LEARNING ACTIVITIES PART 1:

Understanding marine biosecurity

Learning outcomes

- Understand what biosecurity is in New Zealand
- Ability to describe what marine biosecurity is

Time to complete: 60 - 90 minutes

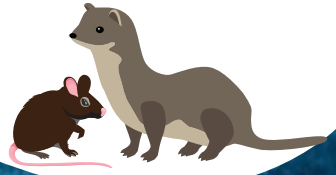
In this section:

Read together:

About marine biosecurity

Watch:

Why do we need to protect our coastlines, beaches and harbours?



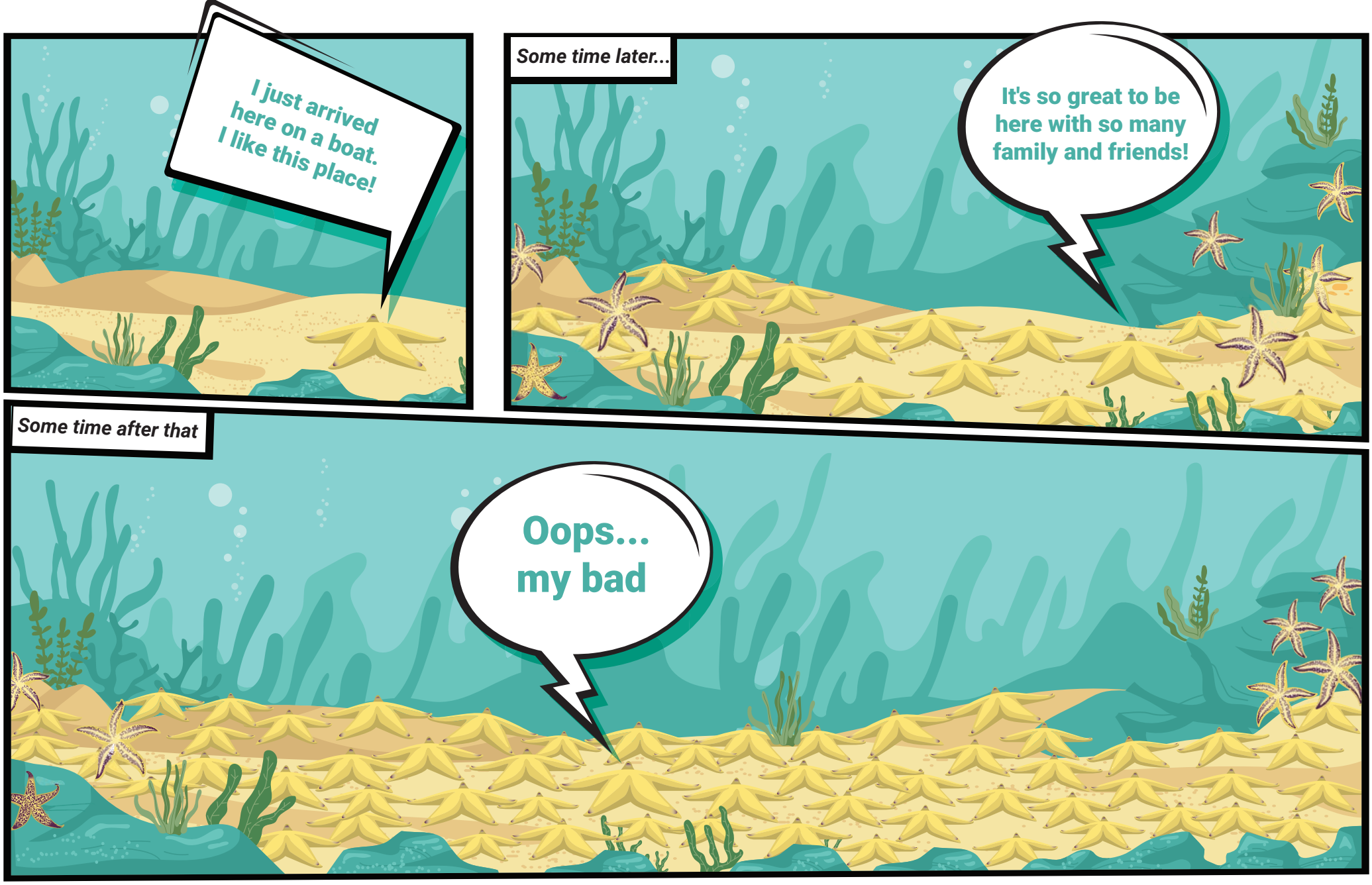
Activities:

Marine biosecurity terminology

How we name marine pests

Marine biosecurity wordfind

Land pests verses marine pests



This is a comic but it has happened in real life too. Check out the video of the Invasion of North Pacific Sea Stars at Mornington Pier, which is a popular place for swimming and boating in Melbourne, Australia - click here www.youtube.com/watch?v=9V7v7dudIOI **Time to complete: 60 - 90 minutes**

Biosecurity is the process of detecting and managing any unwanted species or diseases that could hurt New Zealand's economy, environment, human health, and our way of life.

On land, biosecurity is about protecting Aotearoa New Zealand from:

pests like rats, stoats, possums and mice that can harm our native wildlife

insects like Argentinian Ants

stopping invasive weeds like gorse from spreading

detecting and preventing diseases

In the sea, marine biosecurity is about protecting our marine environment from:

introduced crabs, shrimps and sea stars that are stronger, fitter and faster than our native species and can take all their food

species like fanworm and non-native clams which take up a lot of space and filter a lot of water, taking/removing nutrients/food from other species

slimy snot-like creatures that make our beaches and rock pools look and smell bad

species that can carry diseases that affect our oyster farms

invasive seaweeds that can smother native species

Why do we need to protect our coastlines, beaches and harbours?

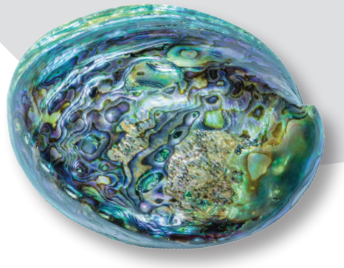
Aotearoa New Zealand is an island nation and many of us have a connection to the moana.

Listen to some experts talking about what the ocean, and marine biosecurity, means to them www.youtube.com/watch?v=hzExYqB7nAo

TALKING POINT

How do you feel connected to the ocean/te moana?

Aotearoa New Zealand has a huge 15,000 kilometres of coastline! The sea is important to our economy and even though we are a small country, we have one of the biggest Exclusive Economic Zones (EEZs) in the world.



TALKING POINT

what are some of the ways our economy benefits from the sea?

Although we are at bottom of the world, we are a long way away from other countries and this distance helps make Aotearoa New Zealand a special place for marine life.

People are working hard to manage marine pests. Watch these two videos to see how the Bay of Plenty Toi Moana Regional Council monitors Tauranga Harbour for marine pests.

BOPRC works hard to stop spread of Mediterranean Fanworm
www.youtube.com/watch?v=PlRjRk9IfQc

TALKING POINTS

What are the divers looking for on the boats?

Why are they worried about marine pests?

What does Hamish want boat owners to do?

What else is interesting about this video, and what other questions do you have?

Asian Paddle Crab (Charybdis japonica) monitoring in Tauranga Harbour **www.youtube.com/watch?v=tbnv51Iur_Y**

TALKING POINTS

Why is Andy holding the crab by the pincers?

Why are there more Asian Paddle Crabs now, and what does that mean for native species?

Why is Asian Paddlecrab a problem for the environment?

Where else are these crabs in NZ? How did they get to Tauranga Harbour?

Teacher note: After watching the videos from those involved in marine biosecurity, what questions do your class have? Make a list and try to answer these questions as you move through the activities. You may have more questions to add to the list as you learn more about marine biosecurity!

Activity: **Marine biosecurity terminology**

Here are some of the words that we use to talk about biosecurity (land and marine)

Biosecurity – how we find and manage any unwanted species or diseases that have been identified as a potential risk to Aotearoa New Zealand's economy, environment, human health, and our way of life. The Covid-19 Coronavirus is one of the most well known biosecurity risks!

Introduced species – a name for organisms from other parts of the world that do not naturally occur in an area or habitat. Also called non-indigenous, invasive or alien species. Not all introduced species cause harm.

Pest species – when a new organism is harmful to the native environment it is called a pest. Pest species compete against native or indigenous species for food, space, and light. They often have morphological advantages, or lack natural predators and can colonise or spread, so our native species often come out second best. This disrupts the natural balance of the ecosystem.

Pathways – the ways pests hitch a ride or spread are known as pathways. Human activities are considered the primary cause of the spread of pests around the globe. Marine pests mostly travel on boats.

Pest control and weed control – most New Zealanders are familiar with pest control methods like trapping and baiting possums, rats, stoats, and mice, and removing weed species from our bush, parks and gardens.

How we name marine pests?

Like all plants and animals, marine pests have two names:

- Their scientific names are used by scientists to accurately identify species. These names are in Latin and the same names are used by scientists all over the world.
- Common names are the names that are usually used by the general public and they often identify where a species comes from.

For example the scientific name for Cat is Felis domesticus. In English it is cat, in Arabic it is kitte, and in Cantonese it is maow. But when scientists call it Felis domesticus, they know exactly what species they mean. Can you think of any other names for 'cat' in different languages?

Activity:

These are the names of some of the marine pests in New Zealand. Draw a circle around the common name for each species!

Pyura Sea Squirt	**Pyura doppelgangera**
Oratosquilla oratoria	**Japanese Mantis Shrimp**
Mediterranean fanworm	**Sabella spallanzanii**
Eudistoma elongatum	**Australian droplet tunicate**
Asian paddlecrab	**Charybdis japonica**
Wakame	**Undaria pinnatifida**

Why do you think the name of a country or place is used in some of the common names?

Marine biosecurity word find

U	S	U	R	V	E	I	L	L	A	N	C	E	I
T	A	T	I	B	A	H	T	E	N	A	T	N	I
A	M	I	I	R	F	H	A	N	A	O	M	M	P
A	M	A	R	I	N	E	T	A	F	I	M	A	E
P	N	C	O	A	S	T	L	I	N	E	S	V	S
S	Y	T	I	R	U	C	E	S	O	I	B	B	T
V	O	H	H	V	G	N	N	N	B	O	A	T	S
H	F	S	B	E	A	C	H	E	S	A	M	T	S
R	P	I	R	I	I	N	A	T	I	V	E	N	V
M	E	F	A	S	N	P	A	T	H	W	A	Y	S
R	C	R	S	I	I	I	A	M	A	R	I	N	A
N	A	R	M	O	N	I	T	O	R	I	N	G	E
E	P	N	N	S	B	P	M	G	N	A	A	N	S
M	R	O	W	N	A	F	I	A	E	T	I	I	A

MARINA
COASTLINE
FISH
BIOSECURITY
BEACHES
SURVEILLANCE
FANWORM
MONITORING
BOAT
MARINE
MOANA
HABITAT
PATHWAYS

Teacher tip: Create your own wordfind using marine biosecurity words at Word Search Puzzles (thewordsearch.com)

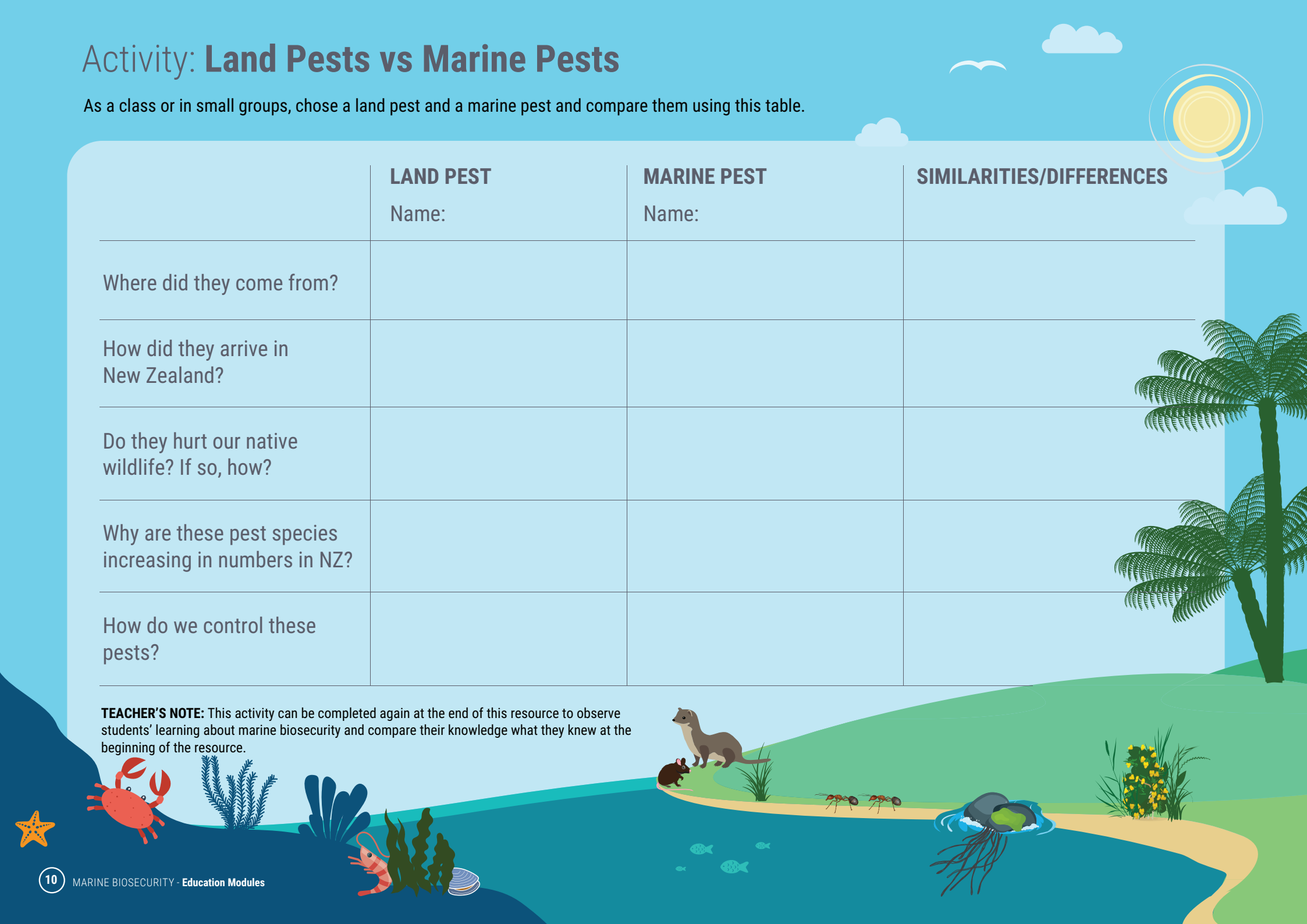
Extension activity: As you move through this resource, create a list of words. Make another word search at the end of the resource - has list has changed over time? See if you can come up with a definition for each of the words used in your word search.

Activity: **Land Pests vs Marine Pests**

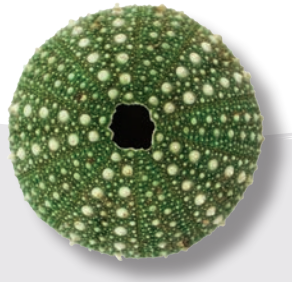
As a class or in small groups, chose a land pest and a marine pest and compare them using this table.

	LAND PEST Name:	**MARINE PEST** Name:	**SIMILARITIES/DIFFERENCES**
Where did they come from?			
How did they arrive in New Zealand?			
Do they hurt our native wildlife? If so, how?			
Why are these pest species increasing in numbers in NZ?			
How do we control these pests?			

TEACHER'S NOTE: This activity can be completed again at the end of this resource to observe students' learning about marine biosecurity and compare their knowledge what they knew at the beginning of the resource.



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



Northland Regional Council

Auckland Council
Te Kaunihera o Tāmaki Makaurau

Bay of Plenty Regional Council
Toi Moana

WITH THANKS TO:

Ministry for Primary Industries
Manatū Ahu Matua

New Zealand Marine Studies Centre

Young Ocean Explorers