Ngā Kīrearea o Aotea

Pests of Aotea

a local guide

aucklandcouncil.govt.nz

Aotea / Great Barrier Local Board
Auckland Council

Contents

Booklet published by Auckland Council's Natural Environment Delivery Team with support from the Aotea Great Barrier Local Board, February 2024.

Front cover image (ship rat) courtesy of Nga Manu Nature Images

Aotea/Great Barrier Local Board area

Public park

Introduction

Ko Aotea tētahi o ngā wāhi tāpua mō te kanorau koiora. Heoi anō, he rite tonu te whakaraerae o ā tātou tipu me ā tātou kīrehe nā ngā riha tipu me ngā riha kīrehe. Tuku pūtea ai a Te Kaunihera o Tāmaki Makaurau ki ngā hōtaka whakakore i ngā taru me ngā riha kīrehe i runga o Aotea, engari me āwhina mai hoki koe ki te tiaki i ngā taonga o tō tātou moutere.

Aotea / Great Barrier Island is one of Auckland's biodiversity hotspots. However, our unique flora and fauna is under constant threat from pest plants and pest animals. Auckland Council funds weed and pest animal management programs on Aotea, but your help is needed to protect our island's treasures.

The Aotea Great Barrier Local Board initiated this booklet with the aim of raising awareness of threats to the islands' unique biodiversity, lifestyle and our primary industries.

We profile 34 species present on the island – 16 pest plants, nine pest animals, two freshwater pests, five marine pests and two pathogens (kauri dieback and myrtle rust). For each species, there is a brief description to help you identify it and some details around its known impacts.

Whether this booklet guides you as a newcomer to spotting and controlling pests on your land, or simply reminds you of good practice, we hope it will become dog-eared with use!

Ngā Kīrearea Tipu

Pest Plants

Pest plants (sometimes called weeds) are plants that are not native to an area and have a negative impact in some way.

The plants we feature in this booklet represent a range of climbers or vines, shrubs and large trees. They all damage our indigenous biodiversity, most often by displacing or competing with our native plants directly.

Aotea has low numbers of some species of High Risk Pest Plants that have overrun parts of the mainland. In this respect the island is incredibly unique and has an excellent opportunity to control and eradicate species that otherwise left unchecked would have a significant impact on the Islands biodiversity.

The following pest plants are currently present on Aotea but are not yet widespread, and we would love to keep it that way. We hope this information helps you spot these plants on your property, at a friends' or neighbours' place and report sightings through to Auckland Council, to arrange control. A seedling controlled today could reduce the need for intense control in years to come.

Climbing Asparagus consuming a forest in Waiheke Island.

Arrowhead

Sagittaria platyphylla

What it looks like

- Perennial herb up to 1 meter tall with creeping stems.
- Submerged leaves are strap-shaped, 10-50 cm long and 3 cm wide with clearly visible longitudinal veins.
- Leaves above the water have a long petiole (c. 40 cm) which is triangular in cross section and a lance-shaped leaf blade.
- Flowers (Nov - Mar) are 3-petalled, white with 3 petals and about 6 cm across.
- Prefers static or slow moving shallow fresh water: drains, streams, pond margins.
- Spreads locally from creeping root system, tubers, stem fragments. Also spread by dumping.

Why it is a problem

- Restricts water movement, increases sedimentation, aggravates flooding. Displaces native plants in wetlands.

Asiatic knotweed

Fallopia japonica

What it looks like

- Upright shrub-like herbaceous perennial, rapidly grows to 3m in height.
- Red-purple shoots appear early in spring, as the canes grow the leaves unfurl and plant turns green. Mature canes hollow with purple flecks.
- Leaves long triangular-oval (15 x 10cm), pointed at the tip, with flattened leaf base. Flowers white creamy white (Dec-Mar).
- Found mainly in shrubland and riparian areas.
- It is spread by vegetative growth from rhizomes.

Why it is a problem

- Once established, it forms dense stands, shading and crowding out all other vegetation.
- Displaces native flora and fauna.

Photo credit: Jonathan Boow

Boneseed

Chrysanthemoides monilifera

What it looks like

- Hardy, bushy, much-branched shrub less than 2m tall.
- Young stems woolly, but soon become smooth.
- Leaves are smooth, leathery, oval to elliptical, and irregularly serrate.
- Bright yellow daisy-like flowers (September to February). Round, green drupes (stone fruit) with hard protective cover (giving boneseed its name), ripening to black.
- Found in well-drained dry soils, coastal cliffs, scrubland, roadsides, consolidated sand dunes, plantations, quarries. Tolerates poor soils.
- Prolific seeder, with seeds spread along coastlines and roadsides by soil disturbance and birds.
- Extensive seed bank viability (10+ years). Fire assists seed germination.

Why it is a problem

- Competes with native vegetation, particularly in coastal environments.
- Changes environments of high light to heavy shade

Bushy asparagus

Asparagus aethiopicus

What it looks like

Two growth forms are known: (1) cultivar 'Sprengeri' is a trailing scrambler with stems to 2 m that are branched towards tips, and with sparse cladodes (flattened leaf-like stems, 10-25 mm) that are flat in cross section, and (2) cultivar 'Meyeri' has erect stems to 700 mm forming a dense cylinder and is covered in cladodes (5-10 mm) that are triangular in cross section. Both cultivars have small tubers, thin wiry stems, tiny pinkish flowers and bright red berries.

- Dense, patch-forming habit, tough, long-lived tubers that resprout, moderate to slow growth rate, and seeds that are widely distributed.
- Tolerates moderate to high rainfall.
- Birds spread the seeds, and tubers resprout and are spread by soil and water movement.
- Common as both a garden and house plant, and occasionally found in hedges.

Why is it a problem

- Can smother shrubs and other low vegetation.


Photo credit: Jonathan Boow

Photo credits: Jonathan Boow

Climbing asparagus

Asparagus scandens

What it looks like

- Scrambling and climbing plant, also found in trees as an epiphyte.
- Slender, extensively branched stems wrap around small trees and saplings. Fine, fern-like foliage; small, delicate leaves attached to hooked vines.
- Tiny white flowers (September to December). Many round berries, ripening green to red-orange.
- Very shade tolerant. Found in forest interiors as well as edges.
- Birds spread the seed, vegetative spread by tubers.
- Extremely fast growing.

Why it is a problem

- Outcompetes and smothers native vegetation, preventing regeneration.

Photo credits: Jonathan Boow

Ginger

Hedychium gardnerianum

What it looks like

- Also known as kahili ginger.
- Herbaceous perennial plant, grows up to 2m tall.
- Large, branching rhizomes that form dense layers less than 1m deep.
- Large wax-covered, lance shaped leaves.
- Lemon-yellow flowers (February to April) with conspicuous red stamens. Under full light conditions, up to 100 seeds produced per flowerhead.
- Spread locally from rhizomes, which sprout annually, and rhizome fragments. Also spread by bird dispersed seed.
- Found in forest edges, plantations, road edges, streams, unfarmed land. Prefers open light-filled areas, also readily grows under forest canopy.

Why it is a problem

- Forms dense colonies, smothering native plants and preventing regeneration.
- Large risk in lowland broadleaf and kauri forest.

Reed Sweet Grass

Glyceria maxima

What it looks like

- Erect grass forming dense mats in wetlands, water edges.
- Shiny, bright green leaves soft, <600mm long, each blade ending in an abrupt point.
- Leaf edges rough to touch. Distinctive brown seed heads (Feb) <1.5m, long-lived seeds.
- Found in any wet ground: wetlands, stream banks, lake edges.
- Seeds spread by wind and water. Rhizomes break off, root in damp ground spread on machinery, fishing gear, animals.

Why it is a problem

- Rapidly forms a dense mat in wet ground, crowding out most native plants.
- Toxic to stock - the toxic agent within Glyceria maxima is cyanide, which acts by blocking cytochrome oxidases, preventing cellular respiration.


Photo credit: Jonathan Boow

Photo credits: Jonathan Boow

Grey Willow

Salix cineria

What it looks like

- Deciduous shrub or small tree usually 2m tall.
- Bark is smooth, stems grey or greenish-grey and hairy, or reddish to dark purple and are not brittle.
- Leaves shiny on upper side and covered with fine grey hairs underneath, not bitter.
- Flowers (Sept-Oct) appear as separate male and female cylindrical catkins (no petals). Fruit may contain many seeds.
- Found in swamps, riverbanks, wet areas behind coastal dunes and nearby drier places.
- Spreads by seed (wind dispersal).

Why it is a problem

- Blocks waterways and modifies wetlands.

Madeira vine

Anredera cordifolia

What it looks like

- Hairless perennial creeper with fleshy rhizome.
- Bright green, alternate, fleshy heart-shaped leaves with reddish brown stems. Small, fragrant, cream flowers (January to April) in slender spikes.
- Tubers produced underground and many on aerial stems.
- Fruit doesn't form in New Zealand. Spread locally by twining detached aerial tubers, rhizome fragments.
- Found in forest margins, low forest, rocky places, coastal areas. Prefers fertile soils in warm, moist climates.

Why it is a problem

- Forms dense long-lived infestations that smother native plants and dominate at medium to high canopy level.
- Weight of tubers can topple small trees.

Photo credit: Jonathan Boow

Mile-a-minute

Dipogon lignosus

What it looks like

- A scrambler climber with three heart shaped leaflets up to 55mm.
- Typical pea type flowers of purple, red, pink and white shadings to 15mm, present July - January. Seed pods, boat shaped to 40mm.
- Found on the forest edge, shrublands, track or roadsides in open sun.
- Spread by birds using plant as nesting material. Seeds spread via water, soil or roading material.

Why it is a problem

- Smothers ground, covers regenerating canopy species and shrubs.

Moth plant

Araujia hortorum

What it looks like

- Slender evergreen vine growing over hosts, up to 6m. Arrowhead like, opposite leaves, dark green on top, grey-green below.
- Clusters of small creamy-coloured, waxy, tubular flowers (December to May). Become large choko like seed pods that dry and split, releasing 250 to 1000 parachute like seeds (autumn to winter). Poisonous, with irritating sap.
- Prefers loose, fertile soils, warm climate, and moderate rainfall. Seedlings are shade tolerant. Found in forest margins and gaps, hedges, wasteland, coastal areas.
- Seeds dispersed by wind up to 30km away. Also spread on clothing and animals.

Why it is a problem

- Competes with or smothers native plant species.
- Fruits and stem produce caustic milky sap when crushed or broken that causes skin irritation in some people and is poisonous to humans.

Photo credits: Jonathan Boow

Royal fern

Osmunda regalis

What it looks like

- A deciduous fern, with a short woody trunk <1.5m high.
- Large yellow-green, tough leathery fronds (<3m long), divided twice into leaflets.
- Fertile fronds with spores look like tiny bunches of grapes with green leaflets at base.
- Found in wetlands, stream sides, damp bare land, especially peaty soils.
- Spores spread by wind and water.

Why it is a problem

- Competes with native species in specialised niches. One of the few weeds of bogs and wetland areas.

Photo credits: Jonathan Boow

Smilax

Asparagus asparagoides

- Climbing perennial herb, grows up to 3m.
- Grows from short rhizomes with tuberous roots.
- Smallish, glossy, thin green leaves, alternate, broadly oval-shaped, with sharp point.
- Small greenish-white flowers (July to August). Small, sticky red berries.
- Seeds dispersed by birds, animals, machinery and dumped tubers in garden refuse.

Why it is a problem

- It smothers native vegetation, becoming the dominant species in urban situations. Competes with or replaces native plant species.


Photo credit: Jonathan Boow

Tree Privet

Ligustrum lucidum

What it looks like

- Small to medium, hardy, fast growing, evergreen tree or dense shrub. Grows up to 10m high and foliage diameter can reach 14m.
- Dark green, glossy oval leaves, pointed tips, smooth edges.
- Long panicles of strongly scented white flowers (November to March). Berry-like bluish or purplish-black drupes (stone fruit).
- Found in hedgerows, roadsides, lowland and coastal forest, wastelands, plantations.
- Tolerates wide range of conditions. Widespread and common.
- Seed dispersed by birds, over long distances by kereru.

Why it is a problem

- Replaces mid-canopy trees (taraire, towai, pohutukawa) and completely dominates areas of forest if unhindered.
- Poisonous leaves and fruit. Strong perfume from plants flowers contributes to asthma.

Woolly nightshade

Solanum mauritianum

What it looks like

- Long lived shrub or tree less than 8m tall.
- Leaves (smelling of kerosene) greyish-green on upper surface, white to yellowish green beneath, and covered in dense felt-like hairs.
- Clusters of purple flowers at end of branches. Yellow berries with many seeds.
- Seeds spread by birds.
- Found in vacant land, farmland, gullies, bush margins.
- Tolerates wide range of habitats, including shade.

Why it is a problem

- Dust from plant irritates skin, eyes, nose and throat.
- Berries are toxic.
- Forms pure colonies, crowding out other plants, but rarely invades intact habitats.

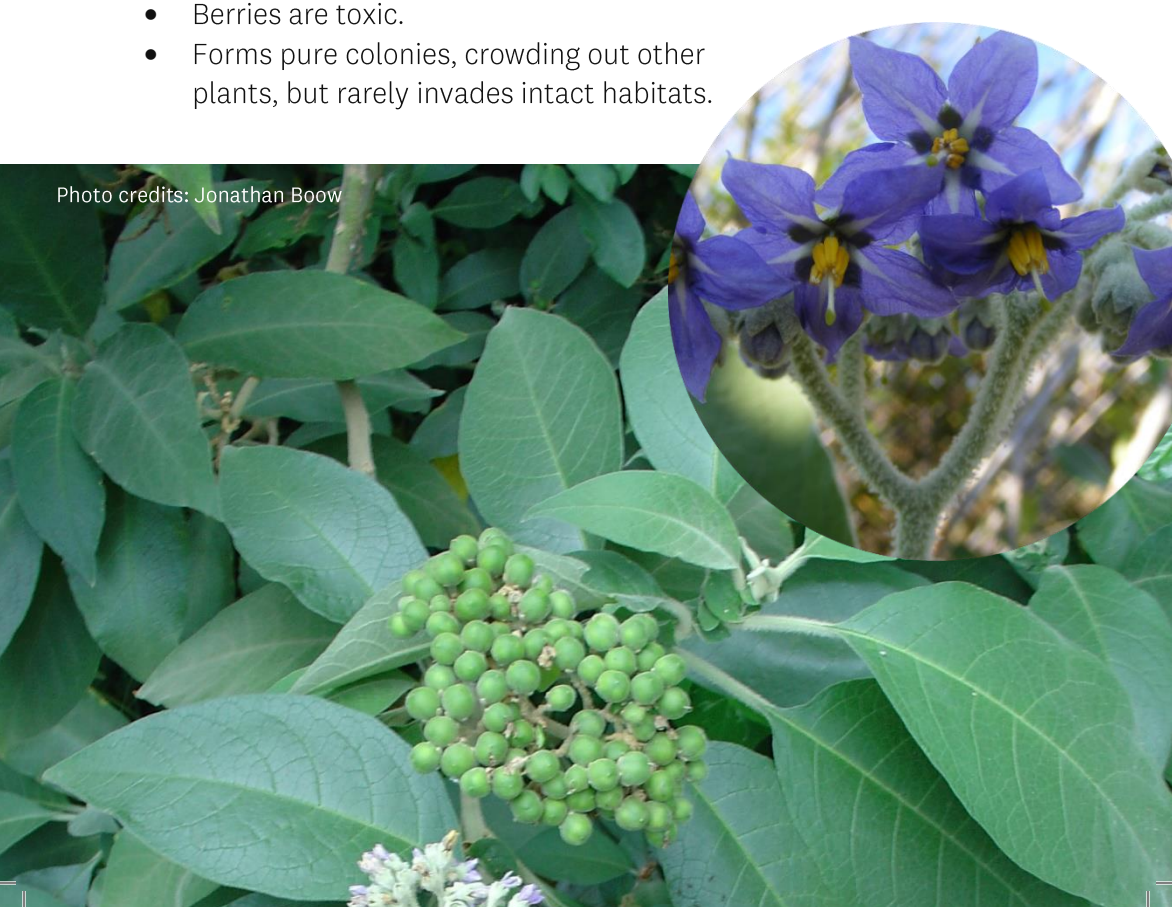


Photo credits: Jonathan Boow


Photo credit: Jonathan Boow

Water Pennywort

Hydrocotyle umbellata

What it looks like

- An aquatic / water's edge vigorous ground cover / creeping perennial herb.
- It produces tangled, air-filled horizontal stems that root at the nodes.
- Stems are round and light green to cream in colour; with umbrella-shaped bright green leaves 3-5cm across, with wavy edges.
- Flowers are green-white, tiny and star shaped with 5 petals.
- Water pennywort is found in marshes, at the edges of lakes or ponds, and in muddy soils.
- It forms large colonies of mat like growth.

Why it is a problem

- Its dense mats can smother and displace other plants and prevent native regeneration.
- Serious risk to wetland habitats, such as those found on Aotea.

Other pest plants

The following weeds are encountered on Aotea. For information on their removal please refer to the websites at the end of this booklet.

Agapanthus
(Agapanthus praecox)

Arum
(Zantedeschia aethiopica)

Blue corn lily
(Aristea ecklonii)

Gazania
(Gazania linearis)

Jasmine
(Jasminum polyanthum)

Japanese honeysuckle
(Lonicera japonica)

Ladder fern
(Nephrolepis cordifolia)

Mexican daisy
(Erigeron karvinskianus)

Pitted crassula
(Crassula multicava)

Senna
(Senna septemtrionalis)

Plectranthus
(Plectranthus ciliates)

Watsonia
(Watsonia bulbillifera)

Photo credit: Jonathan Boow & Holly Cox

GET INVOLVED

Auckland Council is working towards eradicating and keeping out a number of high-risk pest plant species from Aotea. We need your help to hunt these plants out!

- Visit **inaturalist.org**
- Join project **'Aotea High Risk Weeds'**
- Identify and record your weedy find!

pestfree@aucklandcouncil.govt.nz

Ngā Kīrearea Kīrehe

Pest Animals

Aotea is unique in the Auckland region because it doesn't have some of the pest animals present elsewhere.

We're lucky there are currently no possums, mustelids (i.e. stoats, ferrets or weasels), hedgehogs, Norway rats, goats, deer, wallabies and other such pests. The impact of these species on mainland New Zealand's indigenous biodiversity has been significant and it is vital that we keep them off Aotea.

However, we do have other pest animals on Aotea and they're having a harmful effect on some of the environmental, social and economic aspects of island life that we value.

In this section we profile nine pest animal species, with a brief description, details around their impact and suggested options for controlling them.

Argentine ant

Linepithema humile

What it looks like

- Pale to dark brown and 2-3mm long.
- Travels in defined lines of 5-6 ants wide. Fast; they are fast moving and tend to swarm over objects, rather than go around them.
- Likes warm, dry places and can nest almost anywhere. Most commonly found on the ground under timber, retaining walls, metal or concrete, or in plant pots, boats, caravans and tents.
- Needs protein and loves honeydew, so commonly found on citrus trees or plants with a lot of aphids.

Why it is a problem

- They are aggressive and can form super colonies.
- They have a negative impact on indigenous biodiversity, as well as our horticulture, viticulture and apiary industries.

How to control it

- Check for stowaways when moving general freight, building supplies, soil or abandoned vehicles to, from or around the island.

Darwin's ant

Doleromyrma darwiniana

What it looks like

- Dark brown head and lighter brown body, and 2-3mm long.
- Similar in appearance to Argentine ant, the workers give off a strong smell when crushed (Argentine ants don't).
- Walk in a single-file trail.
- Occurs most commonly in dry forested areas, including coastal scrub or heath, where it nests in soil, under rocks or rotten logs, or occasionally in nests abandoned by other ants.
- Commonly found nesting in potted plants.

Why it is a problem

- They are aggressive and can form super colonies.
- They have a negative impact on indigenous biodiversity, as well as our horticulture, viticulture and apiary industries.

How to control it

- Check for stowaways when moving general freight, building supplies, soil or abandoned vehicles to, from or around the island.

Feral cat

Felis catus

What it looks like

- Same size and characteristics as a domestic cat – often with tabby markings.
- Widespread across Aotea.

Why it is a problem

- A major predator of native species, including birds, lizards and bats.
- Cats can transmit the parasite Toxoplasma gondii to humans and native wildlife.

Control of feral cats is carried out regularly across Aotea Conservation Park. To help distinguish owned cats from feral cats, Auckland Council's Environmental Services maintains the Aotea 'Cat-a-logue', a register of domestic cats on Aotea. If you own a pet cat, email your cat's details and a photo to **pestfree@aucklandcouncil.govt.nz.**


Photo credit: Landcare Research

Feral pig

Sus scrofa

Pigs are included as a pest in both the Regional Pest Management Plan and Hauraki Gulf Islands District Plans. We acknowledge that pigs are mahinga kai and respect the right for customary harvest.

What it looks like

- Varies in size and colour, but black is most common. Generally smaller and more muscular than a domestic pig.
- Tend to be found mostly in forests or bush with good cover.
- If you don't see it, the signs are still obvious – round, cloven hoof prints, damaged ground from rooting with their noses, droppings, or signs of kills – crushed snails or bird carcasses, uprooted plants (they are omnivores).

Why is it a problem

- Preys on, competes with and disturbs native species.
- Overturns large areas of soil, alters nutrient cycles, facilitates spread of pest plants and plant diseases.
- Can be a vector for bovine TB, can spread kauri dieback disease.

Photo credit: Dick Veitch Department of Conservation

Kiore

Rattus exulans

What it looks like

- As in photo above, kiore are a smaller rat than a ship rat with brown back, grey/white belly.
- Dark markings running down the outside of hind feet as in photo above.
- Maximum body length is 180mm, excluding tail.
- Female has eight nipples.
- Nocturnal and can climb well, but nests mainly on the ground.

Why it is a problem

- Feeds on similar prey to the ship rat, although plants make up a large part of its diet.

How to control it

- Effective options are careful use of bait in secure bait stations, or trapping. Talk to your council biosecurity advisor for advice.

Mouse

Mus musculus

What it looks like

- Small rodent with grey/brown back and white, grey or brown belly.
- Maximum body length, excluding tail, about 115mm. Tail same length as body.
- Female has 10 to 12 nipples.
- Mostly nocturnal, most active at dusk and dawn.
- More common in areas with rat control, and overgrown properties. Can be a problem in both rural and urban areas.

Why it is a problem

- Eats a wide range of plant and animal material.

How to control it

- Effective options are careful use of bait in secure bait stations, or trapping. Talk to your council biosecurity advisor for advice.

Photo credit: Nga Manu Nature Images

Plague skink

Lampropholis delicata

What it looks like

- A small lizard, 3-4cm from nose to hind legs.
- Previously known as the rainbow skink and similar to the native copper skink. Can be distinguished by the single diamond-shaped scale on top of its head (New Zealand native skinks have two smaller scales), dark stripes down either side of the body and a pale or silvery underside.
- Commonly found under vegetation, leaf litter, rocks and logs in both moist and dry environments. Thrives in urban areas, home gardens and commercial areas. Potted plant soil is its favourite breeding habitat for laying eggs.

Why it is a problem

- Breeds rapidly and competes with native skinks for food and habitat. An omnivore, it will eat snails, beetles, worms, flowers or small berries – could severely impact our native ecosystems.

How to control it

- Check for stowaways (live skinks and eggs) when moving gear, potted or bagged plants, general freight or building supplies from the mainland to the island.

Rabbit

Oryctolagus cuniculus cuniculus

How to identify rabbit damage

- Emerge at dusk to eat and are usually active all night, continuing to feed at dawn if food is scarce.
- An adult's home range is about 2-4 hectares. It doesn't always live directly in the area it's damaging, sometimes making their burrows nearby in bush or under houses.
- Leaves obvious signs – chewed plants, faeces and holes or depressions in the ground.
- Found in many different environments, but wild ones do the most damage in dunes, forest margins and open grassland or pasture.

Why are they a problem

- Capable of a lot of physical, environmental and economic damage as it eats native seedlings, competing with native birds for food and limiting regeneration. Also causes erosion.

How to control them

- Fence an area (must set fence into ground), remove habitat (overgrown areas it may breed in) or use repellents (spray on trees and shrubs to prevent browsing). You can also use methods such as shooting, toxin or burrow fumigation – speak to your biosecurity advisor about the best method for you.


Photo credit: Nga Manu Nature Images

Ship rat

Rattus rattus

What it looks like

- Three colour forms – black back, grey belly; grey/brown back, creamy white belly; grey/brown back, grey belly.
- Tail is longer than the rest of their body. Maximum body length 225mm, excluding tail.
- Female has 10 nipples.
- Great climbers, mostly found in trees, but also found in buildings.

Why it is a problem

- Preys on native bird eggs and chicks, invertebrates and lizards. This can severely affect vulnerable breeding populations.
- Also eats native plants and seeds, competing with native species for food – they eat almost anything.

How to control it

Effective options are careful use of bait in secure bait stations, or trapping.

Aotea has a Trap Library service that provides free rat traps to the community in exchange for their rat catch data. The aim is to have easily accessible, free rat traps for as many households and community projects as possible and to cover as much of the island as we can.

If you would like to get your free rat traps, contact our Trap Libraries Co-ordinator: **aoteatraplibrary@gmail.com.**

There are important differences between ship rat present on Aotea, and Norway rat, not currently present.

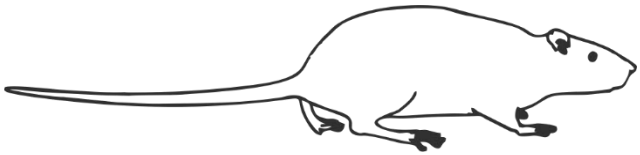
Ship Rat

Tail - longer than head and body

Body - light and slender

Ears and eyes large

Pointed Nose



Norway Rat

Tail - Shorter than head and body

Body - Heavy and thick

Eyes and ears small

Blunt nose

Norway Rat Photo credit: Nga Manu Nature Images

Other pest animals

Aotea is currently free of these pests:

Dama wallaby
(Macropus eugenii)

Eastern Rosella
(Platycerus eximius)

Feral deer
(Dama spp. Cervus spp.)

Feral goat
(Capra hircus)

Hedgehog
(Erinaceus europaeus occidentalis)

Kookaburra
(Dacelo novaeguineae)

Mustelids
(Stoats, ferrets and weasels)

Norwegian rat
(Rattus norvegicus)

Possum
(Trichosurus vulpecula)

Photo credit: Auckland Council, Nga Manu Nature Images

Ngā Kīrearea Wai Māori

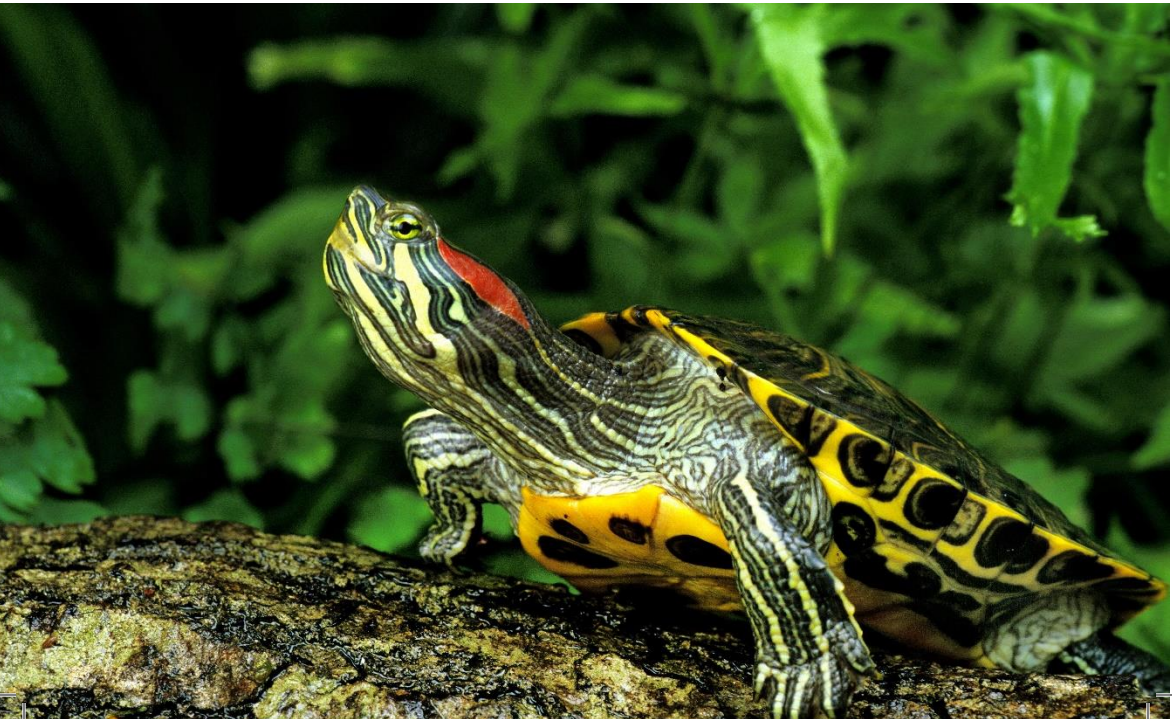
Freshwater Pests

Aotea is unique as it doesn't have many of the freshwater pests that are present elsewhere on mainland NZ.

Aotea is home to kilometres of freshwater streams, wetlands and swamps including Kaitoke swamp, which comprises a range of habitats.

Freshwater ecosystems are an important link in the connection of ecosystems extending from the summit of Hirakimata/Mt Hobson to the dunelands and saltmarshes of the motu. They provide habitat for a diverse array of life and are important for freshwater species such as kokopu and kōura, breeding and roosting waterbirds and migratory shorebirds. They also support a variety of vegetation types and plant communities.

This section explains two common freshwater pests found on the mainland and lists a further ten that would harm our freshwater ecosystems if they made their way to the motu.



Pest goldfish

Carassius auratus

What it looks like

- Small- medium fish (100-400mm).
- Colour varies from red-gold, bronze-black to olive-green.
- Found in still or slow-moving freshwater like ponds, wetlands and drainage ditches.

Why is it a problem

- Eats freshwater plants, insects, small fish and fish eggs.
- Competes with native fish.
- Contributes to poor water clarity and algal blooms.

How to control

- If you own a pet goldfish on Aotea, ensure it is securely contained so it can't get washed into other waterbodies in a flood.
- If you are no longer able to look after your pet fish, find someone who is prepared to give it a lifetime home.
- Never release pet fish into waterways.
- If you see a pest goldfish in the wild report it immediately to Auckland Council.

Red-eared slider turtle

Trachemys scripta elegans, t. scripta scripta, t. scripta troostii

What it looks like

- Olive-brown shell.
- Skin is patterned with yellow stripes.
- Distinctive red stripe behind the eye.
- Shell can grow up to 350mm long.
- Found in still or slow-moving freshwater like ponds, wetlands and drainage ditches.
- Can walk significant distances between waterways.
- Basks in the sun beside waterways.

Why is it a problem

- Predates on native fish, frogs and ground nesting birds.
- They carry diseases that can affect native lizards and frogs.
- Their basking behaviour displaces nesting wetland birds.
- Reduces water quality.

How to control

- If you already own a pet red-eared slider on Aotea, ensure it is securely contained to avoid accidental escape and never release a turtle into the environment. Do not allow it to breed.
- Red-eared sliders can live for over 30 years. If you are no longer able to look after your pet, find someone who is prepared to give it a lifetime home.
- If you find a red-eared slider in the wild, catch and contain it and report immediately to Auckland Council.

Other freshwater pests

Aotea is currently free of these freshwater pests:

Brown bullhead catfish
(Ameiurus nebulosus)

Gambusia
(Gambusia affinis)

Eastern water dragon
(Physignathus lesueurii lesueurii)

Freshwater gold clam
(Corbicula fluminea)

Hornwort
(Ceratophyllum demersum)

Koi carp
(Cyprinus carpio, C. rubrofuscus)

Oxygen weed
(Lagarosiphon major, Lagarosiphon)

Perch
(Perca fluviatilis)

Rudd
(Scardinius erythrophthalmus)

Tench
(Tinca tinca)

Photo credit: Stephen Moore, Margaret Stanley, Ministry for Primary Industries | Creative Commons, Rohan Wells, NIWA, Karul Jabec.

Ngā Kīrearea Moana

Marine Pests

As Aotearoa is an island nation, Aotea is an island community. The health of our moana and land are connected. The beauty of Aotea's marine environment brings people from all over the world to visit. This increases the risk of unwanted marine pests coming to our shores.

Thousands of creatures inhabit the waters surrounding Aotea - a food chain from miniature phytoplankton and fungi to the larger predators that are all an important part of mahinga kai. It's a sophisticated self-regulating food chain, however unwanted pests can interrupt and damage that food chain.

While marine pests can be harder to spot, familiarising yourself with these species will help protect our underwater ecosystems. Given many people who live and visit Aotea spend time on or in the water, we are well placed to keep an eye out.

This section looks at five marine pests in details and lists a further seven species that could be a threat if they reached the motu.


Photo credit: Sam Happy Auckland Council

Ascidians

Clavelina oblonga and Clavelina lepadiformis (lightbulb ascidian)

- Translucent sea squirt that grows to around 2cm in length, found from the low tide mark to 50m depth.
- Grow in dense clusters on sea walls, rocks, underwater structures and vessel hulls.
- Peak abundance is likely to be in the warmer months when reproduction is highest.

Why is it a problem

- Clavelina can form dense clusters that crowd out other species as well as outcompete other filter feeding species for food.
- Clavelina oblonga has only been found at Smokehouse Bay/Port Fitzroy on Aotea, while Clavelina lepadiformis is found throughout NZ. Ascidians can cause issues for New Zealand's aquaculture industry.


Photo credit: S. Wilkens NIWA

Asian paddle crab

Charybdis japonica

What does it look like

- This species has been sighted up in northeastern area of Aotea in the Whangapoua Estuary.
- inhabits intertidal to subtidal estuarine habitats and is found on a number of different substrates from fine muds to rocky reefs.
- Adult Asian paddle crabs can produce hundreds of thousands of offspring and are also capable of swimming large distances.
- It is thought that reproduction is limited to seawater temperatures greater than 20°C, with larvae being long-lived (can survive for 3-4 weeks), potentially increasing spread to new areas.

Why is it a problem

- It is aggressive and has the potential to compete with native crabs and other benthic species for habitat and food.
- It may consume shellfish species that are culturally and economically important.

Photo credit: S. Northland Regional Council

Clubbed tunicate

Styela clava

What does it look like

- A sea squirt that ranges in colour from yellowish to reddish to brown and can grow up to 160mm in length.
- Has a long, tough, leathery skinned cylindrical form, tapering to a stalk with a disc shaped holdfast that anchors them to hard surfaces.
- Found in low intertidal zones to 25m depth in rocky and reef habitat.
- They can form dense colonies.

Why is it a problem

- These highly effective filter feeders can prey on the larvae of commercially important fisheries species in NZ.
- Fouls boats, aquaculture installations and other marine structures.

Exotic caulerpa seaweed

Caulerpa brachypus and Caulerpa parvifolia

What does it look like

- Has green fronds up to 10 centimetres long in the shape of oar blades that rise from long runners or roots known as stolons.
- Can be found growing from the tideline to a depth of 38 metres on both hard surfaces and in sandy areas.
- In favourable conditions, Caulerpa can spread rapidly, forming vast, dense beds or meadows.
- Caulerpa are spread via small broken off fragments and can happen by wave action, coastal currents, and/ or via equipment such as fishing gear and boat anchors.

Why is it a problem

- Caulerpa can survive out of the water for up to a week or more in moist locations and this makes them very susceptible to spread.
- The spread presents a risk to recreational, cultural, and commercial marine activities.
- Exotic Caulerpa compete with other local species for space and upset the balance of local ecosystems.

Photo credit: Irene Middleton NIWA

Mediterranean fanworm

Sabella spallanzanii

What does it look like

- The Mediterranean fanworm is a sessile organism that has a long leathery, flexible tube that is pale brown in colour, has a muddy appearance and is found up to depths of 30m.
- The Mediterranean fanworm extends a spiral fan of yellow-orange filaments to collect plankton from the water column and normally grow to a length of 10-50 cm (larger than native fanworms).
- The tubes may be evident at low tide and form dense clumps up to one thousand individuals per square metre.

Why is it a problem

- In high densities, Mediterranean fanworm may affect the growth of mussels or oysters due to competition for food, as well as displace
- other important native and fisheries species.

Please report Mediterranean fanworm if you see at Aotea via the MPI hotline or marinebiosecurity@aucklandcouncil.govt.nz.

Other marine pests

Aotea is currently free of these marine pests:

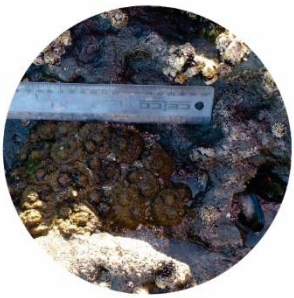
Asian Clam
(Potamocorbula amurensis)

Chinese Mitten Crab
(Eriocheir sinensis)

European Shore Crab
(Carcinus maenas)

Japanese Mantis Shrimp
(Oratosquilla oratoria)

Northern Pacific Sea Star
(Asterias amurensis)



Pyura species

Australian droplet tunicate
(Eudistoma elongatum)

Photo credit: Marine Biosecurity Porthole (https://www.marinebiosecurity.org.nz/potamocorbula-amurensis/) Environment Southland Regional Council, Northland Regional Council

Te puruheka patu kauri

Kauri dieback

Phytophthora agathidicida

What it looks like

- A fungus-like disease, with microscopic spores (zoospores) in the soil that infect kauri roots and damage the tissues carrying nutrients within the tree.
- Some infected trees show canopy dieback and even die without any gum showing on the trunks, as kauri dieback also acts as a severe root rot below ground.
- Kauri dieback zoospores are spread via water and infect the roots. Spores are then spread via infected soil and root contact. More spores are produced in saturated soil, and so the cycle repeats.

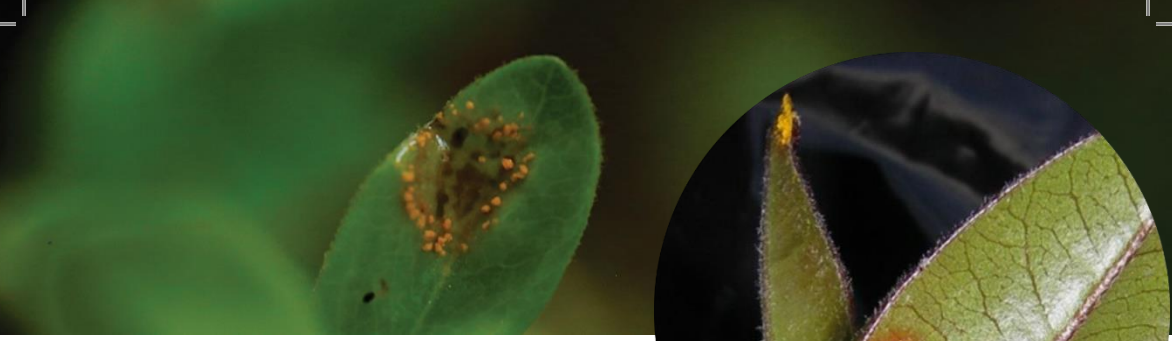
Why it is a problem

- Infected trees show a range of symptoms, including yellowing foliage, loss of leaves, canopy thinning, dead branches and lesions that bleed gum at the base of the trunk. Nearly all infected kauri die.
- Kauri forest is a specialised ecosystem; when the kauri goes, everything else in this ecosystem is at risk too.

How to control it

- CLEAN YOUR GEAR - remove soil before AND after forest visits. Clean your shoes, tyres and equipment.
- If you see a trigene station, use it – it's there for a reason.
- STAY ON THE TRACK – and off kauri roots. The roots spread beyond the drip zone of the tree's canopy, so give kauri trees as wide a berth as possible when out in the forest. Keep dogs and other animals away from them too.


Photo credit: Wildlands Consultants & Auckland



Te puruheka Myrtle

Myrtle rust

Austropuccinia psidii

Myrtle rust is a fungal plant disease that produces powder-like spores that can be easily spread through direct contact or by the wind. Myrtle rust can infect hundreds of species in the plant family Myrtaceae, which in New Zealand includes such species as mānuka, pōhutukawa, rātā and kanuka. Common exotic plants also at risk include feijoa, bottlebrush, gum, guava, willow myrtle, lilly pilly (monkey apple) and brush cherry (Syzygium spp).

What it looks like

- Bright yellow powdery eruptions appearing on the underside of the leaf (young infection). Appearing on both sides of the leaf (mature infection).
- Grey, 'fuzzy' spore growth on undersides of leaves.
- Some leaves may become buckled or twisted and die off.

Why is it a problem

- Myrtle rust reproduces rapidly, in as little as two to four weeks and can continue to damage new growth of infected plants repeatedly.
- Once established on a host tree or shrub, it destroys new growth and soft tissues, reducing the ability of the tree to fruit and set seed and in some species causes death.

Ngā pae tukutuku whaitake

Useful websites

Auckland Region Pests

https://www.tiakitamakimakaurau.nz/protect-and-restore-our-environment/pests-in-auckland/

https://www.tiakitamakimakaurau.nz/pest-search/
https://www.conservationauckland.nz/pest-search/

Pest Plant Control

https://www.tiakitamakimakaurau.nz/protect-and-restore-our-environment/how-to-guides-for-conservation/guide-to-controlling-pest-plants/

Pest Animal Control

https://www.tiakitamakimakaurau.nz/protect-and-restore-our-environment/how-to-guides-for-conservation/guide-to-controlling-pest-animals/

Regional Pest Management Plan (RPMP) Statuses

https://www.tiakitamakimakaurau.nz/protect-and-restore-our-environment/pests-in-auckland/about-the-regional-pest-management-plan-rpmp-statuses/

Kauri Dieback

https://www.kauriprotection.co.nz/

Myrtle Rust

https://myrtlerust.org.nz/

Marine pests

https://www.marinepests.nz/

Ngā whakapānga whaitake

Useful contacts

To report a pest plant, animal, freshwater or marine pest on Aotea email Auckland Council: pestfree@aucklandcouncil.govt.nz

If you think your trees have symptoms of kauri dieback, contact the Kauri Dieback Hotline on 0800 NZ KAURI (0800 69 52874).

If you think your trees have symptoms of myrtle rust use the Myrtle Rust reporter on Inaturalist to confirm an identification.

When to contact Ministry for Primary Industries (MPI)

The Ministry of Primary Industries is responsible for managing exotic pests when they enter our country. You can visit the MPI pest search to see if the pest is known to be in New Zealand. If you see an exotic pest, or have information on them, notify (MPI) on 0800 80 99 66 or visit their website: https://report.mpi.govt.nz/pest/

From time to time, MPI will identify threats from new pest species. When there is a threat, they will lead a national response to prevent the new pest from establishing.

PROTECT OUR HAURAKI GULF

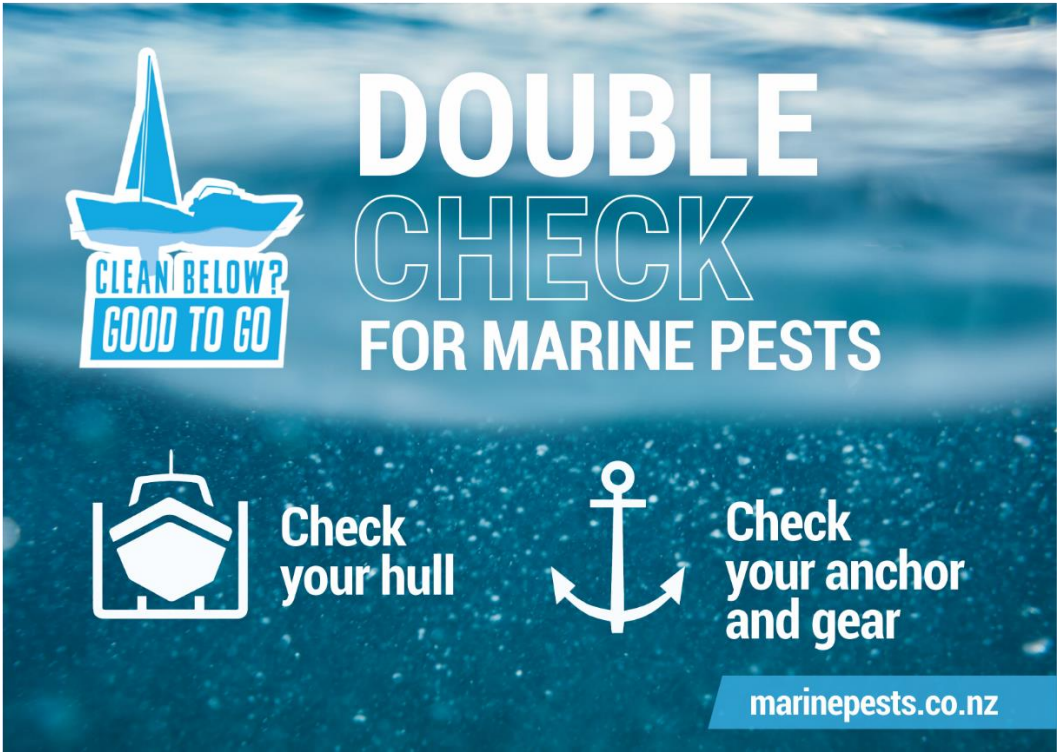
Check
your belongings for pests

Clean
your gear and/or boat before you go

Close
all food in sealed containers

Visit **ourauckland.nz/haurakigulf** to learn more from Auckland Council.

Department of Conservation
Te Papa Atawhai



Notes

Notes

Booklet published by Auckland Council's Natural Environment Delivery Team with support from the Aotea Great Barrier Local Board, February 2024.

Auckland Council
Te Kaunihera o Tāmaki Makaurau