widespread distribution of Ferrets, Stoats, and Weasels, and the difficulty in controlling them.

6.10.5 Strategy Rule for Mustelids – Ferrets, Stoats and Weasels

The Management Agency will promote and encourage control.

6.10.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Ferrets, Stoats or Weasels, under Sections 52 and 53 of the Act.



6.11 PURPLE PAMPAS (*Cortaderia jubata*)



6.11.1 Description

Purple Pampas is a tall, erect, tussock-forming, perennial grass growing up to 2-3 metres high. It starts flowering in late January. Purple Pampas has dark green leaves and its flowering stems, up to 3 metres high, have distinctive, erect, fluffy, purple flower heads that fade with age. This species was planted for shelter belts; its seeds can be carried for more than 20 kilometres downwind. The combination of prolific seeding, extensive wind distribution, and its ability to colonise disturbed land from sea-level up to 800 metres and dominate the site for many years, make it a serious long-term pest.

Purple Pampas is distinguishable from the three native toe-toe species, which have more creamy-yellow heads, and from Common Pampas (*Cortaderia selloana*), which starts flowering in mid-March.

6.11.2 Reasons for the Strategy

Purple Pampas impacts on plantation forests by smothering recently-planted seedlings. It can also suppress the growth of smaller native species, especially in coastal areas, regenerating shrublands and bush margins. Purple Pampas is targeted rather than Common Pampas, as it has the ability to produce fertile seed from individual plants without pollination.

Purple Pampas is assessed at “5” on the infestation curve. It is widespread throughout the Tasman-Nelson region, including Golden Bay and its presence in plantation forests and reverting shrubland make surveillance difficult. Extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of containment control far outweigh the costs.

6.11.3 Objective

To address the adverse effects of Purple Pampas in the Tasman-Nelson region by preventing any increase in its distribution and density during the term of the Strategy.

6.9.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations of Purple Pampas.
- Enforce rules requiring land occupiers to destroy all Purple Pampas plants.
- Advise the public on the identification and control of Purple Pampas.
- Carry out surveillance for Purple Pampas.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of reducing the distribution and density of Purple Pampas, and will result in significant additional costs to the community with respect to lost production and natural values, and the increased cost of control in the future. Requiring total control is not practical given the difficulty of identifying and controlling it in forest plantations, shrubland and on broken terrain.

6.11.5 Strategy Rule for Purple Pampas

The occupier shall destroy all adult and juvenile forms of Purple Pampas on land that they occupy.

A breach of Strategy Rule 6.11.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

6.11.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Purple Pampas, under Sections 52 and 53 of the Act.



7 BOUNDARY CONTROL PESTS

Boundary Control Pests usually refer to pests of generally widespread distribution in a region and for which the goal is to control the spread of the pest to land that is clear, or being cleared, of the pest.



- 7.1 Australian Sedge
- 7.2 Blackberry
- 7.3 Broom (outside Howard - St Arnaud)
- 7.4 Buddleia
- 7.5 Codling Moth, Black Spot and Powdery Mildew
- 7.6 European Canker
- 7.7 Fireblight
- 7.8 Giant Buttercup
- 7.9 Gorse (outside Howard - St Arnaud)
- 7.10 Nodding Thistle
- 7.11 Ragwort

7.1 AUSTRALIAN SEDGE (*Carex longebrachiata*)



7.1.1 Description

Australian Sedge is a perennial tussock-forming sedge, similar in appearance to both native and introduced sedges. However, the plant is distinguishable from other sedges by the way it shoots from within the bottom of the original stalk, its wing shaped leaves, angled flowering stems and catkin-like spikes. The plant normally flowers from October onwards and produces small, smooth, triangular nut-like seeds through to February.

7.1.2 Reasons for the Strategy

Australian Sedge is generally not palatable to stock, but it can form dense stands that invade pasture and reduce carrying capacity. The lateral spread of the plant is relatively small as the seeds fall close to the parent plant. However, care needs to be taken to avoid the risk of spread by animals. Once established, the plant is difficult to control.

Although Australian Sedge is assessed at “3” on the infestation curve, heavy infestations occur at Patarau. To prevent its spread, the occupiers of infested land are required to maintain a 20 m strip along their boundary with land that is clear or being cleared of Australian Sedge. Advice on machinery and stock movement to prevent the spread of the plant will also be provided. As these are the only known infestations in the South Island, the benefits of stopping this plant spreading far outweigh the costs.

7.1.3 Objectives

To control the spread of Australian Sedge from adjacent properties to land that is clear, or being cleared, of Australian Sedge.

7.1.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Enforce rules requiring land occupiers to destroy Australian Sedge where there is a reasonable complaint.
- Advise land occupiers on the control of Australian Sedge
- Carry out surveillance for Australian Sedge.

7.1.5 Strategy Rules for Australian Sedge

1. The occupier shall destroy all adult and juvenile forms of Australian Sedge located 20 metres or less from the boundary of the land that he or she occupies where it adjoins land that is clear, or being cleared, of Australian Sedge.
2. The occupier shall take all reasonable precautions to avoid its spread on animals, machinery, and vehicles.

A breach of Strategy Rule 7.1.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

7.1.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release or commercially display Australian Sedge, under Sections 52 and 53 of the Act.





7.2 BLACKBERRY (*Rubus fruticosus agg*)

7.2.1 Description

Blackberry is a prickly, usually scrambling, perennial shrub, with fleshy edible fruit. Plants will form impenetrable thickets if unchecked. Stems from a partially buried regenerative crown will root where they touch the ground. Propagation is primarily by birds but also through extension from the parent plant by canes that root at their tips in autumn. Infestations are usually prevalent on lightly grazed areas and wasteland in moist situations. It does not compete with well-managed pastures.

7.2.2 Reasons for the Strategy

Blackberry causes economic impacts by invading pastoral land and reducing production. Blackberry forms a total barrier of live and dead arching canes and sheep can become entangled in canes and may die. Pieces of stem can contaminate wool; infestations create obstructions to roadside vision and harbour vermin. Blackberry can suppress other plants in scrub and forest margin habitats and also in young tree plantations.

Blackberry is assessed at “8” on the infestation curve. Blackberry is widespread in the Tasman-Nelson region. The distribution of Blackberry has reached a level where the most cost-effective form of control is to require boundary control. This will assist in protecting land that is clear, or being cleared of Blackberry, from invasion from adjacent land by Blackberry. Significant sums are spent by many land occupiers to control Blackberry on their properties, and they should reasonably expect not to have their land invaded by extension of plants growing through a boundary with adjacent infested land. Extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of boundary control far outweigh the costs.

7.2.3 Objective

To control the spread of Blackberry from adjacent properties to land that is clear, or being cleared of Blackberry, in the Tasman-Nelson region during the term of the Strategy.

7.2.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Enforce rules requiring land occupiers to destroy Blackberry plants when there is a reasonable complaint.
- Advise the public on the identification and control of Blackberry.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of the prevention of the spread of Blackberry to adjacent properties where there is no Blackberry, or where control is being carried out. Requiring a greater level of control, instead of just boundary control, is not appropriate given the widespread distribution of Blackberry, and that the occupier is the main beneficiary.

7.2.5 Strategy Rule for Blackberry

The occupier shall destroy all adult and juvenile forms of Blackberry located up to 10 metres from the boundary of the land that they occupy where the adjacent property is clear, or being cleared of Blackberry.

A breach of Strategy Rule 7.2.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

Explanation of Strategy Rule

The Management Agency will limit its intervention to enforce compliance of the rule to occasions when a reasonable complaint is received from an adjoining land occupier. This would require the complainant’s land to be already clear, or being cleared of Blackberry, and that any invasion of the pest plant through the boundary has the potential to cause economic harm to the complainant’s land.

7.2.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Blackberry, under Sections 52 and 53 of the Act.



7.3 BROOM (*Cytisus scoparius*) – Outside Howard - St Arnaud



7.3.1 Description

Broom is a perennial shrub growing to 3.5 metres in height. It has sparse, green, trifoliolate leaves, yellow pea-like flowers and conspicuous seed-pods. Seeds are dispersed by a ballistic mechanism and are viable for a long time. They are also dispersed via the distribution of gravel and in dirt stuck to machinery.

7.3.2 Reasons for the Strategy

Broom is regarded as a serious production and environmental pest in the Tasman-Nelson region. Dense stands of Broom can shade out most species. It is very competitive in lightly grazed pastoral situations, forming thickets that obstruct grazing. Broom is invasive of plantation forests, establishing rapidly after forests have been harvested and out-competes naturally regenerating species. To many people's perception, Broom degrades amenity values.

Broom is assessed at "7" on the infestation curve. Broom is widespread throughout the Tasman-Nelson region outside the Howard - St Arnaud area and the distribution of Broom has reached a level where the most cost-effective form of control is to require boundary control, and to invest in biocontrol. This will assist in protecting land that is clear, or being cleared of Broom, from invasion from adjacent land by Broom. Extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of boundary control far outweigh the costs.

7.3.3 Objective

To control the spread of Broom from adjacent properties to land that is clear, or being cleared of Broom, in the Tasman-Nelson region during the term of the Strategy.



7.3.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Enforce rules requiring land occupiers to destroy Broom plants when there is a reasonable complaint.
- Advise the public on the identification and control of Broom.
- Introduce biocontrol agents for Broom into suitable sites.

Alternative Measures

The alternative option of "do nothing" or relying on voluntary control will not achieve the objective of the prevention of the spread of Broom to adjacent properties where there is no Broom, or where control is being carried out. Requiring a greater level of control, instead of just boundary control, is not appropriate given the widespread distribution of Broom, and that the occupier is the main beneficiary.

7.3.5 Strategy Rule for Broom

The occupier shall destroy all adult and juvenile forms of Broom located up to 10 metres from the boundary of the land that they occupy where the adjacent property is clear, or being cleared of Broom.

A breach of Strategy Rule 7.3.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

Explanation of Strategy Rule

The Management Agency will limit its intervention to enforce compliance of the rule to occasions when a reasonable complaint is received from an adjoining land occupier. This would require the complainant's land to be already clear, or being cleared of Broom, and that any invasion of the pest plant through the boundary has the potential to cause economic harm to the complainant's land.

7.3.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Broom, under Sections 52 and 53 of the Act.



7.4 BUDDLEIA (*Buddleja davidii*)

7.4.1 Description

Buddleia is a large perennial shrub, whose showy inflorescence has made it a popular garden plant. It grows rapidly for about the first 10 years, with height growth rates of 0.5 metre a year. Plants eventually collapse after about 20 years, as stem rot, insect attack and the brittle nature of the wood cause the shrub to break down. The plant has a preference for low to moderately fertile sites, is highly tolerant of drought, intolerant of shade and slightly tolerant of frost. Vast quantities of seed can be spread by machinery, by transport of gravel, and by wind and water. Seed viability is initially high and probably drops off rapidly.

7.4.2 Reasons for the Strategy

Buddleia is a serious pest for plantation forests. Locally, forest companies acknowledge the threat and they destroy all known plants on their own land. It is also a conservation pest, as it can suppress early indigenous successional species (grasses, herbs and shrubs) in and beside waterways, impacting on conservation values.

Buddleia is assessed at “5” on the infestation curve. It is widespread throughout the Tasman-Nelson region. Requiring boundary control of Buddleia is the only practical control option. This will assist in protecting land that is clear, or being cleared of Buddleia, from invasion from adjacent land by Buddleia. Extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of boundary control far outweigh the costs. Hybrids of Buddleia are not included in this Strategy.

7.4.3 Objective

To control the spread of Buddleia from adjacent properties to land that is clear, or being cleared of Buddleia, in the Tasman-Nelson region during the term of the Strategy.

7.4.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Enforce rules requiring land occupiers to destroy Buddleia plants when there is a reasonable complaint.
- Introduce biocontrol agents for Buddleia into suitable sites.
- Advise the public on the identification and control of Buddleia.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of the prevention of the spread of Buddleia to adjacent properties where there is no Buddleia, or where control is being carried out. The Strategy rule for Buddleia provides some protection for occupiers controlling Buddleia. The cost to the Management Agency of implementing this requirement over the past four years has been minimal. Requiring a greater level of control, instead of just boundary control, is not appropriate given the widespread distribution of Buddleia, and that the occupier is the main beneficiary.

7.4.5 Strategy Rule for Buddleia

The occupier shall destroy all adult and juvenile forms of Buddleia located up to 50 metres from the boundary of the land that they occupy where the adjacent property is clear, or being cleared of Buddleia.

A breach of Strategy Rule 7.4.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

Explanation of Strategy Rule

The Management Agency will limit its intervention to enforce compliance of the rule to occasions when a reasonable complaint is received from an adjoining forest occupier, irrespective of whether it contains either indigenous or introduced trees. This would require the complainant’s land to be already clear, or being cleared of Buddleia, and that any invasion of the pest plant through the boundary has the potential to cause economic or environmental harm to the complainant’s land.

7.4.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Buddleia, under Sections 52 and 53 of the Act.



7.5 CODLING MOTH (*Cydia pomonella*), BLACK SPOT (*Venturia inaequalis*), POWDERY MILDEW (*Podosphaera leucotricha*)



7.5.1 Description

Codling Moth, Black Spot and Powdery Mildew are organisms that damage apple and pear crops. Codling Moth is a small, speckled, grey moth, hosted by apple, pear and walnut trees. It burrows into fruit, leaving a small hole that results in the fruit being rejected for sale. Black Spot is a fungus that grows on the leaves and fruit of apple trees, spreading from spores released from leaf material on the ground to nearby trees. Any sign of Black Spot results in reject fruit. Powdery Mildew is a fungus that affects the tips of the growing shoots of apple trees. It affects the growth of the tree, reducing production through smaller and lesser fruit.

7.5.2 Reasons for the Strategy

Codling Moth, Black Spot and Powdery Mildew can significantly decrease the value of pipfruit crops and impact on orchard production if not controlled. During downturns in the pipfruit industry, some growers have left their orchards unmanaged. This poses a risk to neighbouring growers, as an increase in pest levels in the unmanaged orchards will result in higher pest control costs. Neighbouring growers will need to use more pesticides at a time when the industry is trying to reduce their use. Pipfruit growers controlling Codling Moth, Black Spot and Powdery Mildew should reasonably expect not to have their orchards infected by pests from a nearby unmanaged orchard. Assurance that this will not happen can only be provided by a Strategy that empowers the Management Agency to be able to require the occupier of a unmanaged orchard to carry out appropriate control of the organisms within 500 metres of a neighbouring pipfruit orchard. Appropriate control may include chemical or non-chemical methods. The 500 metre distance is based on advice from HortResearch on the travelling limit for the large majority of these organisms.

Codling Moth, Black Spot and Powdery Mildew are assessed at “7” on the infestation curve. Extensive areas of suitable habitat, and the potential for them to cause significant adverse effects, mean the benefits of boundary control far outweigh the costs.

7.5.3 Objective

To prevent Codling Moth, Black Spot, and Powdery Mildew spreading from host plants where these organisms are not controlled, to pipfruit orchards where these organisms are controlled, in the Tasman-Nelson region during the term of this Strategy.

7.5.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Enforce rules requiring land occupiers to control Codling Moth, Black Spot and Powdery Mildew.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of the prevention of the spread of Codling Moth, Black Spot and Powdery Mildew from unmanaged pipfruit orchards. Requiring a greater level of control, instead of just boundary control, is not appropriate given the widespread distribution of these organisms, and the limited distribution of pipfruit orchards.



7.5.5 Strategy Rule for Codling Moth, Black Spot and Powdery Mildew

An occupier of a pipfruit orchard within 500 metres of another pipfruit orchard shall control Codling Moth, Black Spot and Powdery Mildew to recognised industry standards.

Where there are individual trees outside of a pipfruit orchard that host these pests, then the property owner will allow an adjacent orchardist, or an agreed third party, access to control these pests to recognised industry standards. Where the adjacent non-orchard property wishes organic controls to be used, the orchardist will use control measures recognised by certifying organic agencies.

A breach of Strategy Rule 7.5.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

Explanation of Strategy Rule

The Management Agency will limit its intervention to enforce compliance of the rule to occasions when a reasonable complaint is received. This would require a pipfruit grower to show that their orchard is clear, or being cleared of Codling Moth, Black Spot and Powdery Mildew, and that they could be caused economic harm by the lack of control of these organisms in another orchard less than 500 metres away.

7.5.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Codling Moth, Black Spot and Powdery Mildew, under Sections 52 and 53 of the Act.



7.6 EUROPEAN CANKER (*Neonectria ditissima*)



7.6.1 Description

European Canker is a fungal disease caused by *Neonectria ditissima* that is found in a number of species of trees overseas. In New Zealand, it can be particularly devastating in commercial apple orchards in locations with high autumn and winter rainfall. The canker spores enter the tree through pruning wounds or fresh scar tissue arising from bud break, petal fall, harvesting and leaf fall. These spores are spread by wind and in water droplets. Documented evidence indicates that the spread can be up to 30 m, and anecdotal evidence suggests that it can spread up to 100 m within orchards and this can be assisted by air blast sprayers.

7.6.2 Reasons for the Strategy

The canker is slow acting, but it can eventually girdle infected branches, causing shoot dieback and eventually trunk dieback. Crop production is significantly reduced during this time and heavily infected trees need to be replaced. The newer varieties of apples that have been planted in recent years are more susceptible to European Canker and this, coupled with closer spacing of smaller trees and extended periods of wet weather in spring, autumn and winter, have produced very high levels of infection and mortality.

The “European Canker Management Strategy” has been produced by Pipfruit NZ Inc and it requires European Canker to be managed by removal and immediate burning of infected material throughout the year. It defines the industry standard to be met to comply with the Boundary Control rule.

This European Canker management programme will apply to every commercial apple orchard in the Tasman-Nelson region. It will allow growers to carry out management of European Canker in their orchard, without reinvasion from infected adjoining orchards. The economic benefits to the growers and to the regional economy will outweigh the costs to the Management Agency of administering the management programme.

European Canker is assessed at 7 on the infestation curve. Extensive areas of orchard and its impact on crop production means the benefits of boundary control far outweigh the costs.

7.6.3 Objective

To prevent European Canker spreading from an apple orchard where it is not being controlled to industry standards to an apple orchard where it is being controlled in the Tasman-Nelson region during the term of this Strategy.

7.6.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Enforce rules requiring land occupiers of apple orchards to control European Canker to the recognised industry standard when there is a reasonable complaint
- Ensure all orchardists within the region are aware of their requirements under the Pipfruit Industry’s European Canker Management Strategy



Alternative means

The alternative means of “doing nothing” or relying on voluntary control will not achieve the objective of preventing the spread of European Canker from unmanaged or inadequately managed apple orchards.

7.6.5 Strategy Rule for European Canker

The occupier of an apple orchard shall control European Canker to the recognised industry standard on all apple trees within 30m of the adjoining orchard’s apple trees.

A breach of the Strategy Rules 7.6.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

Explanation of Strategy Rule

The Management Agency will limit its intervention to enforce compliance of the rule to occasions when a reasonable complaint is received. This will require an apple orchardist to show by independent assessment that their orchard is being managed to meet the industry standard for European Canker and that they could be adversely affected by the lack of control of this disease in an adjoining orchard.

7.6.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display European Canker, under Sections 52 and 53 of the Act.

7.7 FIREBLIGHT (*Erwinia amylovora*)



7.7.1 Description

Fireblight is an epiphytotic disease. It mainly infects apple and pear trees, but it is also hosted by hawthorn, cotoneaster, quince, loquat, medlar and pyracantha. It causes a blackening of the twigs, flowers and foliage, which resembles fire damage. The disease is transmitted by insects, birds, and contaminated orchard equipment.

7.7.2 Reasons for the Strategy

Overseas markets, such as Japan, Australia and South Korea, set special conditions to ensure pipfruit (apples and pears) imported come from Fireblight-free orchards. These conditions must be complied with for pipfruit growers to gain access to these markets. These conditions are reviewed by importing countries from time to time.

The Fireblight management programme will apply to any pipfruit orchard in the Tasman-Nelson region. It will allow pipfruit growers to carry out surveillance and management of Fireblight within 500 metres of their orchard and enable growers to meet the requirements of obtaining accreditation to supply Fireblight-free fruit to markets with controlled access. This will provide economic benefits not only to growers, but to the regional economy. This regional benefit will outweigh the minimal cost to the Management Agency of administering the management programme.

Fireblight is assessed at “7” on the infestation curve. Extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of boundary control far outweigh the costs.

7.7.3 Objective

To control Fireblight up to 500 metres from pipfruit orchards to a standard required by the pipfruit industry as being clear of Fireblight in the Tasman-Nelson region within the term of the Strategy.

7.7.4 Means of Achievement

The principal means of achieving the objective will be for an authorised person from the pipfruit industry to:

- Carry out surveillance for Fireblight within the 500 metre buffer zone.
- Fund the control of Fireblight within the 500 metre buffer zone.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not allow pipfruit growers to meet the market requirements for Fireblight-free status. Controlling Fireblight on all hosts across the Tasman-Nelson region would be expensive and difficult. The small number of participating growers does not warrant this expense.



7.7.5 Strategy Rule for Fireblight

The occupiers of land within the 500 metre buffer zone of pipfruit orchards shall either:

- (a) destroy all adult and juvenile forms of Fireblight hosts within the buffer zone; or
- (b) permit the entry of authorised persons for the purpose of control of Fireblight under Section 109 of the Act, and
- (c) permit the entry of authorised persons for the purposed monitoring Fireblight under Section 109 of the Act.

A breach of Strategy Rule 7.7.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

Explanation of Strategy Rule

If a pipfruit grower (the proposer) requests control of Fireblight hosts (as listed in 7.7.1) within 500 metres of their orchard, the grower will negotiate with the occupiers to either:

- (a) obtain the acceptance of the occupier that they will undertake the necessary control of Fireblight infestations and that the reimbursement of agreed costs will be the responsibility of the proposer; or
- (b) obtain consent from the occupier for access to be able to destroy Fireblight host plants, at the expense of the proposer; or
- (c) obtain consent for an approved contractor to undertake the necessary control, at the expense of the proposer; or
- (d) in the event that voluntary agreement cannot be agreed between the two parties, the Management Agency will attempt to facilitate agreement between the two parties. If agreement cannot be reached, enforcement proceedings will then be initiated for the Fireblight to be controlled. In such cases, responsibility for funding control works remains with the proposer; or

- (e) where there are hawthorn hedges that are recognised by an informed body or supporting documentation as having regionally significant historic values, the pipfruit grower shall be allowed access for the purpose of inspecting for the incidence of Fireblight and, with the consent of the occupier, shall remove and control infected branches of hawthorn and undertake other agreed control measures. If the parties are unable to agree on a suitable pruner, the Management Agency will consider the issues and select a pruner with the appropriate skills to do the work, having regard to the preservation of the hedgerow integrity.

Funding Responsibility

As the main benefit of controlling Fireblight accrues to the participating pipfruit grower, they are responsible for the costs of controlling Fireblight in adjacent buffer zones. If the Management Agency has to intervene to undertake surveillance for and control of Fireblight, costs incurred will be a direct charge on the participating grower. This includes the costs of any technical advice sought by the Management Agency. Where an occupier in a buffer zone consents to the voluntary removal of Fireblight host plants from their land, the adjacent participating grower is responsible for compensation to cover the direct costs associated with the re-establishment or replacement of those plants, or a structure to replace the protection provided by those plants against wind, light or spray drift.

7.7.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Fireblight, under Sections 52 and 53 of the Act.

7.8 GIANT BUTTERCUP (*Ranunculus acris*)



7.8.1 Description

Giant Buttercup is a hairy perennial with basal leaves that are present all year round. It grows up to 150 centimetres tall and produces yellow flowers in October. The plant is free-seeding and these seeds may be spread by machinery, water and animals. Seed may be viable for at least 20 years. The plant's preferred habitat is pastureland in high rainfall areas.

7.8.2 Reasons for the Strategy

Unpalatable to cattle, Giant Buttercup can quickly overwhelm pasture species in dairying areas, thereby reducing pasture and dairy production. Once established, the plant is costly to control. Being palatable to sheep, it is not generally a threat to sheep and beef farms. Giant Buttercup is assessed at "6" on the infestation curve. It is widespread in the pastoral areas of the Tasman-Nelson region. Requiring boundary control of Giant Buttercup is the only practical option and the benefits it provides outweighs the minimal costs of enforcing this requirement. The Management Agency will continue to promote the development and distribution of biological control agents. Advice will also be provided to occupiers to assist in preventing the spread of Giant Buttercup in hay and equipment.

7.8.3 Objective

To control the spread of Giant Buttercup from adjacent properties to land clear of Giant Buttercup, or being cleared of Giant Buttercup.

7.8.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Enforce rules requiring land occupiers to destroy Giant Buttercup.
- Advise the public on the identification and control of Giant Buttercup.
- Promote the development and distribution of Biological control agents for Giant Buttercup.

Alternative Measures

The alternative option of "do nothing" or relying on voluntary control will not prevent the spread of Giant Buttercup to adjacent properties where it is being controlled. The Strategy rule for Giant Buttercup provides some protection for occupiers who are controlling Giant Buttercup. Requiring a greater level of control, instead of just boundary control, is not appropriate given the widespread distribution of Giant Buttercup, the high cost of control, and that the occupier is the main beneficiary.

7.8.5 Strategy Rule for Giant Buttercup

The occupier shall destroy all adult and juvenile forms of Giant Buttercup located up to 5 metres from the boundary of the land that he or she occupies when the adjacent property is clear or being cleared of Giant Buttercup.

A breach of Strategy Rule 7.8.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

Explanation of Strategy Rule

The Management Agency will limit its intervention to enforce compliance of the rule to occasions when a reasonable complaint is received from an adjoining land occupier. This would require the complainant's land to be already clear, or being cleared of Giant Buttercup, and that any invasion of the pest plant through the boundary has the potential to cause economic harm to the complainant's land.

7.8.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release or display commercially, Giant Buttercup, under Sections 52 and 53 of the Act.





7.9 GORSE (*Ulex europaeus*) – Outside Howard - St Arnaud

7.9.1 Description

Gorse is a woody perennial, with deep, extensive, lateral roots. It forms dense, spiny thickets. Flowers are deep yellow and form pods that disperse seeds ballistically, but they also spread via water, animals, and potentially in gravel. Seeds remain viable for many years. Gorse will regrow if cut or burnt.

7.9.2 Reasons for the Strategy

Gorse restricts grazing by displacing preferred pasture species and its prickly nature impedes stock access. Spiny twigs lower the value of wool and foraging by sheep amongst Gorse pulls fleeces. The plant provides habitat to animal pests such as possums and rabbits, and in places presents a serious fire hazard. Short or open non-forest communities can become overwhelmed by Gorse, and it impacts on natural and recreational areas through obstruction or degradation of amenity values. On extensively grazed areas, plants can spread from infested sites to adjacent clear land.

Gorse is assessed at “7” on the infestation curve. Gorse is widespread throughout the Tasman-Nelson region, except the Howard - St Arnaud area, where the lower level of distribution makes it still feasible to progressively control Gorse and for the benefits to outweigh the costs. Elsewhere, where progressive control was required under the last Strategy, the distribution of Gorse has reached a level where the most cost-effective form of control is to require boundary control, and to invest in biocontrol. This will assist in protecting land that is clear, or being cleared of Gorse, from invasion from adjacent land by Gorse. Extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of boundary control far outweigh the costs.

7.9.3 Objective

To control the spread of Gorse from adjacent properties to land that is clear, or being cleared of Gorse, in the Tasman-Nelson region during the term of the Strategy.

7.9.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Enforce rules requiring land occupiers to destroy Gorse plants when there is a reasonable complaint.
- Advise the public on the identification and control of Gorse.
- Introduce biocontrol agents for Gorse into suitable sites.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of the prevention of the spread of Gorse to adjacent properties where there is no Gorse, or where control is being carried out. Requiring a greater level of control, instead of just boundary control, is not appropriate given the widespread distribution of Gorse, and that the occupier is the main beneficiary.

7.9.5 Strategy Rule for Gorse

The occupier shall destroy all adult and juvenile forms of Gorse located up to 10 metres from the boundary of the land that they occupy where the adjacent property is clear, or being cleared of Gorse.

A breach of Strategy Rule 7.9.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

Explanation of Strategy Rule

The Management Agency will limit its intervention to enforce compliance of the rule to occasions when a reasonable complaint is received from an adjoining land occupier. This would require the complainant’s land to be already clear, or being cleared of Gorse, and that any invasion of the pest plant through the boundary has the potential to cause economic harm to the complainant’s land.

7.9.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Gorse, under Sections 52 and 53 of the Act.



7.10 NODDING THISTLE (*Carduus nutans*)



7.10.1 Description

Nodding Thistle is an annual or biennial plant, with erect flowering stems up to 1.5 metres tall. It has large purple flowers that droop when mature. Most seeds fall close to the parent plant, being large and heavy. The seeds can also be spread by water, animals, hay, agricultural equipment and in agricultural seed. They will mature even after plants are cut, and have a longevity of 10 years.

7.10.2 Reasons for the Strategy

Nodding Thistle is considered to be the most aggressive thistle in New Zealand. Its suppression of pasture has the potential to reduce grazing capacity – it is capable of total ground cover. It will quickly spread to uninfested areas as a consequence of summer drought. Dense mature stands obstruct livestock movement and provide habitat for rabbits and vermin. Spines adhere to wool, lowering its value.

Nodding Thistle is assessed at “6” on the infestation curve. It is widespread throughout the Tasman-Nelson region, except for Murchison and most of Golden Bay. The distribution of Nodding Thistle has reached a level where the most cost-effective form of control is to require boundary control, and to invest in biocontrol. This will assist in protecting land that is clear, or being cleared of Nodding Thistle, from invasion from adjacent land by Nodding Thistle. Extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of boundary control far outweigh the costs.

7.10.3 Objective

To control the spread of Nodding Thistle from adjacent properties to land that is clear, or being cleared of Nodding Thistle, in the Tasman-Nelson region during the term of the Strategy.

7.10.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Enforce rules requiring land occupiers to destroy Nodding Thistle plants when there is a reasonable complaint.

- Advise the public on the identification and control of Nodding Thistle.
- Introduce biocontrol agents for Nodding Thistle into suitable sites.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of the prevention of the spread of Nodding Thistle to adjacent properties where there is no Nodding Thistle, or where control is being carried out. Requiring a greater level of control, instead of just boundary control, is not appropriate given the widespread distribution of Nodding Thistle, and that the occupier is the main beneficiary.

7.10.5 Strategy Rule for Nodding Thistle

The occupier shall destroy all adult and juvenile forms of Nodding Thistle located 20 metres or less from the boundary of the land that they occupy where the adjacent property is clear, or being cleared of Nodding Thistle.

A breach of Strategy Rule 7.10.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

Explanation of Strategy Rule

The Management Agency will limit its intervention to enforce compliance of the rule to occasions when a reasonable complaint is received from an adjoining land occupier. This would require the complainant’s land to be already clear, or being cleared of Nodding Thistle, and that any invasion of the pest plant through the boundary has the potential to cause economic harm to the complainant’s land.

7.10.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Nodding Thistle, under Sections 52 and 53 of the Act.





7.11 RAGWORT (*Senecio jacobaea*)

7.11.1 Description

Ragwort is an erect biennial or perennial herb that reproduces from crowns, roots and seeds. It commonly grows to a height of between 45 and 60 centimetres. Ragwort is characterised by its conspicuous yellow flowers during summer. The majority of plants flower in their second season from December to March. The seeds are principally wind-dispersed, with most seed falling close to the parent plant, although water and animals may also play a role. Dispersal may also occur in hay, farm implements or uncertified seed.

7.11.2 Reasons for the Strategy

Ragwort is a serious pasture weed. It leads to reduced pasture production, creating ongoing associated costs of control. Cattle tend to avoid both the plant and the pasture close to the plant, further exacerbating its smothering effect, reducing pasture utilisation. The plant is toxic to cattle, and, to a lesser extent, sheep.

Ragwort is assessed at “7” on the infestation curve. It is widespread throughout the Tasman-Nelson region. The distribution of Ragwort has reached a level where the most cost-effective form of control is to require boundary control, and to invest in biocontrol. This will assist in protecting land that is clear, or being cleared of Ragwort, from invasion from adjacent land by Ragwort. Extensive areas of suitable habitat, and the potential for it to cause significant adverse effects, mean the benefits of boundary control far outweigh the costs.

Biocontrol agents for Ragwort that have been released during the last decade have been highly effective in reducing its density on different sites, but there are still opportunities for further distribution. No complaints have been received during the term of the last Strategy, but it is still considered to be a serious pest of pastoral land. For these reasons, it will continue to be a Boundary Control Pest in the Strategy, ensuring that the Management Agency can continue to distribute the biocontrol agents.

7.11.3 Objective

To control the spread of Ragwort from adjacent properties to land that is clear, or being cleared of Ragwort, in the Tasman-Nelson region during the term of the Strategy.

7.11.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Enforce rules requiring land occupiers to destroy Ragwort plants when there is a reasonable complaint.
- Advise the public on the identification and control of Ragwort.
- Continue to spread biocontrol agents for Ragwort.

Alternative Measures

The alternative option of “do nothing” or relying on voluntary control will not achieve the objective of the prevention of the spread of Ragwort to adjacent properties where there is no Ragwort, or where control is being carried out. Requiring a greater level of control, instead of just boundary control, is not appropriate given the widespread distribution of Ragwort, and that the occupier is the main beneficiary.

7.11.5 Strategy Rule for Ragwort

The occupier shall destroy all adult and juvenile forms of Ragwort located up to 20 metres from the boundary of the land that they occupy where the adjacent property is clear, or being cleared of Ragwort.

A breach of Strategy Rule 7.11.5 is an offence under Section 154(r) of the Biosecurity Act 1993.

Explanation of Strategy Rule

The Management Agency will limit its intervention to enforce compliance of the rule to occasions when a reasonable complaint is received from an adjoining land occupier. This would require the complainant’s land to be already clear, or being cleared of Ragwort, and that any invasion of the pest plant through the boundary has the potential to cause economic harm to the complainant’s land.

7.11.6 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Ragwort, under Sections 52 and 53 of the Act.



8 REGIONAL SURVEILLANCE PESTS

Regional Surveillance Pests are pests which may pose a high potential risk but there is limited information on their regional distribution and impact. These pests are banned from sale, propagation or distribution, but there are no Strategy rules requiring the land occupier to undertake control measures. These pests will be monitored by the Management Agency, who will gather information and keep records on their distribution and impact, provide information and advice to land occupiers, and promote voluntary control.

8.1



8.2



8.3



8.4



- 8.1 Parrot's Feather
- 8.2 Lodgepole Pine
- 8.3 Undaria
- 8.4 Yellow Flag



8.1 PARROT'S FEATHER (*Myriophyllum aquaticum*)

8.1.1 Description

Parrot's Feather is a stout, smooth, freshwater perennial that grows to 2 metres long. Stems either form a floating mat spreading across the water's surface from marginal areas, or submerged. Emergent leaves are pale bluish-green, feather-like and finely divided. The submerged leaves are often reddish. Parrot's Feather only spreads vegetatively in New Zealand.

8.1.2 Reasons for the Strategy

Parrot's Feather forms dense mats that impede water movement and increase the chances of flooding and siltation. Stems can break off easily and can block irrigation pumps. The control of Parrot's Feather is very difficult.

Parrot's Feather is assessed at "3" on the infestation curve. Given how difficult it is to control Parrot's Feather, the best option is to provide advice and education to stop the spread of Parrot's Feather, and to monitor and control the existing infestations where possible.

8.1.3 Objective

To gather information on the distribution of Parrot's Feather in the Tasman-Nelson region and prevent the human spread of this pest in the region during the term of the Strategy.

8.1.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Advise and educate the public about the identification and impacts of Parrot's Feather.
- Monitor and control, where feasible, existing infestations of Parrot's Feather.

Alternative Measures

The inclusion of Parrot's Feather in the Strategy, with a focus on advice and education, and surveillance and control by the Management Agency, is appropriate to stop the spread of this plant. The principal alternative measure is to adopt a greater level of regional intervention, such as requiring all occupiers to control infestations of the plant. However, this option is considered inappropriate, given the difficulty of controlling Parrot's Feather.

8.1.5 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Parrot's Feather, under Sections 52 and 53 of the Act.



8.2 LODGEPOLE PINE (*Pinus contorta*)



8.2.1 Description

Pinus contorta is a native of western North America, where it can be found from Mexico to Alaska and from sea-level to nearly 3,000 metres in the Rockies. It was introduced to New Zealand in the 1880s and planted on sites that were too frosty for the more common production species. It was later used for afforestation of severely eroding sites in mountain lands. It is slower-growing than the more common plantation-grown conifers, approaching 15–25 metres by age 30, and can be distinguished by its short paired needles (6–9 centimetres in length), its small prickly cones (4–6 centimetres) and the irregular plates formed by the bark of mature trees.

8.2.2 Reasons for the Strategy

Pinus contorta is capable of producing viable seed from the age of four years. In exposed situations, this seed is capable of being carried moderate distances by gale-force winds. It rapidly colonises alpine tussock grasslands and shrublands, and is capable of growing above the native bushline up to 2,000 metres, but is light-demanding and will not establish under a closed canopy of shrubs or trees. In open shrubland, it is capable of outgrowing most native species and can become the dominant species. In treeless areas, it can have a dramatic impact on landscape values and the formation of dense stands can restrict access. Within the Tasman-Nelson region, the primary area of concern is around Inwood's Lookout, where stands of *Pinus contorta* have been distributing seed into the adjoining areas of Mt Richmond Forest Park. It is classified as an unwanted organism.

Pinus contorta is assessed at “2” on the infestation curve.

8.2.3 Objective

To gather information on the distribution, density and impact of *Pinus contorta* in the Tasman-Nelson region during the term of the Strategy.

8.2.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Encourage forest owners and the Department of Conservation to work together on methods of stopping the spread of *Pinus contorta* into Mt Richmond Forest Park and to deal with the existing wildings.
- Monitor and record existing infestations of *Pinus contorta*.

Alternative Measures

The inclusion of *Pinus contorta* in the Strategy will ensure the Management Agency is actively involved in surveillance and monitoring, as well as encouraging forest owners to voluntarily control infestations of *Pinus contorta*. The alternative option of “do nothing” will allow seed from existing stands of *Pinus contorta* to continue to spread. The principal alternative measure is to adopt a greater level of regional intervention, such as requiring all occupiers to control infestations of the plant. However, this option is considered inappropriate, given the very high costs of clearing the extensive areas involved; however, the Management Agency would encourage this to happen on a voluntary basis.

8.2.5 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display *Pinus contorta*, under Sections 52 and 53 of the Act.





8.3 UNDARIA (*Undaria pinnatifida*)

8.3.1 Description

Undaria is an edible Asian seaweed that grows on rocky habitat and marine structures. A mature Undaria plant is distinguished from native kelp by its “frilly” sporophytes (spore-producing structures) near the base of the plant, and a central rib along the fronds. It is an annual, growing rapidly in spring and early summer and then dying back. It was first discovered in Wellington harbour in 1987, and probably arrived on a vessel or in ballast water. It has spread rapidly on vessels and currents, becoming established along many parts of the New Zealand coastline.

8.3.2 Reasons for the Strategy

Undaria spread rapidly from Port Nelson onto the Boulder Bank and Haulashore Island, and is present on marine farms in Golden Bay. It has the potential to occupy rocky habitat along the Tasman and Nelson coastlines and modify the ecology and “natural character” of highly valued coastal areas such as Abel Tasman National Park.

Undaria is assessed at “5” on the infestation curve. The best option is to continue surveillance on the distribution of Undaria, and to provide advice and education to vessel owners on identifying and controlling Undaria by removing it before spores are being produced. It has been declared an unwanted organism.

8.3.3 Objective

To gather information on the presence of Undaria in sites of high public value in the Tasman-Nelson region during the term of the Strategy.

8.3.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Advise vessel owners and marine farmers on the identification and control of Undaria.
- Monitor and record the distribution of Undaria.

Alternative Measures

The inclusion of Undaria in the Strategy, with a focus on education and surveillance, is appropriate to facilitate the voluntary control of the plant. The principal alternative measure is to adopt a greater level of regional intervention, such as requiring all vessel owners to control Undaria on their vessels. However, this option would only be effective if adopted nationally and it is too widespread to achieve any significant benefits.

8.3.5 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release, or commercially display Undaria, under Sections 52 and 53 of the Act.



8.4 YELLOW FLAG (*Iris pseudacorus*)



8.4.1 Description

Yellow Flag is an evergreen semi-aquatic iris often found on the edge of waterbodies and drains, growing up to 1 metre tall, producing conspicuous yellow flowers in spring. It forms dense floating mats of rhizomes that smother native plant and exclude animal communities. A native of Europe and Western Asia, it was introduced as an attractive garden plant and become widely distributed, but quickly became naturalised.

8.4.2 Reasons for the Strategy

Yellow Flag is an internationally renowned weed of wetlands, where it forms dense sprawling stands up to 1 metre tall that smother and impede the regeneration of other vegetation. The dense mats impede access to water bodies for fishing and other recreational activities, as well as being toxic to stock. It can replace other aquatic margin vegetation and degrade habitat for aquatic fauna. It can also adversely affect estuarine and saltmarsh vegetation. It has the potential to take over wetland margins and the margins of other waterbodies and drains and represents a significant threat to wetlands in the Tasman-Nelson region. It can be spread by seed or rhizome fragments.

Yellow Flag is tentatively assessed at “4” on the infestation curve. Given the importance of remnant wetlands, and its potential impact on wetlands and stock, placing it into regional surveillance will allow mapping of its distribution.

8.4.3 Objective

To gather information on the distribution of Yellow Flag in the Tasman-Nelson region and prevent the human spread of this pest during the term of the Strategy.

8.4.4 Means of Achievement

The principal means of achieving the objective will be for the Management Agency to:

- Inspect properties with known or suspected infestations.

- Advise the public on the identification and control of Yellow Flag.
- Carry out surveillance for Yellow Flag on land at risk from infestation in or close to infested areas.

Alternative Measures

The inclusion of Yellow Flag in the Strategy will ensure the Management Agency is actively involved in surveillance and monitoring, as well as undertaking education and providing advice to landowners. The principal alternative measure is to adopt a greater level of regional intervention but this is dependent on having better information on its distribution. The other alternative is to “do nothing” and this will allow spread to continue, increasing future treatment costs and increasing the risk of further loss of wetland and estuarine habitat.

8.4.5 Biosecurity Act Requirement

No person shall knowingly sell, propagate, breed, release or display commercially, Yellow Flag, under Sections 52 and 53 of the Act.



9 PEST CONTROL IN SITES OF HIGH PUBLIC VALUE

9.1 Explanation

The public see widespread pests, such as Old Man's Beard and Brushtail Possums, as having the greatest impact on the Tasman-Nelson region. However, the cost of controlling these pests across the whole region would be prohibitive, and unlikely to be effective. The most efficient and effective approach is to target these pests at sites of high public value where they are having the greatest impact.

Given that this pest control work benefits the whole community, it is funded from the general rate. There are no requirements on land occupiers to carry out control. Land occupiers and communities in proximity to sites will be encouraged to undertake pest control. All pests at a particular site will be controlled where practical. The objective is the protection of the values of the site, and is not specific to particular designated pests. There is no point in just removing Old Man's Beard from a site when Banana Passion Vine, Jasmine or some other climber will simply replace it. The focus will be on achieving the greatest benefit from the available resources; ongoing pest control work is usually necessary to maintain benefits. Each council is responsible for selecting sites in their area.

9.1.1 Objective

To select and protect sites of high public value from the impact of pests in the Tasman-Nelson region during the term of the Strategy.

9.1.2 Means of Achievement

Sites will be selected according to the following criteria:

- Ecological values.
- Amenity values.
- Cultural values.
- Public access and recreation values.
- Feasibility and cost of effective control.
- History of pest control.

Under the previous Strategy, these approaches have produced significant benefits at various sites. Where necessary, work at these sites will continue, with the likelihood that more sites will be targeted during the duration of this Strategy. The Management Agency will set out the work that will be carried out at each selected site in its annual Operational Plan (see Section 10.6.1). These Plans will be made available to any member of the public on request.

The principal means of achieving the objective will be for the Management Agency to:

- Control pests at the selected sites to protect the identified values.
- Advise and assist land occupiers and community groups to carry out pest control work at, and adjacent to, the selected sites of high public value.

10 BIOLOGICAL CONTROL PROGRAMME

Biological control of widely-distributed pests will be used throughout the region wherever appropriate. It can provide an effective means of long-term control, usually in conjunction with other methods. There are high costs associated with the initial research, testing, approval, breeding and distribution of the biocontrol agents, but these can be more than offset by negligible ongoing costs, no non-target effects and no unwanted residues. The benefits from effective pest control extend throughout the community.

For these reasons, the Management Agent will contribute to the ongoing co-funding of biological control research programmes and provide logistical support for this work along with other regional councils through their biocontrol collective. It will continue to purchase new agents as they become available, selecting the most promising agent for the target pests, and monitor their effectiveness, along with self-introduced agents.

Biological control agents that have established in the Tasman-Nelson region

Target plant	Common name of agent
Blackberry	Blackberry rust *
Broom	Broom leaf beetle
Broom	Broom psyllid
Broom	Broom seed beetle
Broom	Broom twig miner*
Buddleia	Buddleia leaf weevil
Californian thistle	Green thistle beetle
Californian and scotch thistle	Californian thistle fungus*
Gorse	Gorse pod moth
Gorse	Gorse seed weevil
Gorse	Gorse spider mites
Gorse	Gorse thrips
Hemlock	Hemlock moth*

Biological control agents that have established in the
Tasman-Nelson region (cont.)

Target plant	Common name of agent
Nodding thistle	Nodding thistle crown weevil
Nodding thistle	Nodding thistle gall fly
Nodding thistle	Nodding thistle receptacle weevil
Old man's beard	Old man's beard leaf miner
Old man's beard	Old man's beard rust
Rabbit	Rabbit Calicivirus Disease**
Ragwort	Cinnabar moth
Ragwort	Ragwort flea beetle
Ragwort	Ragwort plume moth
Scotch thistle	Scotch thistle gall fly
Smilax	Smilax leaf rust*
St John's wort	Greater and lesser St John's wort beetle
Woolly nightshade	Woolly nightshade lace bug

* Self-introduced biocontrol agent

** Illegally-introduced biocontrol agent

11 MARINE BIOSECURITY

Marine biosecurity is becoming an increasingly important priority to protect the high biodiversity values that are present in the coastal waters of the Tasman-Nelson region and the increasing importance of the natural fisheries and aquaculture. The Ministry of Primary Industries (formed by the merger of the Ministry of Agriculture and Forestry, the Ministry of Fisheries and the NZ Food Safety Authority) is responsible for preventing the importation of unwanted pests and diseases, and for managing or eradicating specified high-risk pests while regional councils are responsible for management of established pests.

A collaborative approach has been used to set up the Top of the South (TOS) Marine Biosecurity Partnership with funding from central government being matched by funding from the three TOS councils (Tasman, Nelson and Marlborough). This funding has been used to develop a Marine Biosecurity Strategic Plan, Operational Manual and Work Plan and develop closer links with a range of stakeholders and industry groups to work on methods of minimising risk.