Coastal & Ocean Environments

Aims

- Introduce students to marine environments including both the ocean and coast
- Show the connection between the river and the ocean and how rivers have a flow on effect for our oceans
- Explore different coastal environments such as sand dunes, estuaries, and rocky shores, and understand the roles they play
- Understand the layers of the ocean, and how each is a unique ecosystem
- Learn about marine biodiversity and habitats
- Investigate food webs to see how plants, animals, and humans are interconnected
- Understand the current threats to the marine environment
- Learn how to take action to protect marine environments

Kia ora, and welcome to our Coastal and Environments guide. Here you will explore the incredible diversity of our coasts and oceans. You will understand the challenges they face and explore how we can protect them for future generations. We hope you enjoy diving into this amazing environment. Resources for the listed activities are stored in the pouches. Some activities require additional equipment that is not included; this is noted alongside the activity. A master copy of all worksheets is provided for you to photocopy, please return these originals to the kit after use.

horizons
REGIONAL COUNCIL

This kit can link to the following NZ curriculum (2026)	
Curriculum Links	**Activities and ideas**
Science (2007) *Nature of Science* Investigating in science: • Pose questions and carry out investigations Communicating in science: • Record and present findings about marine ecosystems and threats. Participating and contributing: • Use science knowledge to make decisions and take action to protect marine environments *Living World* Levels 1–2: • Recognise that living things have certain requirements for survival and are suited to their environment. Levels 3–4: • Explain how living things are adapted to their environment and how changes (e.g., pollution, sedimentation, habitat loss) affect ecosystems. • Investigate relationships between living things and their environment (e.g., food webs, carbon cycle). • Investigate how human activity affects oceans and coasts. • Understand human impact on biodiversity and ecosystems Levels 3–4: • Explain how living things are adapted to their environment and how changes (e.g., pollution, sedimentation, habitat loss) affect ecosystems. • Investigate relationships between living things and their environment (e.g., food webs, carbon cycle).	Kit contains lots of student activities. Here are some more below: • Exploring coastal habitats such as estuaries, driftwood, dune plants and threats to marine and coastal environments. • Create marine, estuarine or driftwood food webs to show how everything is connected. • Conduct a beach litter survey using the Sustainable Coastlines' Litter Intelligence protocol. Sort and classify rubbish types. • Walk through sand dunes and identify native plants (e.g., spinifex, pīngao). Note adaptations to the salty, windswept environment, like root systems and leaf shapes. • Sketch plants and label features that help them survive. • Observe birds (e.g., oystercatchers, gulls) and record feeding behaviour and beak shapes and how their physical features relate to diet and habitat • Research marine species and create a food web diagram showing producers, consumers, and decomposers. Discuss what happens if one species is removed. • Create bingo cards with coastal features (dunes, shells, birds, algae). Students tick off items during a field trip.

• Understand human impact on biodiversity and ecosystems. *Plant Earth and Beyond* Levels 3–4: • Explore how water systems (rivers, oceans) interact and influence each other. • Understand processes shaping coastal environments (sand dunes, estuaries, rocky shores).	
Maths (2026 curriculum) – use in addition to maths textbooks as desired *Statistics & Probability* Years 0–10: • Pose investigative questions (e.g., "How does biodiversity vary between rocky shores and estuaries?"). • Collect and manage data (species counts, litter survey results • Display data using tables, bar graphs, line graphs, and interpret patterns. • Understand variation and uncertainty in sampling. *Number & Algebra* • Use whole numbers, fractions, decimals, percentages to compare species counts • Calculate averages (mean, median) for repeated measurements. • Apply ratios and proportional reasoning (e.g., percentage of native species vs. introduced).	• Students tally species in different coastal habitats, graph results, and compare biodiversity. • Graph litter intelligence survey results and compare across sites
English (2026 curriculum) *Oral Language* • Share observations and findings clearly using topic-specific vocabulary (e.g., "estuary," "biodiversity"). • Engage in discussions about marine threats and solutions.	• Students present results from coastal investigations. • Group discussions on how rivers affect oceans and why protection matters • Students read DOC or NIWA resources on coastal habitats.

Reading • Read and interpret informational texts about marine ecosystems and conservation. • Identify key ideas and supporting details in scientific or environmental texts. *Writing* • Write structured reports summarizing coastal investigations and biodiversity findings. • Create persuasive or informative texts advocating for marine protection.	• Students present results from coastal investigations. • Group discussions on how rivers affect oceans and why protection matters. • Students read DOC or NIWA resources on coastal habitats. • Compare texts on different restoration strategies (e.g., dune planting vs. marine reserves). • Students write a scientific-style report including introduction, methods, results, and conclusion. • Develop a persuasive poster or letter to the local council about protecting estuaries. • Examine marine conservation campaigns for persuasive techniques. • Create multimodal texts (video, infographic) promoting coastal restoration.

The Importance of Marine Environments

The ocean covers more than two-thirds of earth's surface and helps to sustain life in ways that we take for granted. The ocean is essential for human survival, providing food, medicine and the oxygen we breath. It also acts as a powerful climate regulator, absorbing carbon, storing heat, and helping to slow the impacts of climate change.

Our coasts are equally vital. They are places of recreation, sources of energy, and natural shields against storms. Coastal ecosystems such as estuaries, mangroves, and coral reefs protect communities by reducing erosion and buffering waves. They are also home to diverse species and cultures that depend on healthy waters for food security and heritage.

Key ideas to remember:

- Oceans produce half of the oxygen we breathe and regulate climate.
- Coastal ecosystems like estuaries and reefs act as natural barriers against storms.
- Human survival, food security, and cultural heritage are tied to healthy oceans and coasts.

This kit and its activities will help you discover the wonders of marine and coastal environments, understand the challenges they face, and explore how we can protect them for future generations.

🌏 **ACTIVITY: Carbon Cycle Game**

From the Mountains to the Sea

Everything is connected, freshwater flows from the mountains through streams, rivers, wetlands, estuaries and into the ocean. Each stage is linked, and what happens upstream has a ripple effect downstream.

Human activities such as farming, urban development, deforestation, and pollution add stress to waterways. These impacts affect not only our freshwater systems but flow down to the ocean, affecting marine life and coastal ecosystems. Protecting our rivers and wetlands means we also protect our oceans.

In New Zealand, the connection is especially clear. Some freshwater fish, such as īnanga (one of the five whitebait species), or tuna (longfin and shortfin eel) migrate between rivers and the sea to complete their life cycles (they are diadromous). Their survival depends on healthy waterways from the mountains all the way to the ocean.

Key ideas to remember:

- Freshwater flows from mountains to the sea, linking every stage of the journey.
- Human impacts upstream can harm rivers, lakes, estuaries, and marine ecosystems.
- Migrating species like īnanga show how rivers and oceans are deeply connected.

ACTIVITY: Water's Journey

ACTIVITY: Enviroscapes or Waiora Stream Study

You can book one of our Enviroscapes sessions for a more interactive experience of land use around our waterways and Waiora Stream Study sessions to learn how to monitor freshwater health.

Enviroscapes© is a water catchment model that explores run-off (or non-point source) pollution, which contributes a great deal to the pollution in our waterways. This class-based resource has a range of activities which help students to identify the types of non-point source, or run off, pollution, coming from both urban and rural areas. Students can also discuss ways to mitigate the pollution to keep our waterways healthy. This activity is a great precursor to conducting a Waiora stream study. This is a session you will need to book with one of our educators and takes approximately one hour per class of up to 30 students at a time.

Waiora Stream Study investigates water quality issues, aquatic habitats and the impacts of land management. The programme is available as a facilitated session, or you can simply borrow the monitoring kit and carry out your own study at a stream/river of your choice.

Email education@horizons.govt.nz to enquire about these session, or to book a stream kit.

Coastal ecosystems

Coastal ecosystems are diverse and dynamic environments that play a vital role in protecting shorelines, supporting marine life, and connecting land to sea. You will find some of the different ecosystems below:

Sand Dunes

Sand dunes are formed by wind- blown sand that gets trapped by plants like pīngao and spinifex, which help to stabilise dunes and prevent erosion. There are two types of sand dunes.

- Foredunes – these are closest to the sea, shaped by the wind and waves, often with harsh conditions from storms and affected by tides. They are dynamic, so are constantly changing.
- Backdunes – located further back, they are more stable, often are covered in more vegetation and support coastal forests and provide important habitat for native species.

Sand dunes and their associated plants play a critical role in beach dynamics, particularly in the natural cycles of dune erosion and recovery that occur on beaches. Dunes can be restored to encourage natural processes, if there is sufficient space between the beach, buildings and roads.

During periods of prolonged settled weather, sand builds up on the beach and dunes. During major storms, waves erode the beach and dune, often leaving a near vertical dune face. Eroded sand is deposited offshore in the surf zone, where it forms shallow bars that help dissipate the high storm wave energy.

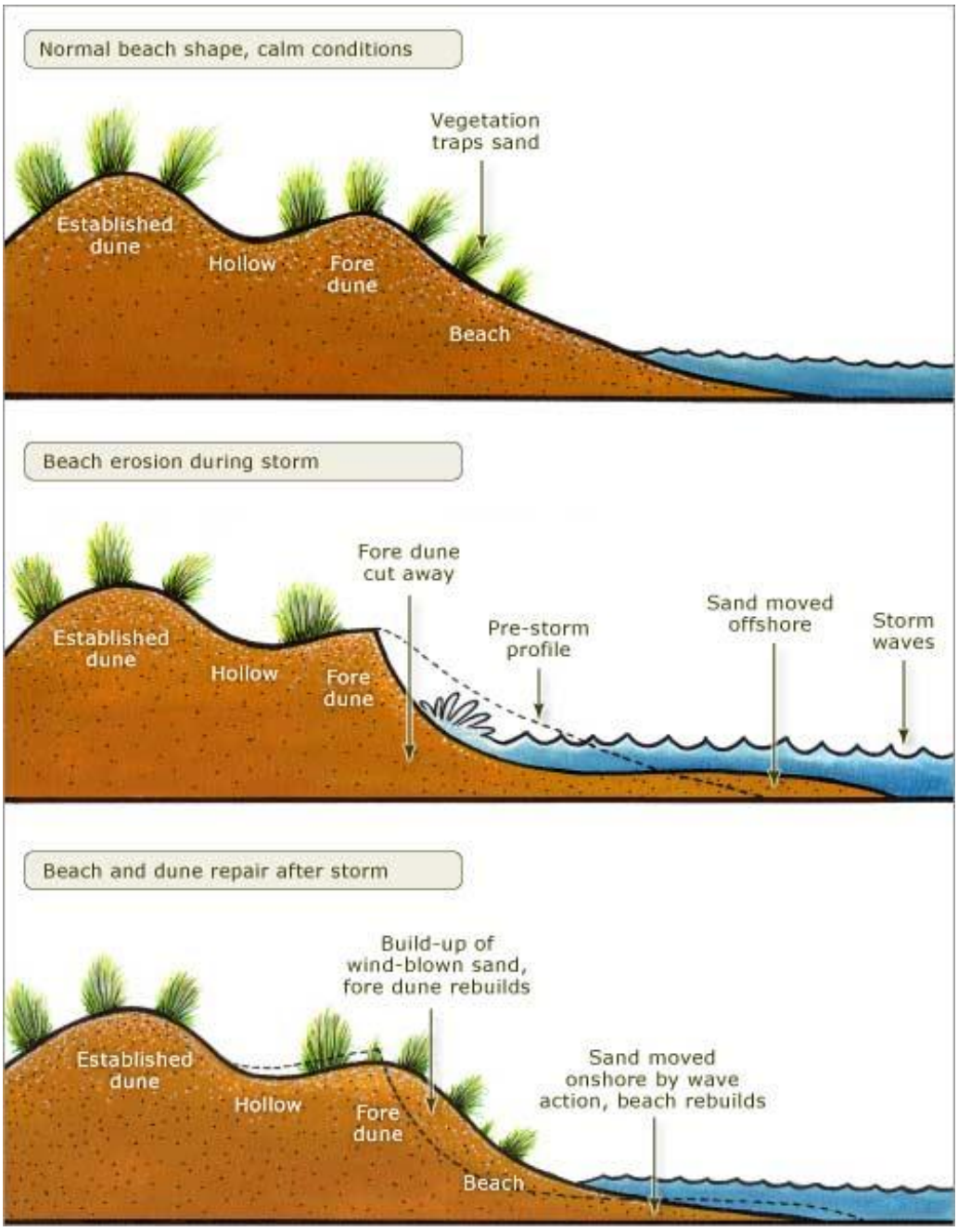
Significant dune erosion can occur in a few hours, but it can take years for the dune to fully recover. After the storm, gentler wave action moves sand back to the shore, slowly rebuilding the beach. See image below that shows fore-dune formation and erosion.

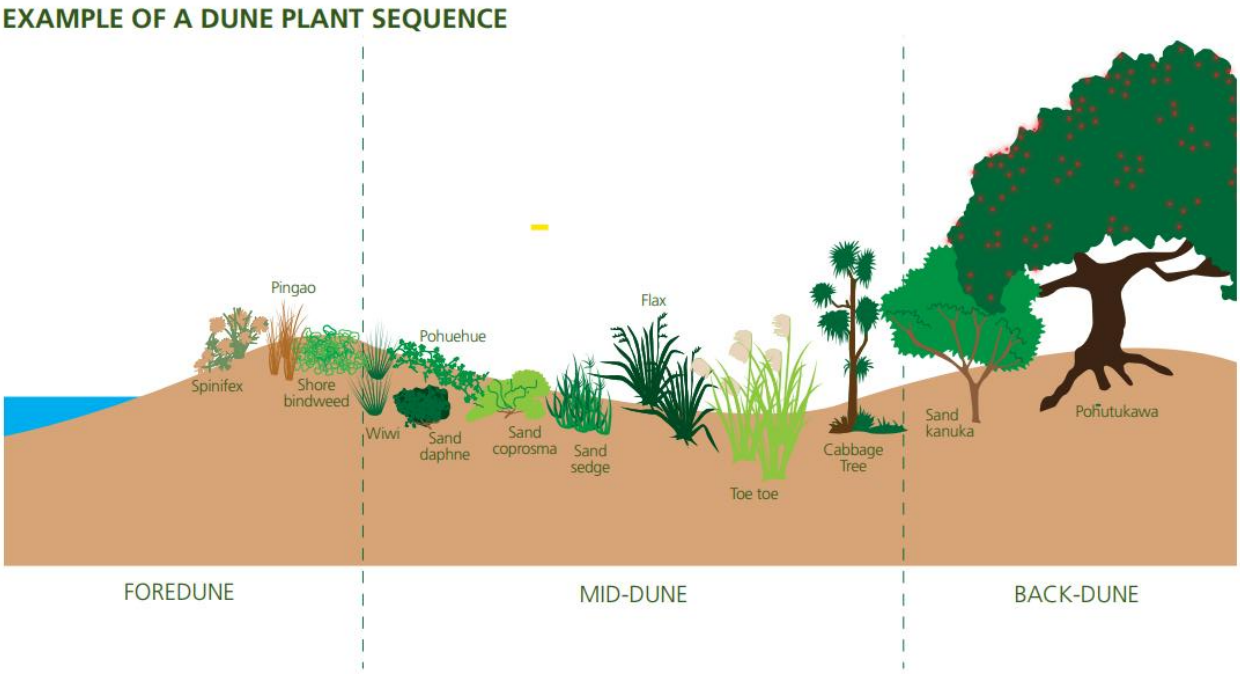
As the beach recovers, dry sand is blown landward and trapped by vegetation to repair the dune. Natural dune repair depends on a good cover of native sand-binding plants, such as spinifex and pīngao that help to stablise the dunes.

The foredunes are the harshest and most unstable part of the dune system and the native plants that grow there don’t appreciate any further pressures. These can be human induced including physical damage from vehicles driving over them or people constantly walking over them. If we protect them, they will protect us.

On coastal dunes you will often find driftwood. These are pieces of wood that have been washed up onto the beach by waves and tides. It creates a valuable habitat for many of our invertebrates who use it for shelter and food. They help to breakdown driftwood in the same way invertebrates do on the forest floor.

Diagram showing fore-dune formation and erosion





Estuaries & Wetlands

Wetlands are areas where land is saturated with water, either permanently or seasonally, and include swamps, lagoons, peat bogs, tidal flats and estuaries. They act like the kidneys of the environment, by filtering out water, storing carbon and helping with flood resilience.

Estuaries are a specific type of wetland where the river meets the sea. Water here is called brackish water, a mix of both freshwater and salt water, they are rich in nutrients and biodiversity.

- Estuaries are crucial habitats for shorebirds like the bar-tailed godwit /kuaka.
- They're also vital for the lifecycle of our whitebait species such as īnanga, and for tuna / eels which spawn and migrate between freshwater and saltwater.

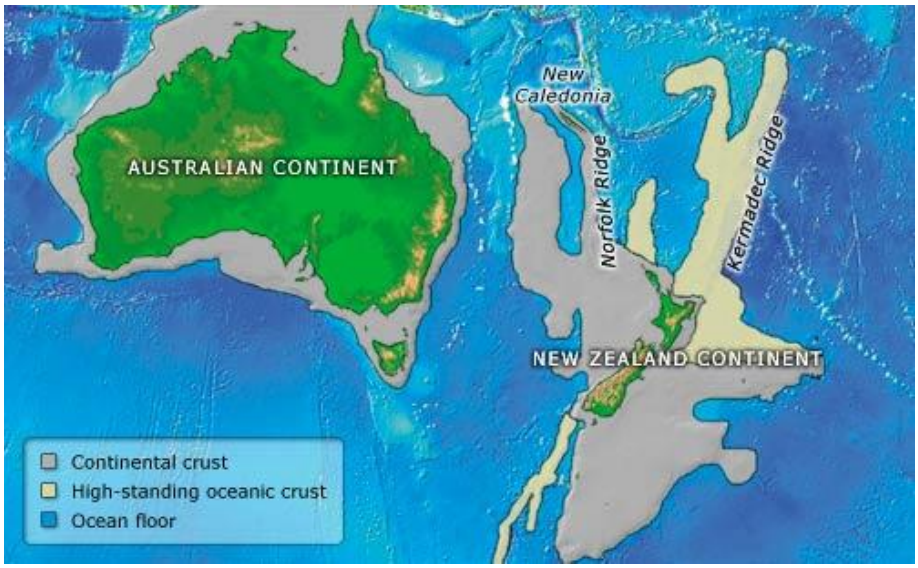
In New Zealand we have seven very special areas called RAMSAR sites. A Ramsar site are wetlands designated under the Ramsar Convention (1971), and they are internationally recongised for their unique biodiversity and ecological importance.

We have one RAMSAR site in the Horizons Region, The Manawatū Estuary which is located at Foxton Beach. Over 90 species of birds have been recorded here including the bar-tailed godwits and red knots that travel from Alaska and Siberia.

You can find out more about RAMSAR sites here https://www.ramsar.org/our-work/wetlands-international-importance/ramsar-list and on the Manawatū Estuary which is a RAMSAR site here https://www.metrust.org.nz/

Continental shelf

As we move from coastal environments into the ocean we start with the continental shelf. The continental shelf is the gently sloping underwater land that extends from the coast to the deeper ocean and includes several important ecosystems including rocky shores and coral reefs. New Zealand's continental shelf is unusually large compared to most countries. Instead of a narrow strip of shallow sea, it extends across vast areas of submerged land known as Zealandia, giving Aotearoa one of the world's largest continental shelf regions. This large shelf supports a rich marine ecosystem with a wide range of biodiversity. It is important economically for mineral extraction, fisheries for NZ.



New Zealand's continental shelf

Rocky Shores

Rocky shores are exposed coastlines made of solid rock. They contain intertidal zones, which are areas between high and low tide.

- These zones support a wide range of biodiversity.
- They provide firm surfaces for plants such as seaweeds to attach, and crevices for animals to hide.

- Common species found on rocky shores include anemones, sponges, crabs, worms, starfish, bivalves, and molluscs.

They are fun to explore due to the range of biodiversity found here. We unfortunately don't have any significant rocky shores in our region, with our coastlines mostly consisting of sandy beaches.
You can see shallow rock pools at Herbertville Beach in Tararua, otherwise the closest option for exploring rock pools would be Wellington, Taranaki or down the west coast of the North Island.

Coral Reefs

Although they cover only a small part of the ocean, coral reefs support nearly 25% of all marine life. New Zealand doesn't have any traditional warm-water tropical coral reefs.

- They act as natural barriers, helping to protect coastlines from erosion.
- Coral reefs are biodiversity hotspots and essential for healthy marine ecosystems.

RESOURCE: Sandy Muddy Guide

RESOURCE: Coastal Planting Guide

ACTIVITY: Meet the dunes

ACTIVITY: Beach Diagram - Label a dune ecosystem

ACTIVITY: Mudflat mysteries activity

ACTIVITY: Driftwood ecology and native dune critters

ACTIVITY: Habitats worksheet

ACTIVITY: Big fish, little fish - survival in an estuary

ACTIVITY: Make some beach art (no instructions provided)

ACTIVITY: Draw and identify dune plants

ACTIVITY: Marine meter squared activity

ACTIVITY: Estuaries experiment (equipment not provided)

Layers of the ocean

Oceanic zones divide the ocean into layers based on depth, light and habitat. They are each important as they support unique ecosystems with different species that provide resources to life on earth by regulating climate through storing carbon and absorbing heat, supporting our food resources, uses for medicine and produces oxygen and recycling nutrients that keep the earth systems balanced and thriving. Without a thriving ocean life on earth will be affected.

There are five zones in what is called the pelagic zone – this essentially is all the water in the ocean which is not touching either the coast or the seabed, see image below.

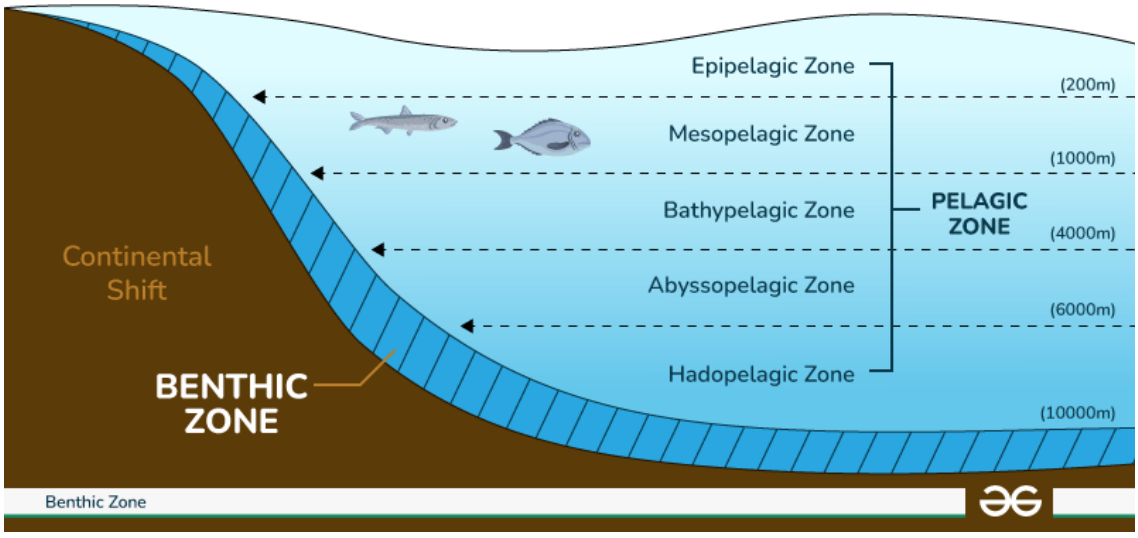


Image showing all the ocean layers

Benthic zone (seafloor)

This is the sea floor, the ocean floor of every ocean layer. It is the lowest part of the ocean at that point. It is home to bacteria, sea stars, urchins which play a significant role in nutrient cycling.

Epipelagic Zone (the Sunlight Zone where the depth ranges from 0–200m)

- This is called the "top floor" as it's bright and warm because sunlight reaches here, and wind can mix the water
- Most ocean life lives in this zone such as fish, dolphins, whales, plankton.
- Plants, such as seaweeds and big kelp grow here because they need sunlight, and this layer allows for photosynthesis to occur

Mesopelagic Zone (the Twilight Zone where the depth ranges from 200–1,000 m)

- The middle layer, it is more dimly lit but there is not enough sunlight for plants to photosynthesise.
- Many animals glow with bioluminescence (built-in flashlights) or have larger eyes like squid and octopus.
- Squid, lanternfish, and other strange creatures live here.
- It is much colder in this zone.

Bathypelagic Zone (Midnight Zone where the depths range from 1,000–4,000m)

- The "dark floor" where no sunlight reaches at all. It is pitch black. No plants live down here as they cannot photosynthesise.
- It is very freezing cold, and the water pressure is very high.
- Giant squid and anglerfish survive here and are specially adapted to live in this harsh environment. They have a slow metabolic rate to conserve energy and often are flat in shape and have thick skin to survive here.
- Animals which live in this zone rely on organic nutrients called *marine snow* which fall from the layers above.

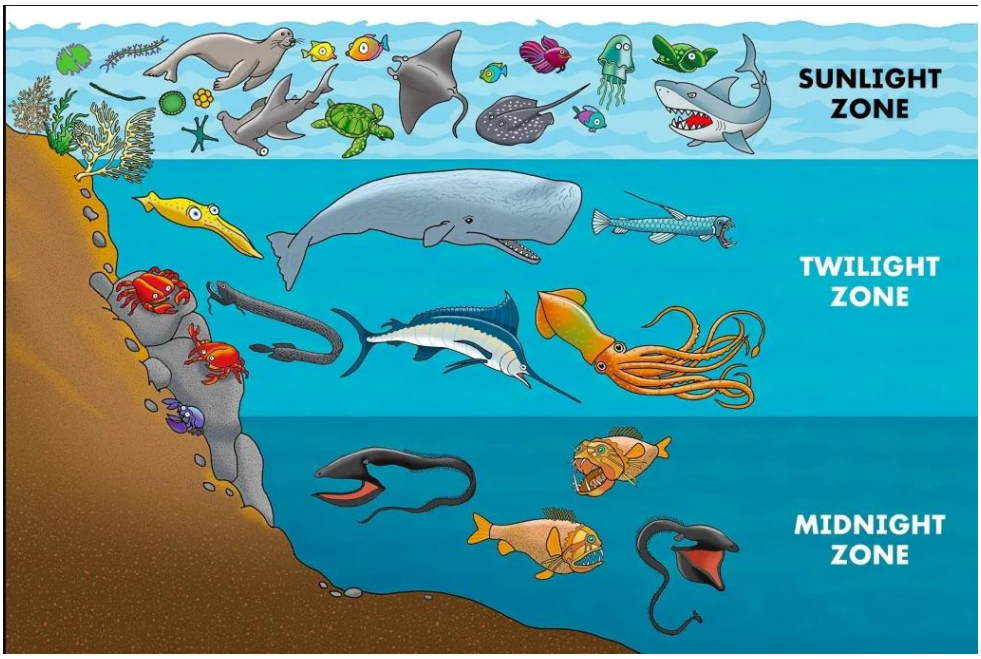
Abyssopelagic Zone (The Abyss where the depths range from 4,000–6,000m)

- The "deep floor."

- Almost no life lives here except tough creatures like sea cucumbers and brittle stars. They are often transparent, have bioluminescence, or have elongated shapes.
- The water pressure is crushing, the temperature near freezing.

Hadalpelagic Zone (Trenches where the depths range from 6,000–11,000m)

- The “bottom or basement.”
- Found in deep ocean trenches – The Kermadec Trench is an example of this, found in the southwest Pacific Ocean, it is one of the world’s deepest trenches
- Few species survive here, but those that do are specially adapted and rely on chemosynthesis, using chemical energy from the seafloor to produce food instead of photosynthesis.
- Freezing temperatures



Marine biodiversity and habitats

As we can see above, the ocean is a vast area covering nearly two thirds of the earth's surface. It is more than simply the ocean; there are many layers to it. There are literally millions of different species that call the ocean and coastline home, and there is likely many more undiscovered species we are not aware of yet. They all rely on each other for something and are all interconnected. Below are some different categories of animals that live in the ocean and on the coast.

Marine mammals

- *Whales* (such as the blue and humpback whales) are the largest animals on earth and migrate long distances.
- *Dolphins and porpoises* - we have eight species of dolphins and porpoises found commonly around New Zealand. The Māui is the smallest dolphin in world and only found on the west coast of the North Island. The Hector's dolphin is also one of the smallest in the world and is found around the coastlines of the South Island.
- *Seals and sea lions* live partly on land and are excellent swimmers. We can find these in our region often spotted at Cape Turnagain near Herbertville on the east coast, and at Foxton beach on the west coast.

Fish

- *Sharks* are the apex predators of the sea and are vital for balancing marine food webs.
- *Rays and skates* are flat-bodied fish that glide along the seabed and typically hunt for small animals buried in the sand.
- *Bony Fish* such tuna, clownfish, angelfish, which have a spine made of bone (as opposed to sharks, rays and skate which have a skeleton made of cartilage – they are called the cartilaginous fish) are a diverse group found in reefs, open ocean, and deep sea.
- Deep-Sea Fish (lanternfish, anglerfish) are adapted to darkness, often bioluminescent.

Migratory fish

Some of our freshwater fish migrate from our waterways to the ocean and back again. These creatures are called diadromous and include longfin and shortfin eels (tuna), kōkopu, īnanga, kōaro, lampreys, torrentfish and some of the bully species. We also have those that are not migratory including the mudfish, dwarf galaxiids and some of the bully species.

Native Whitebait Species

Whitebait in New Zealand are the juvenile forms of five native freshwater fish species, īnanga, kōaro, banded kōkopu, shortjaw kōkopu, and giant kōkopu. They are diadromous which means they migrate between rivers and the sea in order to complete their life cycle.

- Inanga - are the most common whitebait species. Found in lowland rivers and streams, they spawn in tidal zones.
- Kōaro - are strong climbers, often living in fast-flowing mountain streams. These are the ones most likely to be climbing up the sides of white baiter's buckets.
- Banded kōkopu - adults have distinctive vertical bands along their bodies, they prefer shaded forest streams.
- Shortjaw kōkopu - are rare and as the name implies has an undercut jaw, with the lower jaw being shorter than the upper jaw. They are found in boulder-filled streams.
- Giant kokopu - is the largest of the whitebait species and can grow over 40 cm. They live in slow-moving streams and wetlands.

You will find all the whitebait species throughout our region. There are large spawning sites for īnanga on the Manawatū River at Whirokino, near Foxton and on the Whanganui River. Kōkopu species and found in the headwaters of the Mangatainoka, Whanganui and Manganui o te Ao. The shortjaw kōkopu and kōaro are mostly found further upstream in zones that have good riparian planting which are ideal for spawning.

All our whitebait species are declining and nationally vulnerable. This means they have the same classification status to kiwi and whio. Unfortunately, none of our native fish are protected under the Wildlife Act 1953 unlike their feathered friends.

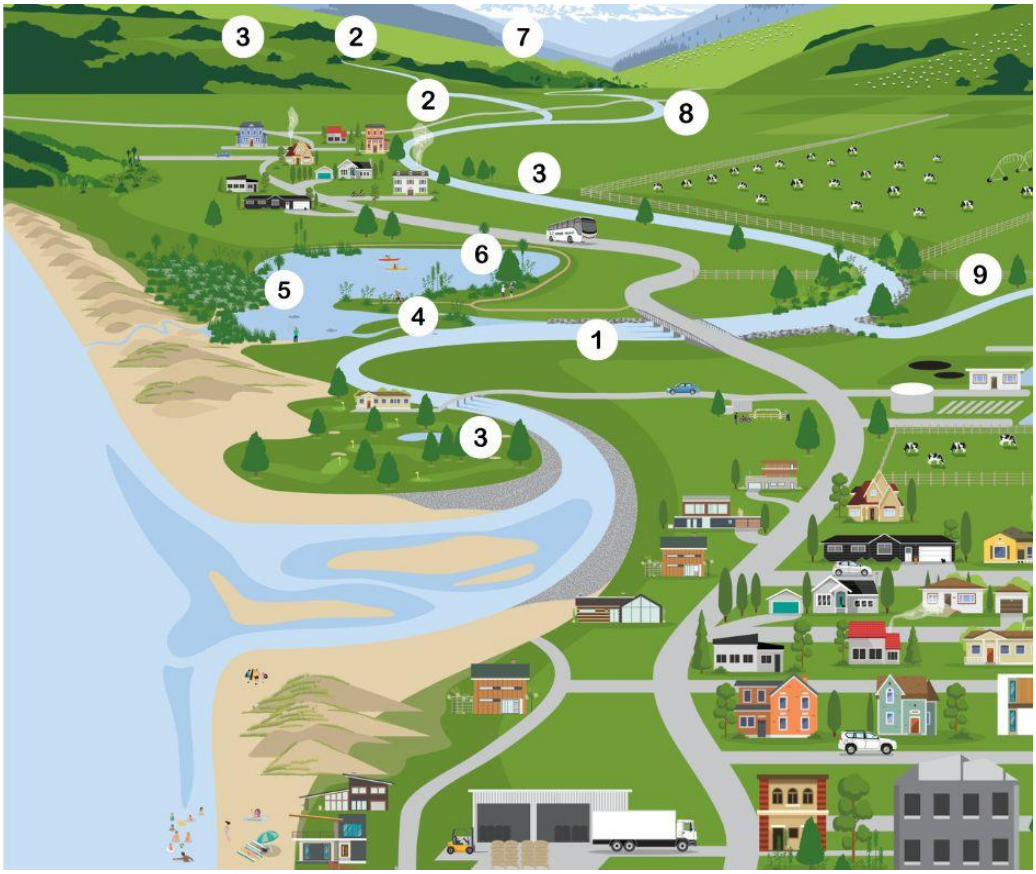
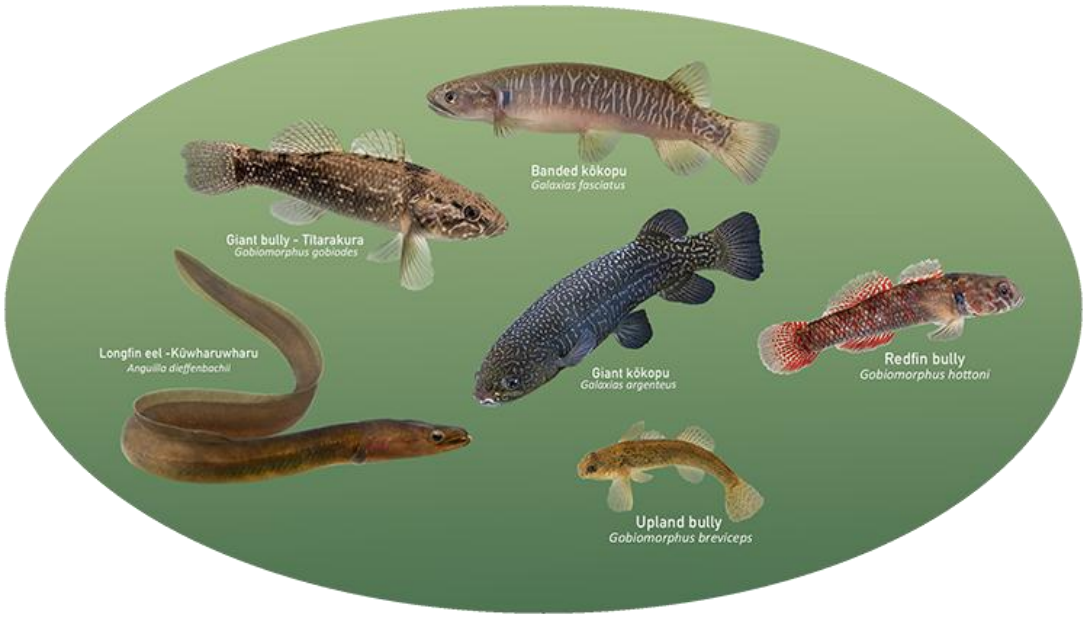


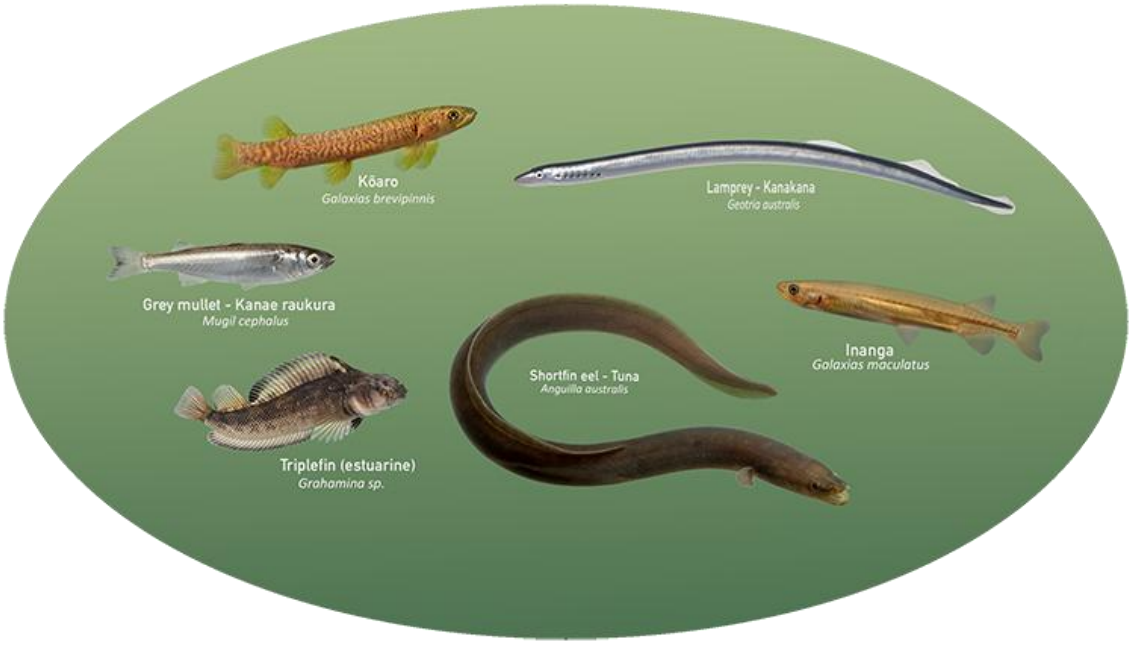
Diagram showing where native fish are found within a catchment

1. Inanga
2. Shortjaw kōkopu and kōaro
3. Eels, tuna
4. Banded and giant kōkopu
5. Brown mudfish
6. Bullies
7. Dwarf galaxiids
8. Torrentfish
9. Lamprey

Endemic freshwater fish of NZ – Only found in New Zealand



Native freshwater fish of NZ – Naturally found in New Zealand but also found elsewhere around the world



Marine Reptiles

- *Sea Turtles* - ancient reptiles, migrate thousands of kilometres, threatened by plastic pollution- the leatherback and green turtles are the commonly found around New Zealand.
- *Sea Snakes* are venomous but shy and live in warm tropical waters. But they can wash up on our beaches when they are sick. We have had three a yellow-bellied sea snakes washed up on the west coast of our region since 2021. If you come across one do not touch it and contact DOC.

Invertebrates

- *Crustaceans* (crabs, lobsters, shrimp) are scavengers and important food sources for many other animals.
- *Molluscs* (octopus, squid, clams, snails) are intelligent hunters and filter feeders. You often find their shells washed up on the beach, see image below.
- *Cnidarians* (jellyfish, corals, sea anemones) have stinging tentacles which they use to catch food floating by. You often see blue bottle jelly fish along the west coast of the region including Foxton, Himitangi and Waitārere beach.
- *Echinoderms* (sea stars, sea cucumbers, urchins) are very cool and can regenerate body parts which can be lost through predation. They recycle nutrients in the marine ecosystem.

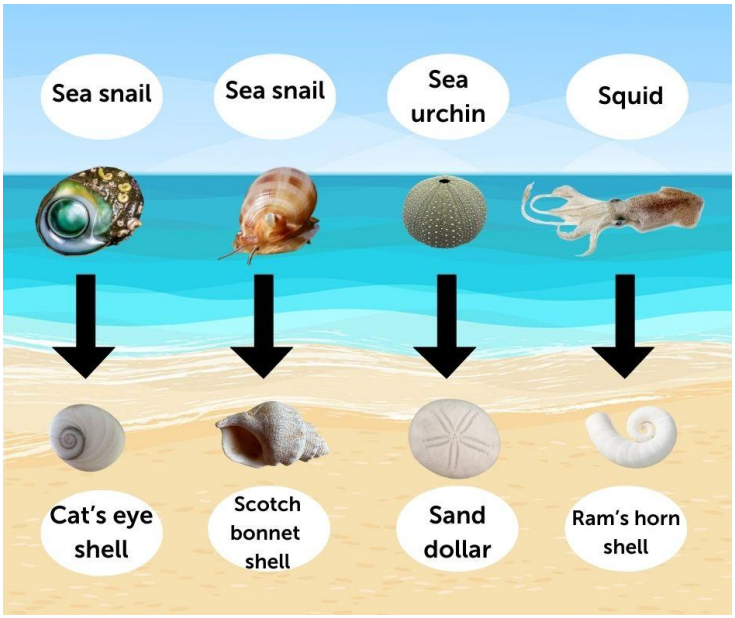


Image showing shells and what invertebrates they come from

Microscopic Life

- *Phytoplankton* are tiny plants that produce oxygen and form the base of the marine (or freshwater) food chain.
- *Zooplankton* are small drifting animals that feed on phytoplankton.
- *Larvae* of many of the sea creatures drift around in the ocean currents before growing into adults.

Birds

- *Seagulls, terns, oystercatchers, and migratory shorebirds* nest and feed along beaches and estuaries, this includes the seven Ramsar sites which are wetlands and estuaries of significance for bird life.

Algae and Seaweed

- Include microscopic phytoplankton and larger forms like seaweed.
- Phytoplankton produce about 50% of Earth's oxygen.
- Seaweeds (brown, red, green algae) form habitats and food sources for countless species. Seaweed is like a forest under water, they absorb excess carbon and nutrients, provide habitat and food and benefit everyone.
- Check out https://www.sciencelearn.org.nz/image_maps/118-love-rimurimu-planning-pathways for an amazing range of learning resources around seaweed

Seagrasses

- True flowering plants that grow in shallow coastal waters.
- Form underwater meadows that shelter various species
- Help stabilise sediments and prevent erosion.

Kelp Forests

- Large brown algae that grow in cool, nutrient-rich waters.
- Create towering underwater forests that support diverse ecosystems.
- Provide food, shelter, and nursery grounds for fish and invertebrates.
- The closest kelp forest to our region is in Wellington at Taputeranga Marine Reserve.

Mangroves

- Coastal trees and shrubs with roots adapted to salty water.
- Protect shorelines from erosion and storm surges.
- Act as nurseries for fish and crustaceans.
- We don't have any mangroves in our region.

Coral

- Tiny animals that build reefs but rely on symbiotic algae for energy.
- Most of the 300 species found in New Zealand waters are protected under the Wildlife Act

RESOURCE: Shore guide

RESOURCE: Take a virtual field trip

RESOURCE: Seaweed ID Sheet

RESOURCE: Investigating seashells

ACTIVITY: Coastal Bingo

ACTIVITY: Yoshi Challenge (instructions only - equipment not provided)

ACTIVITY: Beautiful beaks – shore birds

ACTIVITY: Eastern Bar-tailed Godwit adaption and survival card game

Marine food web

Food webs show how energy and nutrients move through an ecosystem. The ocean is complex, where every organism interconnects with another like a giant net. Every knot of the net is a species and the string that ties them together is a feeding relationship. If one of the knots breaks the net weakens. If more than one knot breaks, it creates a small hole that grows, and the net is no longer as strong as it was.

The Base: Producers

- Phytoplankton and seaweed use sunlight to make food through photosynthesis.
- They are the primary producers, the foundation of the ocean food web.

Primary Consumers

- Small animals like zooplankton (tiny drifting creatures), krill, and small fish eat phytoplankton.
- These are the herbivores of the ocean.

Secondary Consumers

- Larger fish, squid, and jellyfish eat the smaller fish and zooplankton.
- They are carnivores that sit in the middle of the web.

Top Predators

- Sharks, dolphins, seals, and whales are at the top of the food web.
- They have few or no natural predators.

Decomposers

- Bacteria and fungi break down dead plants and animals.
- They recycle nutrients back into the water, feeding phytoplankton again.

If you have less producers, you will have less consumers and there is less food available for secondary consumers and top predators, cause a decline of biodiversity in the ocean.

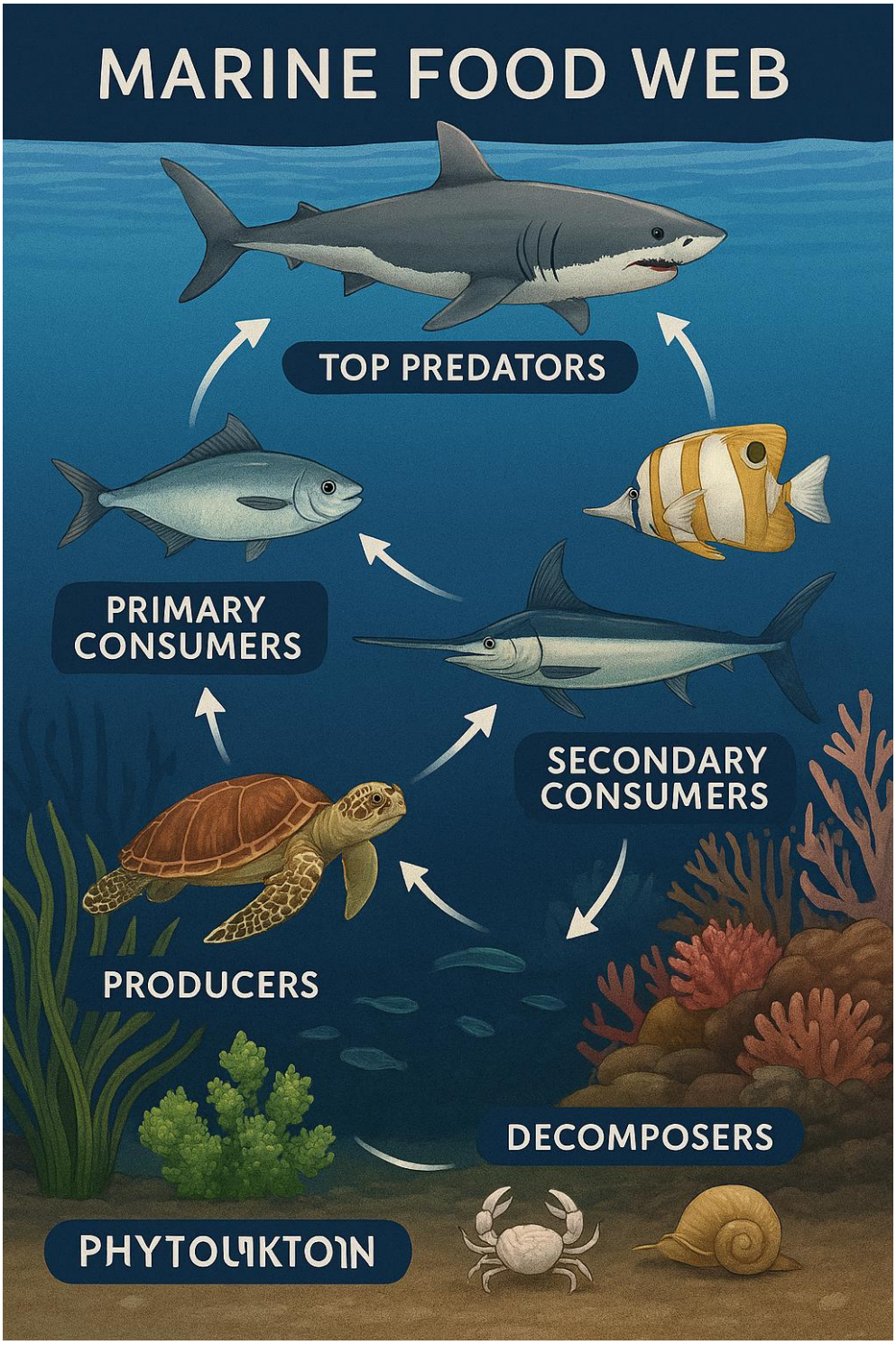


Image showing the food web of the ocean

- **ACTIVITY: Snapper Kina Game**
- **ACTIVITY: Kina Story**
- **ACTIVITY: Food Web Game**

Threats to the ocean and coastlines

Pollution

- Around 80% of marine pollution comes from land-based activities.
- Plastics, oil spills, sewage, and farm runoff poison marine life and disrupt ecosystems.
- Microplastics are now found in fish, seabirds, and even human food chains.

Overfishing

- Fish stocks are being harvested faster than they can recover.
- This undermines food security and destabilises marine food webs.

Climate Change and Ocean Impacts

- Oceans absorb most of Earth's excess heat and carbon dioxide (CO_2), causing warming and acidification. Ocean acidification is the process where increased carbon dioxide from the atmosphere dissolves into the ocean, forming carbonic acid. This makes the water more acidic which lowers the pH of the water.
- Warmer waters stress marine animals, bleach coral reefs, and reduce oxygen, creating "dead zones."
- Acidic water makes it harder for shell-building creatures like clams, oysters, and corals to build their skeletons to survive.
- Changing currents disrupt weather patterns and nutrient flows vital to marine ecosystems.

Loss of Biodiversity

- About 22% of marine mammals and 90% of seabirds face extinction risk.
- Habitat destruction (reefs, mangroves, seagrass beds) reduces breeding and feeding grounds.

Rising Seas and Coastal Impacts

- Melting ice and expanding warm water raise sea levels, eroding beaches and flooding low-lying areas.
- Stronger storm surges damage homes, roads, and schools near the shore.
- Wetlands and mangroves are drowned, removing natural buffers against flooding.
- Around 680 million people in coastal zones risk displacement and economic loss.

Extreme Weather

- Climate change fuels stronger storms that batter coastlines, destroying communities and ecosystems.

Coastal Development

- Building cities, ports, and resorts damages wetlands and mangroves that protect against erosion and flooding.

Oil and Gas Expansion

- Offshore drilling and fossil fuel projects threaten marine ecosystems and add to climate risks.

Marine Reserves

Marine reserves in New Zealand are fully protected “no-take” areas where marine life and habitats are safeguarded from human extraction, allowing ecosystems to thrive and regenerate. They are the ocean equivalent of national parks, designed for conservation, education, and enjoyment.

We currently have 44 marine reserves in New Zealand, ranging from small coastal areas to large offshore island reserves, but it is less than 1% of our coastline and oceans and most of these reserves are found around offshore islands like the Kermadec Islands and Subantarctic Islands. The closest marine reserves to our region are Kāpiti Island, Te Angiangi Marine Reserve in Hawkes Bay and Taputeranga Marine Reserve in Wellington.

While having a marine reserve is a great start, marine mammals don’t stay in one place, and because our marine reserves are not connected this can leave some of our endangered species vulnerable.

Marine Reserves have clear boundary markers that can be found on land and sea to identify when you are located within the reserve.

The rules for Marine Reserves in New Zealand are:

- No fishing of any kind.
- Don't take or kill marine life.
- Don't remove or disturb any marine life or materials.
- Don't feed fish - it disturbs their natural behaviour.
- Take care when anchoring to avoid damaging the sea floor.

You are permitted to swim, snorkel, dive, kayak and boat providing marine life isn’t disturbed in the process, which means engaging with marine mammals that come across your path while in the ocean.

ACTIVITY: What Marine Protection do we have in NZ

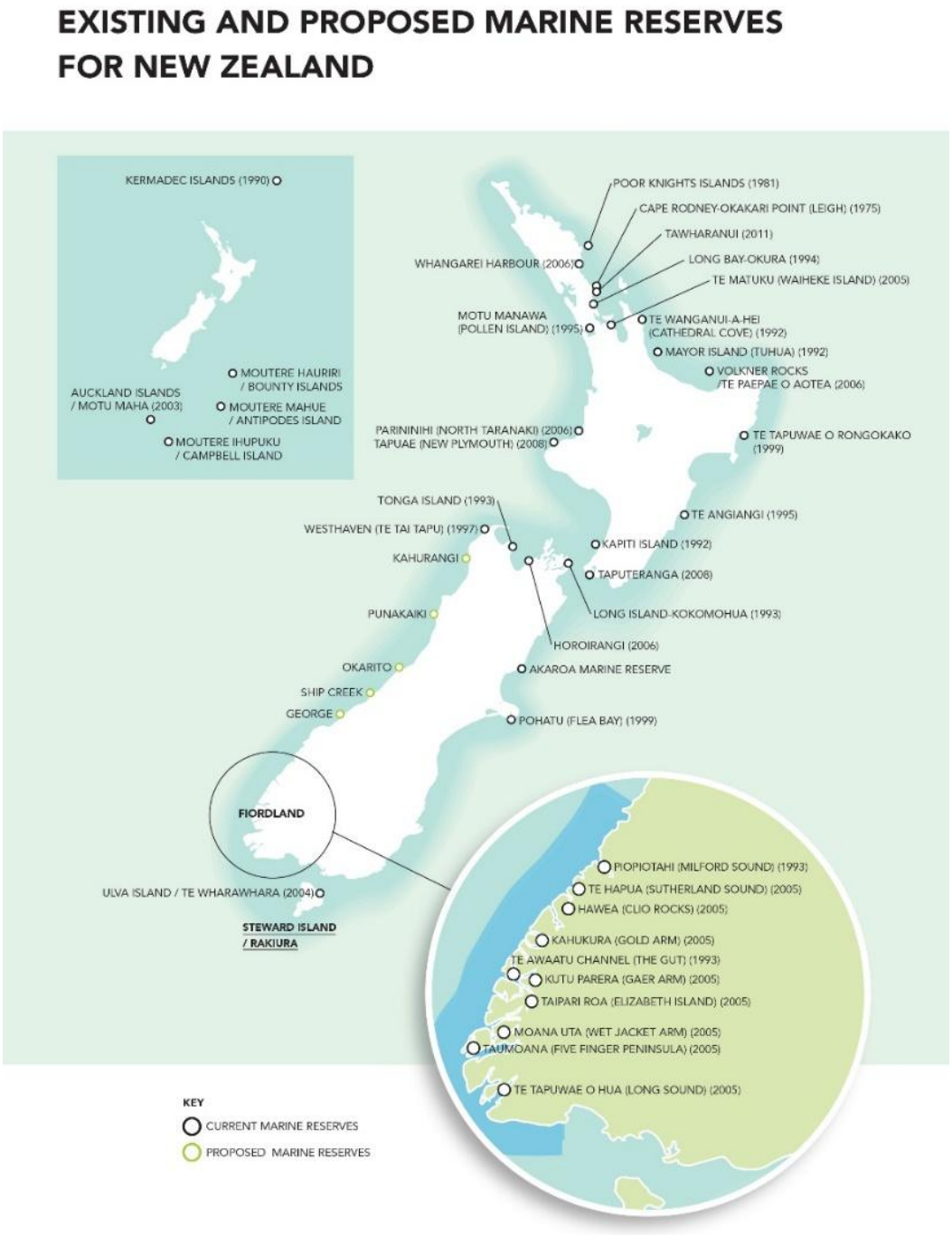


Image showing existing and proposed Marine Reserves in New Zealand

How to take action

Restore and Protect Habitats

- Join dune planting days or local beach working bees.
- Take part in “Adopt a Beach” programmes to care for a stretch of coastline.
- Learn about marine reserves in New Zealand and why they are vital for protecting biodiversity.

Reduce Pollution

- Participate in a beach clean-up or commit your school to the Litter Intelligence Programme (completing four surveys per year) – We hold the Litter Intelligence kit for the region that you can borrow.
- Practice the 5 Rs of Waste Management: Refuse, Reduce, Reuse, Recycle, Repurpose, with a focus on reducing single-use plastics.
- Help reduce stormwater pollution by promoting awareness with stormwater drain stamps.

🌏 ACTIVITY: Commit to Litter Intelligence Programme

Learn and Share Knowledge

- Discover native marine species and identify pest plants or animals to watch out for.
- Advocate for the ocean by sharing what you learn with classmates, family, and your community.
- Explore sustainable seafood choices to support healthy oceans.

Get Involved in Science

- Try Citizen Science projects like the *Marine Metre Squared* survey or monitoring freshwater quality.
- Join in Seaweek activities to celebrate and learn more about the marine environment.
- Start or join an enviro group at school to lead conservation projects.