

CSI At Home

Citizen
Science
Investigations

Field Guide



Tāmaki
Paenga Hira
Auckland
War Memorial
Museum



Become a citizen scientist at home

Museum scientists Ruby and Dhahara have been investigating the biodiversity we have in our Museum backyard, Pukekawa.

Now we want your help to find out about the biodiversity in the backyards of Aucklanders.

But because this is a big task we need your help!

Please help us find out what lives in your house and backyard!

Citizen science lets everybody participate in collecting data for scientific observations and experiments.

How to get started on iNaturalist

We use iNaturalist to record our observations. You will need to create an account (ask your parent/caregiver to help) www.inaturalist.org

We have created an iNaturalist Project Page, check it out! <https://www.inaturalist.org/projects/csi-lockdown>

The logo for iNaturalist, featuring a green lowercase 'i' followed by the word 'Naturalist' in a bold, black, sans-serif font.

How to get started on iNaturalist

To become an official **CSI At Home observer** (have your observations appear on this page), contact us learning@aucklandmuseum.com with your iNaturalist name.

Ruby, Dhahara and other museum scientists will see what you have uploaded and will identify your observation!

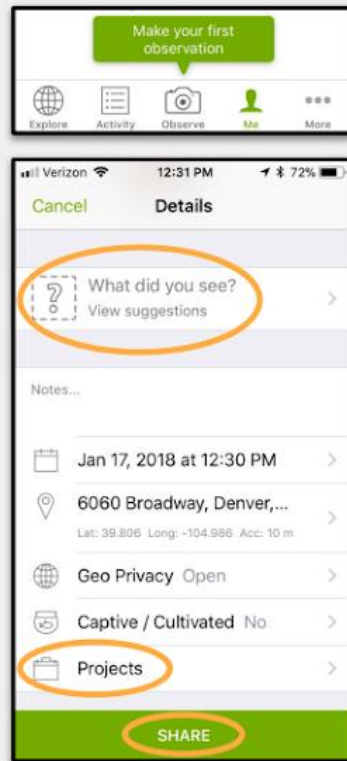
How to get started on iNaturalist

- Explore your bubble, looking for any life (eg plants, animal, bugs, fungi)
- Take photos (*no selfies please, these are going onto the internet*)
- Upload your observations to iNaturalist, including any notes about what you found. (*don't add your full address to the locality notes, your suburb is fine*)

Use iNaturalist to record observations

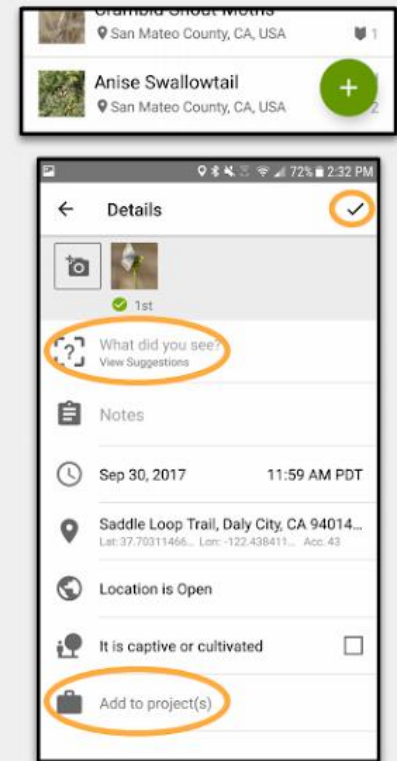
iPhone

1. Tap "Observe" at the bottom of the screen
2. Take a photo or choose one from your gallery -you can add multiple photos!
3. Enter what you think it is. You will see suggested species if you have service
4. Make sure all the information is filled in, and don't forget to select the Denver Metro City Nature Challenge in "Projects"!
5. Tap "Share" to save your observation
6. Your observations may not upload immediately if you don't have service. Tap "Me" at the bottom of the screen, then tap "Upload" once you have service
7. Repeat!



Android

1. Tap "+" at the bottom of the screen
2. Take a photo or choose one from your gallery -you can add multiple photos!
3. Enter what you think it is. You will see suggested species if you have service
4. Make sure all the information is filled in, and don't forget to select the Denver Metro City Nature Challenge in "Add to project(s)"!
5. Tap "✓" to save your observation
6. Your observations may not upload if you don't have service. Return to "My Observations", then tap the green "Upload" bar once you have service
7. Repeat!



You can also make observations without a smartphone! Just take pictures of your observations with a camera, then sign into your iNaturalist account on a computer and upload your observations there. For more information visit: <https://www.inaturalist.org/pages/getting+started>

Optional Challenges

How many of these can you complete?

- A bird
- Something that crawls
- A chewed leaf
- Something native
- Something exotic
- Something that lives on another living thing
- Something that isn't in the guide

Guidelines:

- Don't stray too far!
- Protect yourself: wear sensible shoes and wash hands afterwards
- Respect the environment – put logs and rocks back where you found them

Tips for finding species

- Many NZ species aren't visible at first
- If looking for an animal, stay quiet
- If turning over logs, always roll it back to where you found it

Always look. Sometimes touch. NEVER eat!

Nature Guide

These are some
plants and animals
you may find



Tāmaki
Paenga Hira
Auckland
War Memorial
Museum



Taxonomy of animals

Kingdom of Animalia

Invertebrates (no backbone)

Insects

Chorus Cicada

Tree wētā

Pūriri moth

Sentry dragonfly

Mayfly

Monarch butterfly

Bumblebee

Arachnids

Harvestman

House spider

Crustaceans & Molluscs

Garden snail

Vertebrates (has a backbone)

Mammals

Hedgehog

Birds

Tūī

Kererū

Fantail

Fish

Banded kōkopu

Reptiles

Plague Skink

Tree wētā

Hemideina thoracica



Status	Endemic, not threatened
Habitat	Found in North Island NZ. Common in gardens and forest.
Diet	Leaves
Life history	Eggs hatch from the soil around spring time and receive no parental care. Can make raspy noises with their legs when they are disturbed.
Risks	Gets eaten by birds & possum. Favourite food of the ruru/morepork.
How to look for it	In trees under bark. Look under fern fronds. Young weta can be found in rotting logs.

House spider

Badumna insignis



Status	Introduced
Habitat	Naturally found on tree bark. In houses they are found in corners around windows and doorways, or where light sources may attract prey insects
Diet	Any insect that lands in their web
Life history	Females grow to 3cm legspan. Males are smaller, they grow to 1cm. Females rarely leave their web. Spiderlings can stay in their mothers web for some time.
Risks	White-tail spiders & parasitic wasps.
How to look for it	Look for messy webs in the corners and dark places around your home

House centipede

Scutigera smithii



Status	Probably native
Habitat	Often found in houses and hiding under dark areas.
Diet	Predator. Eats insects like flies and cockroaches
Life history	Has powerful jaws which could probably bite humans. Runs fast. Is a predator of insects in your home.
How to look for it	Cool, damp places. Underneath rocks, large piles and wood and often around composts. Most common in spring

"AHHHHH!!!!" by interpunct is licensed under CC BY-NC-ND 2.0

Kahuku Monarch butterfly

Danaus plexippus



Status	Native
Habitat	Gardens & urban
Diet	Caterpillars eat swan plant leaves, adults drink nectar from flowers.
Life history	The monarch undergoes four stages of complete metamorphosis: egg, caterpillar, pupa and adult. The adult has a life span of about 60-70 days.
Risks	Loss of swan plants. Shining cuckoos eat the adults, insects such as wasps and praying mantis' eat the larvae.
How to look for it	Fluttering around gardens looking for nectar. Caterpillars can be found on swan plants. Monarchs don't like our winter so are uncommon when its cold.

Kihikihi-wawā

Chorus Cicada

Amphipsalta zelandica



Status	Endemic, widespread
Habitat	Forest and open bush. All over NZ
Diet	Sap from trees
Life history	Eggs are laid in thin soft branches, and you can see herring bone patterned scars on tree trunk. Larvae live in soil, feeding on sap from plant roots. In summer, the nymph crawls out of the soil, and the adults 'hatch'.
Risks	Birds, wasps, spiders, fungal diseases
How to look for it	• Scars on tree branches (often on kawakawa) • Listen for "singing" – males sing to attract females • Find cicada cases on trunks

Bumblebee

Bombus sp.



Status	Introduced
Habitat	Around gardens and flowers
Diet	Use a straw like proboscis to suck nectar from flowers
Life history	Are social insects that form colonies with a single queen. Each nest has a queen that reigns for one year. During winter only the queens with eggs survive and hibernate.
Risks	Disease, changing environments, pesticides.
How to look for it	You'll see them clumsily buzzing around your gardens. Be aware though, although they generally avoid humans females can sting repeatedly.

Garden snail

Cornu aspersum



Status	Introduced. Native to the Mediterranean region
Habitat	Has spread across the world inhabiting various climates.
Diet	Mostly herbivorous.
Life history	These snails are both male and female, all of them could lay eggs. Young snails take two years to reach adulthood.
Risks	Common source of food for other animals. Parasites
How to look for it	Found in gardens, damp areas and under leaf litter & logs.

"Snail" by Hilary Gaunt is licensed under CC BY-NC-SA 2.0

Hedgehog

Erinaceus europaeus



Status	Introduced
Habitat	Are native to Europe. Were introduced to NZ in the late 1800s for sentimental reasons. More common in the South Island than the North.
Diet	Omnivorous. Mostly eats insects, slugs and snails. Pose a threat to native species by eating birds eggs, and rare NZ insects.
Life history	Females alone raise a litter of 4-6 hoglets at a time. Young are born blind. Hedgehogs can live up to 10 years.
Risks	Disease
How to look for it	Rummaging through gardens and lawns at night time

Plague skink (rainbow skink)

Lampropholis delicata



Status	Introduced
Habitat	Live in urban areas, gardens, commercial areas and waste ground.
Diet	A wide variety of insects
Life history	These skinks breed really fast. They are invasive and compete directly with our native skinks for food and habitat.
Risks	Cats, rats, mustelids, hedgehogs
How to look for it	Found under vegetation and rocks. They like moist areas

Pūriri moth

Aenetus virescens



Status	Endemic
Habitat	Pūriri trees
Diet	The eggs are laid on the forest floor. The larvae hatch and spend about a year living on the forest floor before they move inside the trunk of their puriri tree host. The larva lives inside a constructed tunnel, and feeds on the bark of the tree. After it pupates, it emerges as the adult moth. Six years a grub, 48 hours a moth!
Risks	Ruru, Kākā, bats, cats, possums, people
How to look for it	Look for the round scars on pūriri trees

Uruururoa

Sentry dragonfly

Hemicordulia australiae



Status	Self-introduced, not threatened
Habitat	Australia, and now established in New Zealand. They require an aquatic habitat during the juvenile phase.
Diet	Insects
Life history	Both adult and larvae dragonflies are predators of other insects.
Risks	They are the top predator!
How to look for it	It flies low over the water. It may be seen far from water hovering above head height over bare ground in gardens and parks. The nymphs are found in wetlands and slow flowing streams. Sometimes you can find the shed skins on the edge of ponds.

Piriwai Mayfly

Zephlebia sp.



Larvae



Adult

Status	Most common and widespread mayfly in NZ
Habitat	Fast-flowing, cool, well-aerated water. Mayflies are “sensitive” to poor water quality.
Diet	Thin layers of algae that grows on rocks and woody debris.
Life history	Eggs are laid around the stream. The nymphs hatch out, and go through a number of moults and live in the water before they become adult, flying mayflies.
Risks	Fish (banded kōkopu, īnanga, eels), spiders
How to look for it	In streams. Ask a parent/guardian to help scoop one out in a net.

Banded kōkopu

Galaxias fasciatus



Status	Not threatened
Habitat	Freshwater streams, especially found in pools with overhanging banks.
Diet	Insects – especially moths and other land insects that fall into the stream, and are struggling on the surface of the water.
Life history	Banded kōkopu lay eggs in the estuary part of the stream, and the hatched larvae swim out to sea. When the larvae grow into small fish, they return to the freshwater, and navigate their way upstream.
Risks	Humans – young banded kōkopu are whitebait, and are fished for, and pipes, culverts and other barriers built in and over streams, preventing the young moving into their habitat.
How to look for it	Keep an eye out for movement when you see a freshwater stream. Banded kōkopu lurk below the surface

Tūī

Prosthemadera novaseelandiae



Status	Endemic, not threatened
Habitat	Forest and suburban gardens
Diet	Flowers (kōwhai, pūriri, pōhutukawa, flax etc), fruit and insects
Life history	2-4 eggs per nest, the female incubates and does most of the chick feeding. They breed at around 2 years old, and live 12 or more years.
Risks	Predation of eggs by rats and stoats etc
How to look for it	Listen for noisy scuffles in the trees – tūī are very territorial, and you often see and hear them swooping through the branches.

Kererū, kūkupa

New Zealand pigeon

Hemiphaga novaeseelandiae



Status	Endemic, not threatened
Habitat	Their nests are a platform of dead twigs – sometimes they are so flimsy you can see the egg through the twigs!
Diet	Foods include buds, leaves, flowers and fruit from a wide variety species, both native and exotic.
Life history	One egg is laid, male and female share brooding. Kererū live to about 21 years.
Risks	Feral cats, possums, stoats and ship rats, especially when nesting. Also people, for instance from window strike
How to look for it	You can listen for the quiet cooing, or you may hear something big crashing through the branches. The flight also has a distinctive sound.

Pīwakawaka

Fantail

Rhipidura fulginosa



Status	Endemic, not threatened
Habitat	Forest and well vegetated parks and gardens
Diet	Invertebrates – moths, flies, beetles and spiders
Life history	2-5 eggs each nest, both parents incubate eggs, and chicks are ready to fledge at 16 days! They live up to 5 years
Risks	Mammalian predators
How to look for it	You may hear their squeaky cheeps, and they often flit around people

Harvestman

Opiliones sp.



Status	Native
Habitat	Under decaying logs
Life history	They are arachnids, but unlike spiders, harvestmen do not have venom or silk glands.
How to look for it	Carefully look under bark on dead logs, they will often be curled up

Taxonomy of plants

Kingdom of Plantae

Don't make seeds			Makes seeds	
Mosses	Ferns	Seaweed	Gymnosperms (no flowers)	Angiosperms (flowers)
	NZ Tree Fern		Kauri Tōtara	Parapara Kawakawa Nīkau palm Pōhutukawa Ivy-leafed toadflax Tī Kōuka

Ngārara wehi

Leather leaf fern

Pyrrosia eleagnifolia



Taxonomy	Plantae; Pteridophyta; Polypodiaceae
Status	Common climbing fern, endemic to NZ
Habitat/distribution	Coastal to montane areas of the Kermadec, Three Kings, North, South, Stewart and Chatham Islands.
Observation tips:	Look for small strap like plant hanging from the branches of pōhutukawa trees

Parapara

Bird catcher tree

Pisonia brunoniana



Taxonomy	Plantae; Nyctaginaceae
Status	Native to NZ
Habitat/distribution	Around the pacific; NZ, Norfolk Island, Lord Howe Island and Hawaii
Fact	When large birds land on the tree, the sticky seeds attach and pollinate elsewhere. But small birds should watch out, the sticky glue could get them in trouble!
Observation tips:	Look for the long sticky seeds

Pōhutukawa

Metrosideros excelsa



Status	Endemic
Habitat/distribution	Natural range is coastal regions of the North Island
Fact	Under threat from the possum which strips the tree of its leaves. It is regarded as a chiefly tree (rākau rangatira) for its strength and beauty
Observation tips:	Doesn't take long to spot one along the shores of NZ or in parks. You won't see many of the red flowers during winter.

Karaka

New Zealand laurel

Corynocarpus laevigatus



Taxonomy	Plantae; Corynocarpaceae
Status	Endemic to NZ
Habitat/distribution	Native probably to only the northern half of the north island.
Fact	The kernels of its fruit provided an important food source for Māori. This was despite the poisonous kernels requiring considerable treatment before they could be eaten. Karaka was so significant that Māori planted it outside its natural range of northern North Island and as far afield as Bank's Peninsula and the Kermadec and Chatham Islands.
Observation tips:	Karaka has large shiny leaves and bright orange fruit

Ivy-leaved Toadflax

Cymbalaria muralis



Status	Introduced
Habitat/distribution	Originates from the Mediterranean region. Has become invasive to NZ. Spreads quickly growing in rock walls, on plants and along footpaths.
Fact	The flower moves towards the light, but after its fertilised it moves away from the sun. This results in it being pushed into dark crevasses into rock where it germinates.
Observation tips:	You will see this along many rock walls across the city.

Tī kōuka

New Zealand Cabbage Tree

Cordyline australis



Status	Endemic
Habitat/distribution	All over the country apart from Fiordland. Was probably introduced to Chatham Islands by Māori. Grows fast and found along forest margins, river banks and open places.
Fact	Fruit source for Kereru and other birds. Used widely in the past for food, leaves for fibre and textiles, anchor ropes, fishing lines & baskets.
Observation tips:	Doesn't take long to spot one on your travels.

Kawakawa

Pepper tree

Piper excelsum



Taxonomy	Kawakawa, Pepper tree, Piper excelsum subsp. excelsum
Status	Endemic to NZ
Habitat/distribution	It is endemic to the North and South Islands and is common from Te Pahi south to about Okarito, North Canterbury and the Banks Peninsula.
Fact	Kawakawa is an important medical plant for Māori, it can help with cuts, tooth ache and it's also a great insect repellent
Observation tips:	Look for the large heart shaped leaves, most of the leaves have little holes in them made by a caterpillar- the kawakawa looper

Kauri

Agathis australis



Taxonomy	Plantae; Araucariaceae
Status	Endemic to NZ
Habitat/distribution	Northern part of the North Island of New Zealand
Fact	Kauri is a conifer. Conifers are cone-bearing, woody seed plants
Something to ponder	Kauri forests are among the most ancient in the world
Observation tips:	One of the largest trees in NZ, look for the smooth bark and small narrow leaves

Pūriri

New Zealand Mahogany

Vitex lucens



Taxonomy	Plantae; Lamiaceae
Status	Endemic to NZ
Habitat/distribution	Three Kings Islands and North Island from Te Pahi to Taranaki, Māhia Peninsula and the northern Hawkes Bay
Fact	Pūriri is one of the few native trees with large colourful flowers. Many plants in New Zealand have white or green flowers
Observation tips:	Look for a tree with 5 wrinkly leaflets and pinkish flowers & covered holes made by pūriri moth caterpillar.

Tōtara

Podocarpus totara



Taxonomy	Plantae; Podocarpaceae
Status	Endemic to NZ
Habitat/distribution	Common throughout both North and South Islands
Fact	Tōtara was the primary wood used to make waka in traditional Maori boat building due to its relatively light weight (about 25% lighter than kauri), long straight lengths and natural oils in the wood which help prevent rotting.
Something to ponder	Tōtara is remarkably resistant to rot, and fallen logs can last for incredible lengths of time
Observation tips:	Look for a large tree with small spiky leaves

Nīkau palm

Rhopalostylis sapida



Taxonomy	Plantae; Rhopalostylidinae
Status	Endemic to NZ
Habitat/distribution	Common throughout both North and South Islands
Fact	The Nīkau is the only palm species native to NZ and it is the worlds most southerly growing palm
Observation tips:	A nīkau palm usually grows about 10 to 15 metres tall. It is easy to recognise in the bush with its circular trunk, which is ringed with evenly spaced scars from fallen leaves. The fronds are up to three metres in length.