

Appendices



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VISITING WHANGAREI HARBOUR MARINE RESERVE

NOTES FOR SCHOOLS AND EDUCATORS



Key information



Whangarei Harbour Marine Reserve comprises two sites on the east coast of Northland, established in 2006.

There are two main habitats in this marine reserve: the mangroves and mudflats at Waikaraka (about 8 km from Whangarei), and the sandy beach, rocky reef and deeper channel of Motukaroro/Passage Island at the mouth of Whangarei Harbour (about 30 km from Whangarei).

These two areas combined protect an area of 253.7 hectares of shore and sea.

For more information and a map of this reserve, see: www.doc.govt.nz/whangarei-harbour.

Visitor facilities and parking

Motukaroro and Reotahi

Access to the marine reserve at Motukaroro is from Reotahi Bay at the end of Beach Road in the Whangarei Heads. Rest rooms are available at the car park.

No drinking water is available, so please bring your own refreshments.

Signs explaining what you may see at this reserve are at both sites.

Waikaraka



Access to Waikaraka is from Whangarei Heads Road. There is a large grass area here, suitable for picnics and a car park near 350 Whangarei Heads Road. No drinking water is available here, so please bring your own refreshments.

See the Whangarei Harbour marine reserve brochure for a map of parking locations (pages 3-4): www.doc.govt.nz/whangarei-mr-brochure.




Suggested self-guided activities for school groups


Biodiversity survey

The Marine Metre Squared Project (Mm2) is an easy quadrat survey for investigating what is living in your marine reserve. See  www.mm2.net.nz for resources. Rocky shore surveys or sandy shore surveys can be carried out approximately 2 hours either side of low tide. For more information, see  *Activity 8: Visiting Marine Reserves*.

Note: when conducting a Mm2 survey, it is important to keep disturbance of sand and animals to a minimum and put them back where you found them.


Litter survey

Try a litter survey on the beach. See page 9 of the DOC *Habitat Heroes: Explore your local marine environment* resource for instructions:  www.doc.govt.nz/habitat-heroes-marine-resource.

Survey sheets and guidance for beach clean-ups and litter audits is available at:  www.loveyourcoast.org.nz/learn (Love Your Coast/Sustainable Coastlines).

Health and Safety considerations

- Be aware that the waters around Motukaroro/Passage Island have strong tidal currents and back eddies. Experience and local knowledge is recommended for a safe and enjoyable swim or snorkel.
- The oyster-covered rocks can cause injury if students are not wearing suitable footwear.
- Seals are present in the cooler months – keep at least 20 metres away.

Teachers should also consider general risk management around water. See also general health and safety considerations for schools in marine environments:  *Activity 8: Visiting Marine Reserves*.


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Habitats and species in the reserve

The Waikaraka site of the marine reserve is almost entirely mangrove forest with intertidal mud flats and a subtidal channel edge. The mangroves provide important habitat for juvenile fish, shellfish, crabs and a wide variety of birdlife. Snapper, trevally, kahawai and mackerel can be seen during different parts of their life cycle near the mangroves. For more information, see:  www.doc.govt.nz/waikaraka-poster.



The shallow reefs between Reotahi and Little Munroe Bay host many species, including triplefin fish and nudibranchs.

On the southern side of Motukaroro Island, the water is deeper (up to 30 metres) in the channel of the Whangarei Harbour. Here you can see a variety of fish (such as trevally and kingfish), sponges and anemones. For more information about the types of fish and other animals you may see in this reserve, see:  www.doc.govt.nz/motukaroro-mr-poster.

See also:  www.doc.govt.nz/whangarei-harbour.



Snorkelling providers in the area

Experiencing Marine Reserves is an organisation that specialises in safe snorkelling experiences for school groups in marine reserves and at other sites. They provide all the gear and expertise. For more information see:  www.emr.org.nz, email: info@emr.org.nz and view  www.facebook.com/emr.mtsct.

PROTECT OUR MARINE RESERVES

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- 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
- Call **0800 DOC HOT** (0800 362 468) to report any illegal activity.



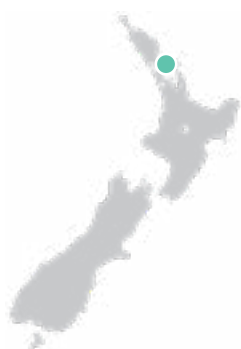
VISITING CAPE RODNEY-OKAKARI POINT MARINE RESERVE (GOAT ISLAND)

NOTES FOR SCHOOLS AND EDUCATORS



Snorkellers at Goat Island. Photo: © Brian MacKie

Key information



Cape Rodney-Okakari Point, known as Goat Island, was New Zealand's first marine reserve. This marine reserve is a popular location for snorkelling and recreation in North Auckland. There are opportunities to see abundant biodiversity here, due to long-term protection.

From February to April, the beach at the marine reserve can be crowded. During Term 1, it is suggested that non-marine education activities such as kayaking, raft-building and beach sports be experienced at alternative large, less crowded beaches in the area, e.g. Te Kohuroa/Mathesons Bay or Omaha.

For more information and a map of this reserve, see:  www.doc.govt.nz/goatland.

Tāwharanui Marine Reserve is also in north Auckland. For more information about what you can do in this reserve, see:  www.doc.govt.nz/tawharanui-marine-reserve.



Visitor facilities and parking

Toilets, changing rooms and information displays are near the main car park. Drinking water and other refreshments are not available in the reserve. The Leigh township is close by and has accommodation and several shops for supplies.

Car parking is limited, especially during peak holiday periods.



- Public vehicle access is not permitted over the bridge on to Auckland University land or private land.
- There is a 5 min loading zone near the beach to drop off and pick up gear only. There is strictly no parking in this zone.
- Larger vehicles, including campervans and buses, should park in the lower car park. Avoid the sharp turn by accessing it from the main car park (see map on website).
- Goat Island Road is not suitable for very large buses.
- No overnight parking is permitted in any of the car parks.

Do not litter: place your rubbish in the bins provided in the toilet block.

See the Cape Rodney-Okakari Point Marine Reserve brochure for more information about car parking and facilities:  www.doc.govt.nz/goatisland.

Suggested self-guided activities for school groups



Biodiversity survey

The Marine Metre Squared Project (Mm2) is an easy quadrat survey for investigating what is living in your marine reserve. See  www.mm2.net.nz for resources. Rocky shore surveys or sandy shore surveys can be carried out approximately 2 hours either side of low tide. For more information, see  *Activity 8: Visiting Marine Reserves*.


Note: when conducting a Mm2 survey, it is important to keep disturbance of sand and animals to a minimum and put them back where you found them.

Litter survey

Conduct a litter survey on the beach to investigate human impacts on this marine reserve. You'll be cleaning it up as you go!

See page 9 of the DOC Habitat Heroes: Explore your local marine environment resource for instructions:  www.doc.govt.nz/habitat-heroes-marine-resource.pdf. Survey sheets and guidance for beach clean-ups and litter audits are available at  www.loveyourcoast.org.nz/learn (Love Your Coast/Sustainable Coastlines).

Short walks

- **Goat Island Walkway (approx. 2 hr return):**  www.doc.govt.nz/goat-island-walkway.
- **Pink Beach Walk (30 min one way):** At low tide it is possible to walk along the beaches and rocks, showing a variety of rock structures and habitats, towards Pakiri. Pink Beach was named because of the dominance of pink shell grit present.



Health and safety considerations

- The marine reserve is unsuitable for in-the-water activities during east or north-east winds of 20 knots or more, and east or north-east swells of more than a metre.
- Cellphone coverage can be inconsistent. In an emergency the operator may dispatch Leigh First Response. The nearest ambulance station is in Warkworth: almost 30 minutes away.
- Teachers should also consider general risk management around water and rock shelves. See also general health and safety considerations for schools in marine environments: 📞 *Activity 8: Visiting Marine Reserves*.

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Habitats and species in the reserve

There are accessible rocky shores exposed at low tide, and deeper reefs, underwater cliffs, canyons and sand flats at Cape Rodney-Okakari Point. The sandy shore provides a great place to rest, investigate or eat.

Snapper/tāmure and crayfish/lobster/kōura numbers are far greater in the protected waters of the reserve than anywhere on the surrounding coast. Other species of fish like butterfish, blue maomao, silver drummer, blue cod/pākirikiri, red moki/ngutere, and black bream/parore are often seen by snorkellers in the shallow water not far off the beach.

Education providers working here

Goat Island Marine Discovery Centre: 📞 www.goatlandmarine.co.nz.

This interactive, informative education centre is a 5-minute walk from the car park or beach. The discovery centre is part of the University of Auckland's Leigh Marine Laboratory. For school bookings, see: 📞 www.goatlandmarine.co.nz/groups-tours/#schoolgroups.

Snorkelling providers in the area


- **Experiencing Marine Reserves** is an organisation that specialises in safe snorkelling experiences for school groups in marine reserves and at other sites. They provide all the gear and expertise. For more information see: 📞 www.emr.org.nz, email: info@emr.org.nz and view 📞 www.facebook.com/emr.mtsct.
- **Saltwater Eco:** 📞 www.saltwatereco.co.nz.
- See also: 📞 www.leighbythesea.co.nz/things-to-do-in-leigh/experience-goat-island.



Other education experiences

Other education experiences


A glass-bottom boat operates off the beach in suitable weather. The trip includes a full commentary and identification of marine life seen. It visits the deeper reefs and caves around Te Hawere-a-Maki/Goat Island. Bookings are essential. See:

 www.glassbottomboat.co.nz.

- Learning Journeys can co-ordinate trips for years 7–13 students: see

 www.learningjourneys.co.nz/nz-schools/biodiversity.

- Kiwi guardians at Cape Rodney-Okakari Point: see

 www.doc.govt.nz/kg-cape-rodney

Accommodation

There are campgrounds at Te Hawere-a-Maki/Goat Island, Whangateau and Pakiri as well as a local marae that may be suitable for schools who want to stay near the reserve overnight.

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- Take care when anchoring to avoid damaging the sea floor
- Call **0800 DOC HOT** (0800 362 468) to report any illegal activity.



VISITING LONG BAY-OKURA MARINE RESERVE


NOTES FOR SCHOOLS AND EDUCATORS



Key information



This popular beach and marine reserve is in the Hauraki Gulf Marine Park and on Auckland's North Shore. The reserve has a large, picturesque sandy beach, rocky reefs, estuarine mudflats and mangroves. The adjacent Long Bay Regional Park (managed by Auckland Council) has many walks, picnic areas, a playground, space for recreation and barbeque facilities.

For more information and a map of this reserve, see:  www.doc.govt.nz/long-bay-okura-marine-reserve.

Visitor facilities and parking

Several toilet blocks and changing rooms are available in the reserve. The beach and rock pools are an easy, relatively short walk from the car parks. There are information displays near the entrance and signs throughout the reserve. Drinking water is available from a number of taps and drinking fountains.



Other refreshments can be purchased at the nearby township of Torbay, which is a 5 minute drive from the reserve.

The area can be very busy during summer, especially from February to April, so booking a site in advance is essential to ensure you have enough space and shelter available for conducting activities with your students. For bookings, contact Auckland Council on (09) 301 0101. School bookings are free on weekdays (except public holidays).

The reserve has plenty of parking throughout, and buses regularly visit from the Auckland CBD. See Auckland Council website for information on parking and buses:  regionalparks.aucklandcouncil.govt.nz/longbay.



Biodiversity survey



The Marine Metre Squared Project (Mm2) is an easy quadrat survey for investigating what is living in your marine reserve. See  www.mm2.net.nz for resources. Rocky shore surveys or sandy shore surveys can be carried out approximately 2 hours either side of low tide. For more information, see  *Activity 8: Visiting Marine Reserves*.

Note: when conducting a Mm2 survey, it is important to keep disturbance of sand and animals to a minimum and put them back where you found them.


Rocky and sandy shore surveys can be performed at each end of the beach where there are rock pools and suitable sandy shores.

Litter survey


Conduct a litter survey on the beach to investigate human impacts on this marine reserve. You'll be cleaning it up as you go!

See page 9 of the DOC *Habitat Heroes: Explore your local marine environment* resource for instructions:  www.doc.govt.nz/habitat-heroes-marine-resource. Survey sheets and guidance for beach clean ups and litter audits are available at  www.loveyourcoast.org.nz/learn (Love Your Coast/Sustainable Coastlines).


Dune plant survey

Look at the dune plants and see if you can identify them. Be careful not to walk on dunes during your survey and respect any barriers. See page 10 of the DOC *Habitat Heroes: Explore your local marine environment* resource for instructions:  www.doc.govt.nz/habitat-heroes-marine-resource.

Short walk

Nature trail (30 min): This easy walk goes through native bush from the Vaughan homestead down to the wetland. See:  regionalparks.aucklandcouncil.govt.nz/longbay/track/Nature%20Trail

Health and safety considerations

- Check weather conditions and tides before your visit.
- Slips and erosion from cliffs at the north end of the beach can be a significant hazard. Please watch for signage and avoid such areas if recommended. Stay back from cliff faces.
- In easterly conditions the water can be choppy, making snorkelling more difficult.
- Teachers should also consider general risk management around water and rock shelves. See also general health and safety considerations for schools in marine environments:  *Activity 8: Visiting Marine Reserves*.

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Habitats and species in the reserve

There are accessible rocky shores at both ends of the beach which are exposed at low tide. When exploring the rocky shore, time your visit for the low tide, when the rock shelves are most accessible and rock pools are visible. In the intertidal zone you can find a variety of sea snails, sea stars and seaweeds. In the subtidal zone you may find kina, snapper and lots of kelp. If you dig in the sand at low tide, you may find some tuatua shellfish which make their home by burrowing down into the sand.

The estuary and mangroves are also easily accessible from the beach. Coastal walks meander alongside the stream. Here you can see a variety of shorebirds and wetland species, including pūkeko, herons and pied shags.

Education providers working here

- Auckland Council's **Learning Through Experience** education team offer several facilitated programmes for school groups. Programmes include: Coastal Biodiversity Detectives, Healthy Waterways, Outdoor Challenge, and Sensational Senses.

These programmes are suitable for Year 0–8 students. For more information, visit the Auckland Council website: www.aucklandcouncil.govt.nz and search for 'Learning Through Experience'. For school bookings, contact: longbay.schoolbookings@aucklandcouncil.govt.nz.

- At the south end of the beach at the park's entrance is the **Sir Peter Blake Marine Education and Recreation Centre** (known as M.E.R.C): merc.org.nz. MERC offers a variety of facilitated outdoor education programmes, including land-based games (including archery, abseiling, orienteering, mountain biking) as well as water-based activities (including kayaking, paddle boarding, sailing and canoeing). Contact 09 473-0714 or office@merc.org.nz for bookings and school enquiries.

Other education experiences

Long Bay Nature Kindergarten www.playandlearn.net.nz/long-bay-nature-kindergarten.

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VISITING WHANGANUI A HEI (CATHEDRAL COVE) MARINE RESERVE

NOTES FOR SCHOOLS AND EDUCATORS



Photo: Alan Cressler

Key information



The marine reserve is in the Hahei area of the Coromandel Peninsula. This popular marine reserve was created in 1992 and became New Zealand's sixth marine reserve in 1992. There are many opportunities for recreation and learning here, including walking, snorkelling, swimming and picnicking.

It can be very busy in summer. For more information and a map of this marine reserve, see: www.doc.govt.nz/te-whanganui-a-hei.

For information about the wider Coromandel area, see: www.doc.govt.nz/coromandel-brochure

Visitor facilities and parking

Parking is available at the Cathedral Cove lookout (end of Grange Road) during the off-season only. During the peak season, parking is available at Hahei Beach, and a park and ride service operates from the Hahei Visitor car park.

A privately operated water taxi is available from Hahei when sea conditions allow.

No drinking water is available in the reserve, and the closest food providers are approximately 2 km away in the Hahei township. There are 2 toilets (bio toilets) at Cathedral Cove beach, and 2 more at the Cathedral Cove lookout. Trees on the beach provide the only shelter at Cathedral Cove.



Self-guided activities for school groups

Litter survey

Try a litter survey on the beach. See page 9 of the DOC *Habitat Heroes: Explore your local marine environment* resource for instructions: www.doc.govt.nz/habitat-heroes-marine-resource. Survey sheets and guidance for beach clean-ups and litter audits are available at www.loveyourcoast.org.nz/learn (Love Your Coast/ Sustainable Coastlines).

Walks near the marine reserve

There are several scenic walks on land adjacent to the reserve:

- **Cathedral Cove Walk (1 hr 30 min return):** Explore Gemstone Bay, Stingray Bay, Mares Leg Cove and Cathedral Cove. See: www.doc.govt.nz/cathedral-cove-walk

Health and Safety considerations

In Coromandel, hazards occur from time to time (e.g. slips, flooding, track work). Please contact the Kauaeranga Visitor Centre for all public information regarding Coromandel tracks and current hazards, see: www.doc.govt.nz/kauaerangavc.

There can also be large waves at times and the area is often very crowded in summer. Please do not swim around tour operators. Teachers should also consider general risk management around water. See also general health and safety considerations for schools in marine environments: [Activity 8: Visiting Marine Reserves](#).

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Habitats and species in the reserve

Species seen in this reserve include: blue cod/pākirikiri, red moki/ngutere, pāua, leatherjacket/kōkiri, spotty/paekirikiri, banded wrasse/tāngāngā, scarlett wrasse/pūwaiwhakarua, kelpfish/hiwihiwi, goatfish/rarahi, blue maomao/maomao, rock lobster/crayfish/kōura, snapper/tāmure and sometimes orca/maki.

Snorkelling providers in the area

Experiencing Marine Reserves is an organisation that specialises in safe snorkelling experiences for school groups in marine reserves and at other sites. They provide all the gear and expertise. For more information see: www.emr.org.nz, email: info@emr.org.nz or view www.facebook.com/emr.mtsct.

Other education/ recreation experiences

For other suggested activities, see: www.doc.govt.nz/te-whanganui-a-hei.

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VISITING TE TAPUWAE O RONGOKAKO MARINE RESERVE

NOTES FOR SCHOOLS AND EDUCATORS



Photo: Trudi Ngawhare

Key information



Te Tapuwae o Rongokako Marine Reserve is near Gisborne on the east coast of the North Island. The reserve is 16 km north of Gisborne and can be accessed by State Highway 35 from Pouawa.

Te Tapuwae o Rongokako, 'The footprint of Rongokako', Marine Reserve was established in 1999, after many years of work by Ngāti Konohi and the Department of Conservation (DOC).

It protects about 2,450 ha of coastline, and features eight marine habitat types, including inshore reefs, rocky intertidal platforms and sediment flats.

For more information and a map of this reserve, see: www.doc.govt.nz/te-tapuwae-o-rongokako.



Visitor facilities and parking

There are public toilets, picnic tables, a picnic area, and information signs available for visitors at this reserve. Parking and access to the reserve is via Pouawa Road. See: www.doc.govt.nz/te-tapuwae-mr-brochure.

Water at the reserve is not suitable for drinking, so bring drinking water with you.



Biodiversity survey



The Marine Metre Squared Project (Mm2) is an easy quadrat survey for investigating what is living in your marine reserve. See  www.mm2.net.nz for resources. Rocky shore surveys or sandy shore surveys can be carried out approximately 2 hours either side of low tide. For more information, see  *Activity 8: Visiting Marine Reserves*.

Note: when conducting a Mm2 survey, it is important to keep disturbance of sand and animals to a minimum and put them back where you found them.


The beach and intertidal reefs are best explored at low tide. The sandy beach is about 4 km long, and there are intertidal reef platforms around Pariokonohi Point near the southern boundary.

Litter survey

Conduct a litter survey on the beach to investigate human impacts on this marine reserve. You'll be cleaning it up as you go!

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Dune plant survey


Look at the dune plants and see if you can identify them. Be careful not to walk on dunes during your survey and respect any barriers. See page 10 of the DOC *Habitat Heroes: Explore your local marine environment* resource for instructions:  www.doc.govt.nz/habitat-heroes-marine-resource.pdf.

Short walk

Beach walk (1 hr 30 min): A beach walk is at the northern end of the reserve. Here you can see remnants of the Old Coach Road along the beach. You will also get a magnificent view of Whangara Island/Te Ana o Paikea.

There are opportunities for birdwatching.

Health and safety considerations

- There is sometimes a current in the channel draining the reef platform during incoming and outgoing tides which can be dangerous for snorkellers or swimmers. If you are planning to swim or snorkel, check the tide times and plan accordingly.
- At certain times of year there are biting insects that can cause discomfort and a reaction in some people. Take insect repellent.
- NZ fur seals/kekeno may be along the beach stay – at least 20 m away from any seals.
- Teachers should also consider general risk management around water and rock shelves. See also general health and safety considerations for schools in marine environments:  *Activity 8: Visiting Marine Reserves*.

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Habitats and species in the reserve

On the sandy shore you can spot birds, including gannets/tākapu, terns/tara, oystercatchers/tōrea, New Zealand dotterels/tūturiwhatu and gulls. Marine mammals such as New Zealand fur seals/kekeno, dolphins/aihe and some whale species are regular visitors. Exploring the intertidal reef, you will find crabs/pāpaka, and barnacles/werewere.

The subtidal area of the reserve contains several distinct habitats. Down to about 10 m in depth, a variety of seaweeds/rimurimu such as flapjack and kelp can be found. Some of the fish you may see are spotties/paketi, banded wrasse/ tāngahanga, red moki/nanua, hiwihiwi, greenbone butterflyfish/ mararī, marblefish/ kehe and black bream/parore.

Education providers working here

Nga Mahi Te Taiao, Gisborne, offers LEOTC programmes in this marine reserve. For school bookings, see:  www.nmtt.co.nz/education/he-tai-ora-the-living-sea.
Contact: Amy-Rose Hardy, email: amyhardy@nmtt.co.nz.

Other education experiences

Kiwi Guardians at Te Tapuwae o Rongokako Marine Reserve:  www.doc.govt.nz/kg-te-tapuwae-o-rongokako.

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VISITING TE ANGIANGI MARINE RESERVE

NOTES FOR SCHOOLS AND EDUCATORS



Photos: Catherine Tiffen



Key information



Te Angiangi Marine Reserve is in central Hawkes Bay, on the east coast of the North Island.

This reserve was established in 1997 and includes a range of habitats, including a boulder bank, sheltered bay and intertidal rock platforms. The name 'Te Angiangi' was chosen by Ngāti Kere to honour their history; the marine reserve area was safeguarded by the mana of Te Angiangi, a significant ancestor.

The meeting of the warm East Cape current and the cold Southland current, in this reserve, provides varied habitats that are home to a wide variety of species found around New Zealand.

Visitor facilities and parking

For more information and a map of this reserve, see: www.doc.govt.nz/te-angiangi-marine-reserve.

Suggested self-guided activities for school groups

Biodiversity survey

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Note: when conducting a Mm2 survey, it is important to keep disturbance of sand and animals to a minimum and put them back where you found them.

Litter survey

Conduct a litter survey on the beach to investigate human impacts on this marine reserve. You'll be cleaning it up as you go!


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Dune plant survey

Look at the dune plants at Aramoana Beach and see if you can identify them. Be careful not to walk on dunes during your survey and respect any barriers. See page 10 of the DOC *Habitat Heroes: Explore your local marine environment* resource for instructions: www.doc.govt.nz/habitat-heroes-marine-resource.



Health and Safety considerations

- There can be strong, unpredictable currents in the water at this reserve. Use caution when swimming/snorkelling, ensure the tide is suitable for in-water activities and give students clear instructions and adequate supervision.
- Teachers should consider general risk management around water and rock shelves. See general health and safety considerations:  **Activity 8: Visiting Marine Reserves.**

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Habitats and species in the reserve

The reserve has a sheltered bay (Stingray Bay), intertidal rock platforms and sandy beaches. Stingray Bay is a very calm lagoon that is suitable for beginner snorkellers.

This reserve is home to many types of different birds, including: gannets/tākapu, gulls, herons/matuku moana, terns/tara, pied stilts/poaka, oystercatchers/tōrea, and penguins/kororā. New Zealand dotterels/tūturiwhatu and godwits/kuaka can be seen at times.

During summer, pods of common and bottlenose dolphins/aihe are often observed and there have been reports of dusky dolphins and orca/maki. New Zealand fur seals/kekeno are also occasional visitors to the reserve.

A large intertidal rock platform is exposed at low tide, which is home to the golden limpet, Neptune's necklace, pink coralline seaweed, and eel grass. Small fish, crabs, pāua and kina live in the rock pools.

For more details of species and habitats and a map of the reserve, see:  www.doc.govt.nz/te-angiangi-brochure.

Other education experiences

The **Aramoana Environmental and Education Trust** has displays in the historic woolshed.

PROTECT OUR MARINE RESERVES

They are special places that protect the species and habitats within them.

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- Take care when anchoring to avoid damaging the sea floor
- Call **0800 DOC HOT** (0800 362 468) to report any illegal activity.



VISITING TAPUAE MARINE RESERVE

NOTES FOR SCHOOLS AND EDUCATORS



Photo: Mike Tapp

Key information



Tapuae Marine Reserve is near New Plymouth, on the Taranaki coast. This rugged coast is a changeable environment, but is home to many diverse species.

The 1404 hectare reserve adjoins the Ngā Motu/Sugar Loaf Islands Marine Protected Area (SLIMPA) and extends southwest to the Tapuae Stream. The reserve was established in 2008 by the Ngā Motu Marine Reserve Society, with support from Ngā Mahanga a Tairi. Ngā Motu/Sugar Loaf Islands are of great significance to the iwi.

For further information and a map of the reserve, see: www.doc.govt.nz/tapuae-marine-reserve.

Visitor facilities and parking

You can access this marine reserve via New Plymouth's Centennial Drive. The southern part of the reserve can be accessed from Surf Highway 45, 8 km south of New Plymouth.

Parking is available at Centennial Park car park (immediately south of Paritutu rock). Toilets are available at the second car park, several hundred metres south.



Drinking water is not available at this reserve. For refreshments, visit the nearby Moturoa Shopping Centre.

There is information about the reserve at the Marine Information Centre on Ocean View Parade.

See DOC brochure for detailed directions to the reserve: www.doc.govt.nz/tapuae-brochure.





Biodiversity survey


The Marine Metre Squared Project (Mm2) is an easy quadrat survey for investigating what is living in your marine reserve. See  www.mm2.net.nz for resources. Rocky shore surveys or sandy shore surveys can be carried out approximately 2 hours either side of low tide. For more information, see  *Activity 8: Visiting Marine Reserves*.

Note: when conducting a Mm2 survey, it is important to keep disturbance of sand and animals to a minimum and put them back where you found them.


Litter survey

Try a litter survey on the beach. See page 9 of the DOC *Habitat Heroes: Explore your local marine environment* resource for instructions:  www.doc.govt.nz/habitat-heroes-marine-resource.pdf. Survey sheets and guidance for beach clean-ups and litter audits are available at  www.loveyourcoast.org.nz/learn (Love Your Coast/Sustainable Coastlines).

Dune plant survey

Look at the dune plants around Tapuae stream and see if you can identify them. Be careful not to walk on dunes during your survey and respect any barriers. See page 10 of the DOC *Habitat Heroes: Explore your local marine environment* resource for instructions:  www.doc.govt.nz/habitat-heroes-marine-resource.pdf.

Health and safety considerations

- **Please note: Students are not advised to snorkel or get into the water at Tapuae.** This rough, exposed coast can be dangerous for swimming/snorkelling. There are no lifeguards in the area. The sea in this reserve can be wild, and large waves are common. Due to the exposed nature and murky water in the reserve, most educational activities occur at Ngāmotu Beach.
- It is possible to get caught against the cliffs when the tide comes in. If undertaking a survey or Mm2 and reef investigation this can only be done during low tide. Make sure there is time to do the survey and return before the tide turns and reaches the base of the cliffs, as you will need to cross the Herekawe Stream (this is usually shallow and not a concern).
- Ensure you check the weather forecast and sea conditions carefully before exploring the rock shelf. The weather and waves can cause unsafe conditions in the reserve.
- Keep well away from the cliffs as they are unstable and there is a risk of falling debris or collapse.
- NZ fur seals/kekeno may be along the beach – stay at least 20 m away from any seals.
- Teachers should also consider general risk management around water and rock shelves. See also general health and safety considerations for schools in marine environments:  *Activity 8: Visiting Marine Reserves*.

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Habitats and species in the reserve

Ngā Motu/Sugar Loaf Islands are the remnants of an ancient volcanic cone. They provide a diverse range of habitats and sheltered areas for marine life. Subtidal habitats include caves, canyons, rock faces with crevices and overhangs, large pinnacles, boulder fields and extensive areas of mud and sand. As the habitat is unique to the region, it is considered to be of significant conservation value. In contrast, the intertidal and subtidal habitats in the southwestern part of the Tapuae Marine Reserve are a classic example of the wild Taranaki coastline.

The rocky reefs are covered with macroalgae, bryozoans, kina, sea cucumbers/rohi whiore, molluscs and sea stars/papatangaroa. Triplefins and other reef-associated fish (e.g. red moki/ngutere, butterfly perch/oia), may be visible in the shallows.

The reserve is an important breeding and haul-out site for New Zealand fur seals, and has the northernmost breeding population of this species. Other marine mammals that have been observed in this area include common dolphins/aihe, NZ fur seals/kekeno, pilot whales/parakipīhi, orca/maki, humpback whales/paieka and southern right whales/raiti wēra.

Education providers working here

Ngā Motu Marine Reserve Society runs the Experiencing Marine Reserves (EMR) programme Taranaki. Please email: taranaki@emr.org.nz or see the website for more information: www.emr.org.nz/index.php/emr-areas/emr-taranaki.

Other education experiences

The Marine Information Centre on Ocean View Parade hosts information displays about this marine reserve as well Taranaki's other marine reserve: the Parininihi Marine Reserve. For more information about this reserve, see: www.doc.govt.nz/parininihi-marine-reserve.

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VISITING KAPITI MARINE RESERVE

NOTES FOR SCHOOLS AND EDUCATORS



Photo: Neil Price


Key information



Kapiti Marine Reserve is the fourth-largest marine reserve in New Zealand and was established in 1992. The reserve connects Kapiti Island Nature Reserve and Waikanae Estuary Scientific Reserve, forming a unique protected area from mountains to the sea.


Kapiti Marine Reserve is a popular spot for snorkelling and diving because of the diverse marine life, which includes NZ fur seals/kekeno, dolphins/aihe, banded wrasse/tāngāngā, blue cod/pākirikiri, butterfish/mararī, blue moki and pāua.

This scenic reserve is on the west coast of the lower North Island.

For more information and a map of this reserve, see:  www.doc.govt.nz/kapiti-marine-reserve.

Getting to Kapiti Island

Kapiti Island is predator free. Please ensure you check your belongings and bags for pests before your visit.

If you would like to visit Kapiti Island, you need to travel to the island with an authorised boat service. For more information and to book a boat service, visit:  www.doc.govt.nz/kapitiisland.

Landing on the island in a private vessel, such as a kayak or boat, is only permitted if you have a permit.



**CHECK
YOU ARE
PEST-
FREE**





Visitor facilities and parking

- Kapiti Marine Reserve can be accessed from the shore at Waikanae Estuary. Parking is available at the estuary. When visiting Kapiti Island, there is parking at the Kapiti Boating Club.
- There are two visitor shelters, information displays and toilets on Kapiti island. As there are no food outlets on the island and no drinking water, you will need to bring your own refreshments.

Suggested self-guided activities for school groups



Biodiversity survey

The Marine Metre Squared Project (Mm2) is an easy quadrat survey for investigating what is living in your marine reserve. See  www.mm2.net.nz for resources. Rocky shore surveys or sandy shore surveys can be carried out approximately 2 hours either side of low tide. For more information, see  *Activity 8: Visiting Marine Reserves*.

Note: when conducting a Mm2 survey, it is important to keep disturbance of sand and animals to a minimum and put them back where you found them.

Litter survey

Conduct a litter survey on the beach at Waikanae or Kapiti Island to investigate human impacts on this marine reserve. You'll be cleaning it up as you go!

See page 9 of the DOC *Habitat Heroes: Explore your local marine environment* resource for instructions:  www.doc.govt.nz/habitat-heroes-marine-resource.pdf. Survey sheets and guidance for beach clean-ups and litter audits are available at  www.loveyourcoast.org.nz/learn (Love Your Coast/Sustainable Coastlines).

Dune plant survey


Examine any dune plants at Waikanae Estuary and see if you can identify them. Be careful not to walk on dunes during your survey and respect any barriers.

See page 10 of the DOC *Habitat Heroes: Explore your local marine environment* resource for instructions:  www.doc.govt.nz/habitat-heroes-marine-resource.pdf.

Short walks

See:  www.doc.govt.nz/kapiti-walks for information about short walks on Kapiti Island.

Health and safety considerations

- Please be aware that there can be very changeable conditions in this marine reserve. There are frequently very strong currents throughout the reserve. The western side is particularly exposed. When visiting Kapiti Island you should ensure that you have sturdy shoes, wet weather gear and sun protection.
- At Waikanae Estuary, take care in sand near the river: the area can sometimes have quicksand conditions.
- Teachers should also consider general risk management around water and rock shelves. See also general health and safety considerations for schools in marine environments:  *Activity 8: Visiting Marine Reserves*.

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Habitats and species in the reserve

This marine reserve hosts diverse habitats and species. It includes the coast bordering the Waikanae Estuary out to Kapiti Island.

- Waikanae Estuary Scientific Reserve connects to the Kapiti Marine Reserve. Here you can see bird migrants, with over 60 species of birds calling this home at certain times of the year. For more information about visiting the Waikanae Estuary Scientific Reserve, see: www.doc.govt.nz/waikanae-estuary.
- On Kapiti island, there are many threatened species, such as; kākā, saddleback/tīeke, stitchbird/hihi, takahē and kōkako. You may also see gulls, nudibranchs, finger sponges, crayfish/kōura and gannets/tākapu along the coast. In the water, you could be lucky enough to see fish such as butterfly perch/oia or eagle rays/whai repo, little penguins/ kororā, NZ fur seals/kekeno, common dolphins/aihe or even orca/maki.

For more information on the animals and habitats in this reserve, see:

www.doc.govt.nz/kapiti-island-brochure and www.doc.govt.nz/kapiti-marine-reserve-brochure.

Snorkelling providers in the area

Note: Snorkelling trips in Kapiti Marine Reserve are best undertaken with an accredited provider such as MTSCT/EMR (see below).

Mountains to Sea Wellington work with **Experiencing Marine Reserves (EMR)** to provide guided, safe snorkelling experiences for school groups in marine reserves and at other sites. They provide all the gear and expertise for a guided snorkelling experience at Kapiti Island. For more information see: mountainstoseawellington.org/education-programmes, www.facebook.com/emr.mtsct and www.emr.org.nz or email: wellington@emr.org.nz.

Other education experiences

The Kapiti i-SITE in Paraparaumu has an informative educational display about Kapiti Marine Reserve.

For further resources about field trips to Kapiti, see: www.doc.govt.nz/kapiti-field-trip.

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VISITING PUNAKAIKI MARINE RESERVE

NOTES FOR SCHOOLS AND EDUCATORS



Photo:

Key information



Punakaiki Marine Reserve surrounds the Pancake Rocks and blowholes at Dolomite Point, on the west coast of the South Island. The marine reserve was established in 2013 and covers an area of more than 35 square kilometres, from Perpendicular Point to near Maher Swamp, and out to two nautical miles from shore.

Punakaiki is located on State Highway 6, about 40 minutes drive north of Greymouth and 50 minutes south of Westport. It is part of the Paparoa National Park. The park is located alongside the very scenic State Highway 6.

For more information and a map of this reserve, see: www.doc.govt.nz/punakaiki-marine-reserve.

Visitor facilities and parking

The Paparoa Visitor Centre (on Coast Rd, Punakaiki) has toilets, a picnic area, car parking and visitor information. Refreshments can be purchased at the Pancake Rocks Café. There is a craft centre and campground in the area. No drinking water is available at Paparoa National Park.

Fuel up at Westport or Greymouth; there is no petrol station at Punakaiki.

Intercity buses have a regular service to the area, see: www.intercity.co.nz/cheap-south-island-buses/bus-to-punakaiki.

See DOC's Paparoa National Park brochure for more information on parking, toilets and other facilities: www.doc.govt.nz/paparoa-np-brochure.



Suggested self-guided activities for school groups

Biodiversity survey

Take part in a Marine Metre Squared (Mm2) rocky shore survey and/or sandy shore survey with students to investigate what is living in this marine reserve. Try a sandy shore survey at low tide north of the rocks beside Pororari Lagoon or south at Pakiroa Beach. At low tide you can survey the rocky shore at Tauranga Bay (1 hr north of Punakaiki).

For more information, see www.mm2.net.nz and [Activity 8: Visiting Marine Reserves](#).

Note: when conducting a Mm2 survey, it is important to keep disturbance of sand and animals to a minimum and put them back where you found them.

Short walks

- **Pancake Rocks and Blowholes Walk (20 min):** This famous walk takes in the spectacular blowholes and pancake rocks. For more information, see: www.doc.govt.nz/pancake-rocks-and-blowholes-walk.
- **Truman Track (15 min):** Truman Track is a walk through unspoiled subtropical forest where podocarp and rātā trees tower above thickets of vines and nīkau palms. The track emerges on a spectacular coastline with cliffs, caverns, a blowhole and a waterfall which plummets straight onto a rock-strewn beach. A stairway provides access to the beach, which may be safely explored when the tide is out. The sandy beach at either side of the Pancake Rocks and Blowholes is accessible.
- More Punakaiki walks: www.doc.govt.nz/punakaiki-area-walks/#truman.

Kiwi Guardians

Kiwi Guardians in Paparoa National Park: www.doc.govt.nz/paparoa-national-park.

Health and safety considerations

- The weather on the West Coast can quickly change. Always take good wet weather gear and warm clothes, adequate food and water.
- Check the weather, tides and sea forecast before visiting and be aware of large waves when walking on the beach or rocky shore. Keep children well supervised when visiting.
- **NOTE: DO NOT SWIM** at this reserve. Swimming is dangerous here.
- Do not go off the tracks. This is limestone country and there can be a risk of unexpected holes in the ground.
- There is tidal vehicle access to some beaches (e.g. Pakiroa Beach) but be careful driving any vehicles onto the sand as they often get stuck.
- Teachers should also consider general risk management around water and cliffs. See general health and safety considerations: [Activity 8: Visiting Marine Reserves](#)

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Habitats and species in the reserve


The Pancake Rocks are 30 million year old limestone formations: the shells of ancient marine animals overlaid with soft mud and clay, raised by earthquakes and etched out by the sea.

There are also incredible rock formations visible along the Truman Track at lowest tide, at the sandy/pebbly Truman Beach.

There are also sandy beaches directly north of the Punakaiki main village, beside the Pororari Lagoon and at Pakiroa Beach (south of the Pancake Rocks). Access is tidal.

Offshore, beyond rocky reefs, the seabed is mostly a rippled surface of sand and mud that provides habitat for burrowing surf clams and worms, as well as fish like stargazers/moamoa, gurnard/pūwhaiau and sharks.

Westland petrels/tāiko breed in the hills above Barrytown Flats and are often seen in the reserve. Albatrosses/toroa, shags/kawau, terns/tara and gannets/tākapu also pass through. Blue penguins/kororā and Hector's dolphins/waiaua can be seen within the reserve.

For more information about little blue penguins and the West Coast Blue Penguin Trust, see:  www.bluepenguin.org.nz/education.

Other education experiences

Information and educational displays are available at the Paparoa National Park Visitor Centre, on Coast Road, Punakaiki.

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VISITING PIOPIOTAHİ/MILFORD SOUND MARINE RESERVE

NOTES FOR SCHOOLS AND EDUCATORS



Photo: S. Hayes


Key information




Piopiotahi (Milford Sound) is one of our most scenic and spectacular marine reserves both above and below the water.

The steep sides of Piopiotahi/Milford Sound were carved out by glaciers thousands of years ago. This breath-taking, unique marine environment with its dark, deep waters, surrounded by huge rock faces and peaks, is a very popular international tourist attraction. The rock walls host an amazing range of deep water species. This is the only location in our marine reserves where you can see black and red coral.

This reserve was established in 1993 by a group of concerned local fishermen. It is 16 km long and covers an area of 690 hectares. It is situated along the northern side of the fiord and covers a range of habitats.

For more information and a map of this reserve, see:  www.doc.govt.nz/piopiotahi-marine-reserve.

For more information about Fiordland's network of marine reserves, see:  www.doc.govt.nz/fiordland-marine-reserves-brochure.



Visitor facilities and parking

There are public toilets at Milford Sound. You can purchase refreshments and drinking water at the cafes. Information displays can be found at the Discover Milford Sound Information Centre, at the end of Milford Sound Highway.

Cruises and scenic flights can be booked from Milford Sound.


Take a boat trip or visit the underwater observatory to experience the fiord and see black coral and other marine species.

For a map of the reserve, see:  www.doc.govt.nz/piopiotahi-marine-reserve.


Suggested self-guided activities for school groups


Milford Discovery Centre and Underwater Observatory

Visit the underwater observatory in Harrison's Cove (within the marine reserve) and descend under the water, without getting wet, to see the strange deepwater creatures that live in the fiords. You may even see a shark or stingray glide past. The observatory has many facilities and educational information displays. Here you can learn about the geology, history, culture and wildlife of Milford Sound.


 www.southerndiscoveries.co.nz/milford-sound/milford-discovery-centre-underwater-observatory.

Litter survey


Perform a litter survey at Milford Sound to see what impact people have on this reserve. See page 9 of the DOC *Habitat Heroes: Explore your local marine environment* resource for instructions:  www.doc.govt.nz/habitat-heroes-marine-resource.pdf.

Survey sheets and guidance for beach clean-ups and litter audits are available at  www.loveyourcoast.org.nz/learn (Love Your Coast/Sustainable Coastlines).

Short walk

- **Lady Bowen Falls Walk (30 mins):** Take a short, affordable boat trip across the basin and then walk up to the 162 m Lady Bowen Falls, which have only recently been re-opened.
- See  www.doc.govt.nz/milfordroad for other walks in the area.

Health and safety considerations

- Fiordland is well known for its high rainfall so make sure that all visitors have a good raincoat.
- Snorkelling or swimming in the marine reserve is not recommended for students. The water is very cold and dark so proper exposure protection is necessary.
- Teachers should also consider general risk management around water and rock shelves. See also general health and safety considerations for schools in marine environments:  *Activity 8: Visiting Marine Reserves*.

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Habitats and species in the reserve

Underwater habitats in this reserve include: deep muddy fiord basin, deep reef and a small section of shallow rock wall along the shore.


The steep rock wall on the inner northern side of Piopiotahi/Milford Sound hosts a range of deep water invertebrates such as encrusting tubeworms, soft corals, black coral, sponges, colonial sea squirts, and anemones.

Heavy rainfall washes tannins from the leaf litter of the steep forested slopes which form a dark freshwater surface layer. This significantly reduces light penetration to the waters below, allowing species which would usually live in deeper waters, such as red coral/punga kura, black coral and sea pens, to be seen in easily diveable depths.


Other species which can be seen in this rich and unique environment include butterfly perch/oia, sea perch/pūaihakarua, tiger shells, urchins/kina, Jason's nudibranch, snakestars, rock cod/taipua and dogfish/mango tara. Marine mammals also inhabit the fiords including New Zealand fur seals/kekeno and a resident population of bottlenose dolphins/aihe. See:  www.doc.govt.nz/piopiotahi-video for more information about species and habitats in this reserve.

Other education experiences

A range of boat cruises is available at Milford Sound. For options see:

 www.fiordland.org.nz/activities-and-tracks/boat-cruises.

Information on other activities and walks in the area is available at:

 www.doc.govt.nz/milfordroad.

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GLOSSARY

biodiversity	Biodiversity is the variety of living things within an environment.
breeding	To produce offspring/have young (e.g. produce eggs or young).
deep sea	The dark, deep area of water under the open ocean where light does not reach.
environmental action	Environmental action is a learning process where students plan and implement a project to address an issue related to the environment and sustainability. Examples include planting trees, controlling pests, reducing carbon emissions and restoring habitat for native species.
estuary	An estuary is where the fresh water of a river meets and mixes with the salt water of the sea. They are partly enclosed coastal areas of shallow water which are affected by tides.
fiord	Fiords are narrow inlets of the sea carved out by glaciers over a very, very long time.
habitat	The place where an animal (or population of animals) normally lives.
intertidal zone	The area of shore that is most affected by the tides – this zone is covered with water at high tide and then becomes uncovered when the tide goes out.
introduced predators	Animals brought to New Zealand by people, such as: rats, cats, dogs, stoats, ferrets and possums.
issue	A problem or difficulty.
juvenile	Young animal that is yet to breed.
kaitiaki	People who are recognised by tangata whenua to protect and look after an area's resources. They act to restore ecosystems through a holistic approach, recognising that all things are interconnected.
kaitiakitanga	Kaitiakitanga is a way of thinking about and looking after the environment in order to help maintain the balance of everything within it. It can be loosely translated as protection or guardianship.
life cycle	A series of stages a living thing passes through during its lifetime, from birth to death.
marine reserve	A marine reserve is a protected area of the sea and shore that is protected. People are not permitted to take living things or non-living things. Everything in a marine reserve is protected by law. There is no fishing or shellfish gathering allowed.



manaaki	To care for, look after, and protect.
mauri	The essence or life force present in all living things.
observation	Giving complete attention, watching, perceiving and noticing. This word can also describe the notes attached to the watching/noticing.
open ocean	The open ocean extends out from the edge of the subtidal zone to a depth that light can still reach – the ‘photic zone’.
rāhui	A rāhui is a restriction on collecting or harvesting a resource for a certain time.
rocky shore	An intertidal area of shore that is primarily covered with rocks and rocky reefs. A rocky shore often includes rock pools.
sandy shore/ beach	Sandy shores/beaches are areas of sand that cover an area of coast (other beaches may be composed of mostly gravel or shells).
species	A group of similar individuals that are capable of breeding.
subtidal zone	An area of shore that is always under water.
tikanga	Māori customs and traditional values. Correct procedures and customary protocols that are part of a way of life and social fabric.
threat	Something that can harm or kill.
value	A deeply held belief about what is important.



TEACHING STRATEGIES

THINK, PAIR, SHARE

Students consider a point and think about it for a few minutes individually. Then the students pair up and take turns to listen to one another's ideas. The listener can reflect back or summarise the speaker's points. They then swap roles. To conclude, the teacher can ask a few pairs to share what their partner said with the class.

THINK, WRITE, SHARE

As for the above method for think, pair share, but here students consider and write down their thoughts individually, then get into pairs to come up with one piece of writing reflecting the main points of the lesson.

THINK, PAIR, SQUARE

Students think about the learning focus, then share their thoughts, ideas and knowledge with a partner. This first pair constructs a summary of both of their ideas between them. The pairs then join with another pair (to form a square), share their paired summaries and collaborate to co-produce another joint summary.

JIGSAW/4 STRAY, ONE STAY

Students form into groups of 4 to 6. This is their home group. They work at their station/table on a particular task and record results. They discuss how to share the results and summarise findings for others.

Students from each group number off, each choosing a different station to visit. The group then separates, leaving one member behind to explain and summarise to the students visiting their station. The students visit their designated station and listen to the summary of results of that group. After a defined time, they return to their home group and report back to the group. In this way the whole class can be informed of all the groups' conclusions.

