

2: Biosecurity – Levels 1 & 2

Protecting our local environment



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Students are introduced to natural and cultivated environments and the relationships between plants and animals living there. The importance of biosecurity is explored as students are encouraged to consider the impact of pests and disease on local environments.

Key understandings

- Plants and animals are a key part of balanced environments.
- There are multiple pathways for pests and diseases to enter New Zealand and spread between regions.

Different environments

Introduce the students to environments, such as school grounds, parks, gardens, wetlands, fresh waterways, oceans, mountains, and bush. Discuss natural and cultivated environments.

1. Take students to visit local parks, reserves, gardens, rivers, lakes, beaches, bush or mangrove swamps.
2. Take photographs for later referral.
3. Have the students make simple models of what they see, using sand, soil, parts of plants and objects such as plastic animals.
4. Which of these environments are natural and which are cultivated?

The interaction of living and non-living things

Students explore the concepts of living and non-living things and classify animals and plants by sorting and categorising.

1. Explore what is living and what is not. What defines a living thing? If a tree is living, is a chair, which is also made of wood? Why/why not? This could be integrated with the students' home learning. They can identify living and non-living things in their homes or on their way to school.
2. Using the photos from your ecosystem visit have the class label and list living and non-living things.



3. Print images of a range of habitats and have the students place plastic animals in their habitats.
4. Types of animals. Students group animals into relevant categories. You could make animal flashcards, or have students bring animal toys or pictures of their pets. As a class, talk about the similarities and differences between them and categorise the animals into groups. Simple categories could be number of limbs, or what their bodies are covered with (fur, feathers or scales). For more complex categories, try introducing scientific vocabulary, such as mammal, reptile, amphibian and bird.
5. Introduce the concepts of food chains and habitat. Have students identify where different animals live and the foods they eat. Introduce students to the terms herbivore, carnivore and omnivore. Using the flashcards, toys or pictures from the previous activity, students group animals according to what they eat. As a class, use some of the animal examples to create simple food chains.
6. Other ideas to introduce your students to food chains include:
 - Have students create stacked [food chain collage](#).
 - Write the names or put images of animals from a specific food chain onto paper cups. Students can stack them in the order of who eats who.
 - Have students draw pictures of animals in chalk on the playground. They can then draw arrows linking the animals and showing their places in the food chain.
 - Give each student a picture of an animal or plant. Have them display their card so that the others can see it and move around the room creating their own food chains.

Related resources

- Food Chains for Kids from [Best Children's Books](#)
- [Interactive site](#) for food chains
- [Animal classification](#) – information and interactives

Māori and the living world

Share the story of [Ranginui and Papatūānuku](#) to help students understand the living world from a Māori perspective.

1. Students name the children of Ranginui and Papatūānuku and explore how each god has responsibilities for the guardianship of a part of the natural world.
2. Revisit photos from your local environment trip and have students identify the guardian who looks after each area, and what they would think of the way the land is being cared for.
3. Throughout this learning, students can explore Māori values and beliefs that act as guidelines for the management of land and water.

Tangaroa God of seas, lakes, all living things within them	Tāne-mahuta God of forests and all living things within them	Tāwhiri-mātea God of wind and storms
Rongo-mā-tāne God of cultivated foods and peace	Haumia-tiketike God of fern roots and other wild foods	Rūaumoko God of earthquakes and volcanoes



Biosecurity and you

New Zealand's geographical isolation and strong biosecurity system keeps many pests and diseases out of our country. Help students investigate pests and diseases and their impact on local environments, including crop loss, crop disease, and diseases in animals like foot and mouth disease. Lead students to understand that they have a role to play in upholding biosecurity systems.

Keeping our environment safe

Help students understand that pests and diseases can harm our environment and we have biosecurity systems in place to protect it.

1. Explore biosecurity with your students by watching [Biosecurity – Protecting to Grow New Zealand](#), a short movie produced by the Ministry for Primary Industries.
2. Discuss the different people in the movie. Who are they, what work do they do, what do they say in the film?
3. Work in small groups to create a cartoon strip or mini play to summarise some of the key messages from the film. This brief exploration will give the students a reference point when they examine risks to biosecurity and biodiversity in more detail.



At the border

The pests and diseases that can affect environments in New Zealand can enter the country in three ways: trade, travel and environment. Unwanted organisms can enter the country through products that are imported and through the movement of people and the animals or food they bring with them. Unwanted organisms can also arrive or spread on the wind, or through ocean tides, and even due to climate change. Ask students to explore one of the methods we use to detect unwanted pests and diseases.

1. Discuss with your students how new plants, animals and microorganisms can arrive in New Zealand as a result of natural events. Sometimes we don't think of new arrivals as pests, especially if they've been here for a long time, such as the Silvereye or Wax-eye bird. These birds arrived over 100 years ago and likely flew from island to island until they reached New Zealand. Other new arrivals are clearly unwanted, such as the recent arrival of [myrtle rust fungus in New Zealand](#), which seems to have travelled here on the wind.
 - As a class think about the plants and animals in your local environment. Which of these are exotic (not native) to New Zealand?
 - Make a list and see if you can find out how they came to be in New Zealand. Identify those that you think arrived 'naturally' and categorise them as helpful/harmful/don't know.
 - What steps are being taken to try and manage or eradicate the harmful ones from your area? Think about who you could contact to find out more information about the plants and animals in the 'don't know' category.
2. Explain that we use a variety of methods to detect unwanted pests and diseases before they arrive in New Zealand. One way our borders are checked is through the [detector dog programme](#). Students examine the job of a detector dog and check how the Ministry for Primary Industries (MPI) look after the welfare of their [canine workers](#). The dogs have their own [Facebook page](#), with each dog profiled on its own detector card. Students can explore why dogs are used for this job and the kinds of products the dogs can detect.
3. Watch [Powder Patrol](#) and make a list of all the foods mentioned in the video that are not allowed into New Zealand. Investigate why these foods are not



allowed and how they could affect New Zealand's animals, crops or environment.

Related resources

- [Detector Dogs](#) – An informative film for school-aged children about Australian detector dogs.
- [Surveillance programmes](#) MPI is always looking for pests and diseases that might have arrived from overseas. Finding them early is vital for a successful response.
- Alerts – Some of the major threats, pests and diseases facing New Zealand's primary sector.
- Biosecurity 2025 Direction Statement – Biosecurity 2025 Direction Statement for New Zealand's biosecurity system will ensure that our already strong biosecurity system continues to protect New Zealand against pests and diseases.

Managing pests and diseases

1. Visit a local environment – for example a park, garden, local bird sanctuary or regional park. If you have already made such a visit for an earlier exercise, consider returning to the same location. Discuss natural and cultivated environments with your students. Identify the plants and animals that live there (with emphasis on native species that might be there), and understand how the chosen area supports biodiversity.
2. Explain how exotic animals or plants have been introduced, which sometimes can damage or destroy the local government.
3. During the visit have students identify any technology they can see that is designed to protect the environment from pests and diseases. Examples could include designated tracks, wooden or concrete ramps, footwear baths, bird feeders and possum traps or bait stations. If possible, examine tracking stations and traps and traces of predator behaviour. Take photos to take back to the classroom.
 - If you cannot find a local ecosystem that is making efforts to conserve native species and combat biosecurity risks, aim to introduce this concept using online resources such as the [DOC](#) and [MPI](#) websites or information from local and regional councils.
4. Explore your school environment to identify any opportunities to help manage pests. Have students design possible solutions. As a class, select a solution and work together to implement it. You could consider working with your school groundskeeper/caretaker, other students, local gardeners or pest management workers, DOC or the SPCA.
5. Join [Nature Watch NZ](#) in citizen science projects that ask New Zealanders to work together in observing and recording species in your area, including some pests, and sharing the findings in a nationwide project.

6. Find out more about pests in New Zealand by creating your own A-Z of pests, using the [Department of Conservation information](#) as a guide.
7. Profile a pest that harms your local environment. Where did it come from originally, how does it damage animals or plants, and what is being done to identify it and eradicate it? Students create a poster to provide information about a local pest to their community. An example is the [Queensland Fruit Fly](#) which spoil many horticultural crops, often making them inedible.
8. Create signs to warn people coming into your region about any biosecurity hazards, and what action they can take.

Related resources

- [Meet the Locals](#) – A series of short videos exploring local conservation efforts and issues, produced by the Department of Conservation and TVNZ.
- [Kiwi Conservation Club](#) – A section of Forest and Bird that teaches children about New Zealand's wildlife and wild places.
- [Wild Things](#) – The magazine of the Kiwi Conservation Club, provides a wealth of information for children on conservation issues. It is available free to schools.
- [Pests and Predators](#) – Interactive online game.
- [Investigating plant pests in your green space](#) – An education resource from DOC.

Kaitiakitanga

Students explore the relationship of tangata whenua to the land and waterways of Aotearoa and learn the importance of guardianship and protection to ensure their sustainability for future generations.

1. The concept of rāhui can be a starting point for the study of kaitiakitanga. Explain that rāhui is a limit or ban on the use of a particular resource. It is put in place to protect a resource or people in response to a perceived threat to the environment. This is an important function of kaitiakitanga.
2. Read the story *Rāhui* by Chris Szekely to the students and discuss the use of rāhui as a spiritual and conservation response.
3. Relate this to any bans on wildlife harvesting that are in place in your local area. Take particular note of any bans that are in place in a response to the presence of a pest or disease.
4. Set up a plan with local iwi to participate in a local kaitiaki action group.

Related resource

Szekely, Chris. (2011). *Rāhui* Wellington: Huia Publishers

