



MARINE BIOSECURITY

Education Modules

An education resource for delivery to children in Years 5 to 8 (science levels 3 and 4).



Imagine if we could go back in time and stop pests like rats, stoats or weeds like gorse from ever coming into New Zealand. When it comes to our coastlines, we still have a chance to do that!

Without even knowing it, we can spread pests everywhere we go. This can be on our shoes, like the organism that causes Kauri Dieback. Even though we don't know they are there, mice and ants can travel in our camping gear and food (yuck) or in our cars.

At sea, we can accidentally spread pests on our boats, fishing gear and other equipment. We can take them to beautiful places where there are no pests, and where they can do a lot of damage. They can spoil our beautiful beaches, and even ruin the kaimoana we like to eat from the sea.

So you can see why it's really important that we don't give marine pests a free ride! We can start by learning about marine biosecurity, how to identify marine pests, and how to stop them spreading.

THIS EDUCATION MODULE CONTAINS:



Information about this resource for teachers

For your knowledge: an explanation of marine biosecurity

An overview of the programme

Curriculum links

Real-life science capabilities



Learning Modules:

Part 1: Understanding Marine Biosecurity

Part 2: Diving Deeper into the world of marine pests

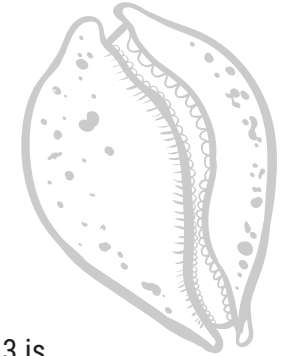
Part 3: Monitoring for marine pests -
a citizen science and advocacy project

EVERYONE HAS A PART TO PLAY IN PROTECTING AOTEAROA'S BIODIVERSITY.

Without knowing it, the things we do can assist in the spread of pests in New Zealand. In the marine environment, boats and equipment can give marine pests a free ride and transport them to new places around the country. Once they arrive, these marine pests can then interfere with the places we like to visit, swim at, and negatively impact the kaimoana we like to eat. So, we need everyone's help to prevent further marine pests from becoming established in New Zealand and to prevent spread of already established marine pest species into new marine environments.

Students can expect to gain the following **key learning outcomes** from the resource:

1. **To understand what marine biosecurity is**
2. **To learn about marine pests and the impacts they can have on the marine environment**
3. **To inspire student-led action as kaitiaki to monitor and report marine pest sightings**



Connecting the classroom to your coastline

This resource provides a range of activities to develop an understanding of marine biosecurity in New Zealand, to help investigate marine pests and their impacts and encourage participants to 'dive deeper' and take action to protect the moana from marine pests. The activities in this resource package are designed to be used in both formal and informal educational settings and can be used both in and out of the classroom. There is flexibility to adapt the activities to suit the needs/age of the participants involved.

This resource is split into three parts with associated information and activities.

Part 1: Understanding marine biosecurity

Part 2: Diving deeper into the world of marine pests

Part 3: Monitoring for Marine Pests and Taking Action!

Parts 1 and 2 will take around 1-2 hours each. Part 3 is recommended to include a half day fieldtrip to your local seashore.

We've included links to further material and resources throughout each section and there are plenty more in the 'Extra Resources' document included with this programme.

We hope you enjoy your learning journey about marine biosecurity, please be sure to provide us with any feedback at info@marinepests.nz



This resource is based on the education for sustainability (EfS) pedagogy and supports the key competencies and overall vision as stated in the New Zealand Curriculum



Click for info

nzcurriculum.tki.org.nz/Curriculum-resources/Education-for-sustainability

Diving into the curriculum links

Thinking

Using language, symbols, and texts

Managing self

Relating to others

Participating and contributing

English

The Arts

Health and Physical Education

Learning languages

Mathematics and Statistics

Science

Social Sciences

Technology

Understanding Marine Biosecurity

Surveillance	✓	✓	✓			✓	✓		✓				✓
Land Pests vs Marine Pests	✓	✓		✓	✓	✓			✓				✓

Diving Deeper into Marine Biosecurity

Meet our Marine Pests/kīrearea	✓	✓	✓	✓				✓		✓	✓		✓
Marine Pest Profiles	✓	✓	✓	✓		✓			✓	✓	✓		✓
Make a Marine Pest	✓	✓	✓				✓			✓			
Pest Pathways	✓	✓		✓	✓	✓	✓			✓			✓
When a Marine Pest Arrives	✓	✓	✓	✓			✓			✓			
NIMS in New Zealand	✓	✓		✓	✓				✓	✓			✓

Monitoring for Marine Pests and Taking Action

Marine Pests and Marine Metre Squared	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓
Data Review	✓	✓	✓	✓	✓	✓		✓	✓				✓
Who Wants to Know?	✓	✓		✓	✓				✓	✓	✓		✓
Spread the Word!	✓	✓		✓	✓			✓	✓	✓	✓		✓



This resource is highly relevant to the 'Nature of Science' strand as part of the New Zealand curriculum. As part of the Nature of Science, students learn what science is, how science knowledge is created and applied in the world through five different capabilities.

These capabilities are:

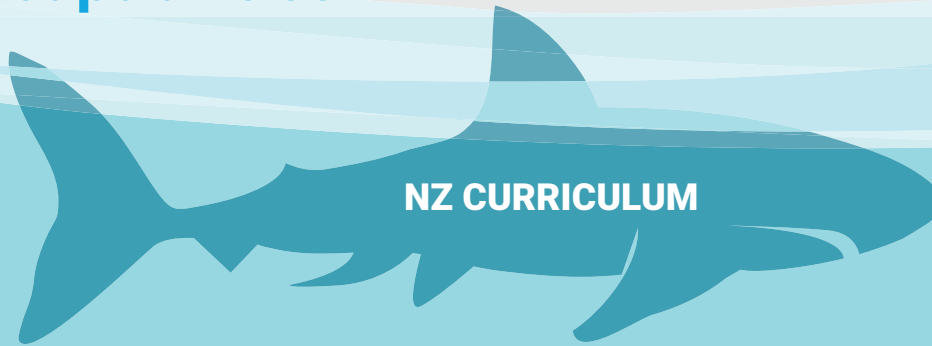
- Gather and interpret data (make careful observations and differentiate between observation and inference)
- Use evidence (support ideas with evidence and look for evidence supporting others' explanations)
- Critique evidence (evaluate the trustiness of the source of information)
- Interpret representations (Represent ideas in different ways e.g. models, graphs, charts, written texts)
- Engage with science (putting science into "real-life" contexts)



Creating real-life science capabilities

The capabilities also relate to the four nature of science sub strands which are:

-  Understanding about science
-  Investigating science
-  Communicating in science
-  Participating and contributing

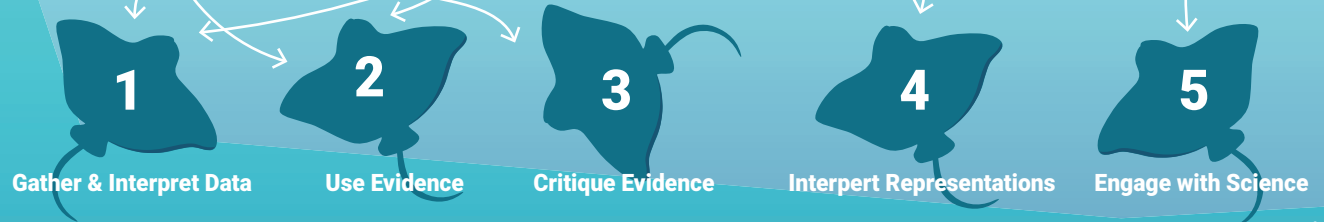


NZ CURRICULUM

"Students explore how both natural physical world and science itself work so they can participate as critical, informed, and responsible citizens in a society in which science plays a significant role."

THE NATURE OF SCIENCE

Students learn what science is and how scientists work.

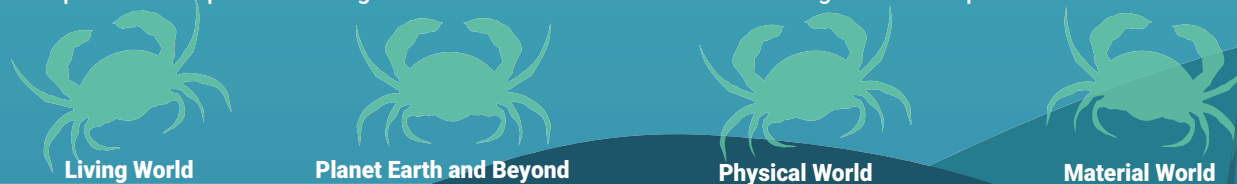


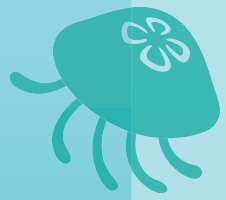
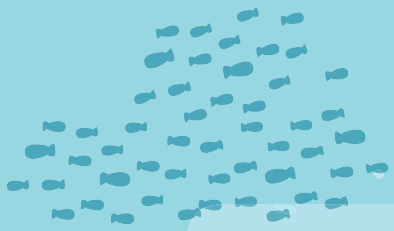
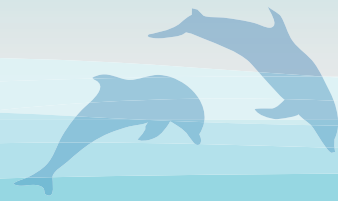
THE SCIENCE CAPABILITIES

Developed to join the dots between. contexts/strands, curriculum statement, NOS, Key Comps and existing resources.

CONTENTS/STRANDS

The NOS Capabilities are pursued through the contexts in which scientific knowledge has developed and continues to develop.





Science Capability

Gather and interpret data

Use evidence

Critique evidence

Interpret representations

Engage in science

Related Activities

Surveillance, Land Pests vs Marine Pests, Meet our Marine Pests/
Kīrearea, Make a Marine Pest

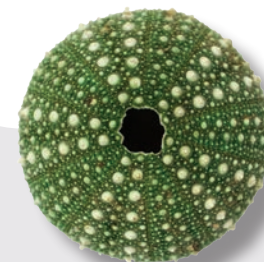
Land Pests vs Marine Pests, Marine Pest Profiles, Pest pathways,
Marine Pests and Marine Metre Squared

NIMS in New Zealand, Data Review

When a Marine Pest Arrives, NIMS in New Zealand, Marine Pests
and Marine Metre Squared, Who Wants to Know?

Marine Pests and Marine Metre Squared, Who Wants to Know?,
Spread the Word!

This Education Resource was developed by the following organisations to support marine biosecurity awareness in Aotearoa New Zealand:



WITH THANKS TO:

