

The Catlins Coast

An environmental education resource kit for use on three sites in the Catlins:

- Lake Wilkie
- Tahakopa Bay
- Picnic Point



Department of Conservation
Te Papa Atawhai

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WHAT'S SPECIAL ABOUT THE CATLINS?

The Catlins, in the south-eastern corner of Te Waipounamu (the South Island) has been occupied by humans for at least a thousand years.

The region is named after Captain Edward Cattlin (correct spelling), who bought land from the Kāi Tahu chief Tuhawaiki in 1840, a month before the Treaty of Waitangi was signed. The “Catlins” name now refers to the whole coastline, coastal forests and farmland between the Clutha and Maitai Rivers.

This area is now the largest expanse of native forest left on the east coast of the South Island. The extent and range of vegetation give it national importance for its botanical value. Unbroken sequences of vegetation stretch from the coast to sub-alpine tops.

The Catlins' remote and largely unspoilt coastline and bush provide a precious haven for wildlife. Many species of animals, insects, plants and fish found here are now rare or endangered.

Today scientists, students and tourists from all over the world visit the Catlins to experience a unique, relatively unmodified landscape – New Zealand close to the way it was hundreds of years ago.

USING THIS RESOURCE

This resource kit is part of a Department of Conservation and Kai Tahu ki Araituru initiative. The aim of the resource is to encourage teachers to plan exciting, educational experiences on key reserves in Otago with significant conservation and cultural values.

In the southern Kai Tahu dialect, 'ng' is often replaced by 'k'.

A brief summary of the area's early history is included to help students understand the strategic importance of this coast, its rivers, estuaries and forests for the survival of the *tākata whenua* (local people), and the sealers, whalers, saw millers and farmers who followed during the last 1000 years of human settlement.

This Catlins Coast resource kit focuses on three sites, all within easy access of the Tautuku Outdoor Education Centre:

- **Lake Wilkie**, nestled in a hollow in the Tautuku dune forest about 500 metres south of Tautuku Outdoor Education Centre, is an excellent example of forest succession from marsh to mature podocarp forest.
- **Tahakopa Bay**, a classic example of an early Māori moa-hunting camp dating back to 1000AD, is sited at the mouth of the Tahakopa River at Papatowa.
- Across the estuary at Papatowai is a popular beach walk along a typical stretch of Catlins coastline to the **Picnic Point Scenic Reserve**. A track returns through coastal podocarp forest.

CURRICULUM LINKS

This resource kit offers a selection of pre-visit, on-site and follow-up activities to provide students with a range of experiences in, about, and for the environment. These suggestions can be adapted to any age/level and provide learning experiences that:

- Encourage safe and informed use of conservation sites;
- Cover the seven essential learning areas of the New Zealand curriculum using the relevant achievement objectives listed in the *Guidelines for Environmental Education in New Zealand Schools* (1999, Ministry of Education);
- Include a Māori cultural perspective with particular reference to technology;
- Value the Catlins as part of Otago's environmental heritage.

The *Guidelines for Environmental Education in New Zealand Schools* promote education for the environment. People are encouraged to think about their attitudes, values and life-style choices against the impact on the environment.

An understanding of the construction and use of Māori technology provides valuable insights into the physical properties, adaptations and behaviour of plants and animals in this environment. It also highlights the interconnectedness of this habitat with other sites in the Otago region.

When planning post-visit activities, students are encouraged to use an action-oriented approach that promotes informed action to address environmental issues raised during the visit. See Appendix 5, *Guidelines for Environmental Education in New Zealand Schools*.

Some suggestions are given in post-visit section, but an action-oriented approach is most effective when students take responsibility for their own planning, and carry out their activities in partnership with others.

OUTDOOR SAFETY

When planning a visit to the Catlins, make sure school policy and the correct procedures are followed. For example, you will need to do a risk analysis management plan for your visit.

Points to remember:

- Brief students on outdoor safety before the visit and remind them again on arrival to take care.
- Groups must remain on marked tracks and should stay together at all times.
- At Lake Wilkie, school groups need to be well supervised on narrow boardwalks along the lake margins.
- Parents and helpers should be well briefed on their responsibilities - mainly to know exactly where their charges are at all times.
- The study sites are all on open land close to the main tracks, so the possibility of getting lost is minimal if tracks are followed.

For further in-depth information on outdoor safety refer to:

- *Education Outside The Classroom: Guidelines For Good Practice* (Ministry of Education, 1995)
- *Managing Risks in Outdoor Activities* (Mountain Safety Manual 27, 1993)
- *Outdoor Safety Management Systems* (EONZ, 1998)
- *Outdoor Pursuits Guidelines For Educators* (Hillary Commission, 1996)
- *Water Safety Across the Curriculum* (Water Safety New Zealand, 2000)

School groups should be aware that the Catlins was occupied or visited by Māori for many centuries and may have urupā (burial grounds) and other wāhi tapu (sacred) sites that were restricted areas to the tākata whenua (local people). Groups should respect cultural protocols by observing tikanga (customs) where possible, for example, not taking food on to such sites.

Before your site visits you may like to consider DoC's environmental care code on its web site (<http://www.doc.govt.nz/Explore/NZ-Environmental-Care-Code.asp>). Below is a summary of the main points:



ENVIRONMENTAL CARE CODE CHECKLIST

- Protect plants and animals
- Remove rubbish
- Bury toilet waste
- Keep streams and lakes clean
- Take care with fires
- Camp carefully
- Keep to the track
- Consider others
- Respect our cultural heritage
- Enjoy your visit

Protect the environment for your own sake, for the sake of those who come after you, and for the environment itself.

History

In early Māori history, myth and fact are intertwined and the lines between the two are not always clear. Oral legends describe a magical tribe of giants or ghost people, the Kahui Tipua, who once roamed the south. The great Tautuku forests were reputedly guarded by legendary wild, hairy men known as maeroero.

Fact takes over from legend when successive waves of Waitaha, Kati Mamoe and Kai Tahu iwi (tribes) migrated south from the North Island between 850AD and about 1650AD. These tribes combined through conquest and strategic marriages and are now known collectively as Kāi Tahu (southern dialect), or Ngai Tahu.

Archaeologists have excavated Māori kaika (villages), moa-hunting camps and middens in the Catlins dating back to 1000AD. Excavations have uncovered bones from 13 different species of moa, a large flightless bird that is now extinct, stone knives and adzes, artefacts, bone fish hooks and two unfinished waka (canoes) carved from giant tōtara logs.

Settlements were concentrated on major river estuaries because they offered access to *mabika kai* (food resources) along the coast and into the densely forested interior of Murihiku, the Māori name for this area.

Evidence of major settlements has been found at Murikauhaka and Te Karoro (Kaka Point), Cannibal Bay, Pounaweia and Hinahina on the Catlins Lake (Kuramea), Papatowai, Tautuku Peninsula and Toetoes (Mataura River mouth). There were many more seasonal hunting camps (nohoaka) that were used for gathering food.

The great English navigator Captain James Cook sailed along this coast on his circumnavigation of New Zealand in 1770, but it was more than 30 years later before European and American sealers and whalers landed on these shores.

Southern fur seals were plentiful on this coast in the early 1800s. Sealing gangs quickly cleaned out breeding colonies and shipped the skins back to Europe for the fashion trade.

The whalers followed the sealers. Many settled here, marrying Kāi Tahu women.

A shore whaling station was set up at Tautuku Peninsula by William Palmer in 1839. Crews with famous names like Tommy Chasland, Long Harry and Scotch Jack caught many whales in the first three years, but then catches declined and the station eventually closed.

Port Molyneux (near Kaka Point), Owaka, Tautuku and Waikawa Harbour became busy coastal ports as settlers arrived from the 1840s and began clearing forests for agriculture.

By 1872, saw milling was a major industry for the Catlins and the port of Owaka exported more timber than any other port in the South Island. However, by 1889 the easy timber had been felled and the trade fell into decline.

Construction of a railway line from Owaka revived the timber industry. At its peak between 1919 and 1929 there were 30 sawmills operating, small towns and schools flourished but the industry eventually exhausted itself, many towns disappeared as the populations left and the railway line itself was closed in 1971.

THE FORESTS

The cool, temperate Catlins coastal rainforests include the Maclennan (18,954 hectares) and Tautuku Forests (13,326 hectares). Over 3,700 hectares of forest remains in private Māori ownership, mostly in the Tautuku, Chaslands and Waikawa area.

These Catlins forest are most famous for their giant podocarps – rimu, miro, totara, kahikatea and matai – that were once the basis of the region's saw milling industry. The largest podocarps are concentrated along the coast.

Silver beech (tawhai) is dominant on the inland hills, particularly in the Maclennan Forest. The southern-most stand of silver beech forest in New Zealand occurs in the Catlins. Between the hills and the coasts, beech forest is mixed with podocarps, and the spectacular red, white and yellow flowering rata, kamahi and kōwhai.

The higher country is a mosaic of shrub and scrubland, peat bog, wetland and red tussock. Bog pine, yellow-silver pine, kaikawaka (mountain cedar) and celery pine, mānuka, olearia and cassinia are some of the species found here.

The Catlins rainforest is renowned for its lush undergrowth, often a dense tangle of tree ferns, shrubs, vines, lancewoods, stinkwood, broadleaf and three-finger under the tall tree canopy. The mix varies from site to site depending on light, moisture and aspect. The forest floor is generally covered in moss, ferns and seedlings.

Two unusual plants are the rare Catlins coastal daisy (*Celmisia lindsayi*), which is endemic to this region and is found perched on cliff tops from the Nuggets south, and pikao (or pingao), a native sand binder now threatened in most parts of the country. This species may be found on the sand dunes behind Tautuku and Tahakopa beaches.

BIRDS

A wide range of habitats from the coast, river estuaries and forests to the high country attracts an unusually large and varied population of birds.

Forest birds include the nectar-eating songbirds, the tui and bellbird (korimako), New Zealand pigeon (kūkupa) and mohua (yellowheads). Smaller bush dwellers like the fantail (pīwakawaka), tomtit, grey warbler (riroriro) and brown creeper (pipipi) are also common.

In the rivers and estuaries, paradise shelducks, mallards and grey ducks are common but the numbers of rare endemic blue duck (whio) are in critical decline through loss of habitat. The secretive fernbird (mātā) is more often heard than seen in salt marshes and scrub margins.

Two species of freshwater shag (kōau) are common, along with the South Island pied oystercatcher (torea), pied stilt (poaka), kingfisher (kōtare), the white-faced heron and spur-winged plover.

Out on the coast are several breeding colonies of yellow-eyed penguins (hoiho), probably the world's rarest penguin, and their shy cousin the little blue (kororā).

MAMMALS

Long-tailed bats occur in the Catlins, though their numbers are thought to be in decline. Introduced mammal predators and loss of habitat to roost, in tall podocarps, threaten this species.

Most resident mammals were introduced and are now regarded as pests. Rabbits, stoats, ferrets, feral cats, possums, pigs, goats, wild cattle and red deer are the main offenders.

Along the rocky coast, New Zealand fur seals are common while New Zealand sea lions can be seen on some sandy beaches. Occasionally elephant seals and sea leopard seals haul themselves ashore.

FRESHWATER FISH

Water quality is especially high in the Catlins because of the unmodified forest catchment. This is rare in coastal reaches of rivers along the east coast of the North or South Islands.

Threatened species of giant and banded kōkopu and koaro are believed to occur in the rivers and estuaries. A survey in 1994 confirmed the presence of an unidentified galaxiid.

All rivers and streams are important habitat for whitebait (inaka) and eels (tuna). The Catlins River is an important trout and whitebait fishery.

INVERTEBRATES

A large pink and green moth (*Meterana* n. sp.), a flightless chafer beetle (*Prodontria praeletella*) and Astelia zig-zag moth (*Charixena iridoxa*) are among the special insects of this part of the Catlins coast.

Salt marsh insects at Tahakopa Bay and dune insects at Tautuku and Waipati beaches are significant with several species of restricted distribution, and some as yet undescribed.

Freshwater aquatic insects are also important because of the diversity of species and the number of rare species present.

MANAGEMENT ISSUES

The Department of Conservation's main management priorities are:

- The control of forest browsers - possum, deer and goats.
- Noxious weeds on roadsides and forest margins.
- Protection of forests.
- Protection of marine mammals, penguins, mohua and other wildlife.
- Control of predators in breeding colonies.
- Coastal erosion and use of vehicles on beaches, dunes and wetlands.

DoC's management objectives for the Catlins are:

To improve protection for complete sequences of indigenous vegetation and examples of uncommon species and ecosystems.

To secure as complete an area of indigenous coastal and inland forest as is feasible in the Catlins for protection of its high landscape, floral and faunal values and public enjoyment.

TAUTUKU OUTDOOR EDUCATION CENTRE

- The Tautuku Outdoor Education Centre is run by the Otago Youth Adventure Trust. Contact (03) 415-8035 for bookings or further information.
- It is set in native lowland forest in the William King Scenic Reserve, 500m from Tautuku Beach and 32km south of Owaka on State Highway 92.
- It provides accommodation for groups of up to 100 people (88 beds in two dormitory blocks and 8 staff rooms). A self-contained block with four twin bedrooms, kitchen, common room, shower and toilet is also available.
- The centre charges \$5 per person or a minimum of \$200 per night (2002 rates).

Safety around wildlife in the Catlins

School groups are quite likely to encounter wildlife at close range on the rocky shores and beaches of the Catlins. New Zealand fur seals and sea lions are common and breed in colonies along the coast while southern elephant seals and leopard seals occasionally haul out on beaches here. There are also several penguin breeding colonies.

Here are a few general guidelines to keep you safe and to avoid disturbing the animals:

- Keep your distance – avoid disturbing wildlife by approaching too close. If any animal shows signs of disturbance or alarm you should retreat quietly.
- Avoid loud noises or sudden movements that could cause animals to panic.
- Never get between wildlife and the sea, as this is their natural escape route if alarmed.
- Stay away from seal colonies during the breeding season. During this time males are territorial, extremely aggressive and will attack trespassers on their territory.
- Groups of sea lions, particularly young males, can be unpredictable and likely to charge. Do not approach closer than 20 metres.
- Dogs and wildlife do not mix so it is best to leave Rover at home.
- Avoid using a camera flash around wildlife as the intense light can damage their eyes and night vision.

Tautuku Bay and Tahakopa Bay, Catlins



Lake Wilkie – site information

WHAT'S SPECIAL ABOUT THIS SITE?

- The sequence of vegetation along the seaward edge of the lake is regarded as unique and of special scientific value.
- The complete succession of vegetation from sphagnum moss on the lake edge to mature forest is compressed into a distance of less than 65 metres.
- Some of the main forest species growing here are rimu, miro, tōtara, rata, kamahi and mānuka.
- A series of information panels explain the process of forest succession.

Access

- Lake Wilkie is a short walk (500m) south of the entrance to the Tautuku Outdoor Education Centre on State Highway 92, the main route through the Catlins.
- It is a five-minute walk from the car park on SH92 to a viewing platform overlooking the lake, which nestles into an old dune hollow between the highway and Tautuku Beach.
- The track then cuts down through the forest to boardwalks around the marshy edges of the lake, about a 10-minute walk from the car park.
- Allow at least an hour for a site visit, depending on activities planned.

Tahakopa Bay – site information

WHAT'S SPECIAL ABOUT THIS SITE?

- Tahakopa Bay is an important archaeological site of an early Māori moa-hunting camp dating back to 1000AD. Extensive middens (pictured below) have been exposed by coastal erosion from the Tahakopa River terrace (pictured above) directly opposite the village of Papatowai. Stone knives, adzes, bone fishhooks and artefacts have been found in this area.
- The Catlins may have been one of the last refuges of the flightless, now extinct moa. Thirteen species have been identified from bones excavated here. They were hunted on the open mud flats of the Papatowai and Pounaweia estuaries between 1000AD and 1700AD
- The dense podocarp forest covering the old mudflats and sand dunes of the estuary is of national importance because it is one of few areas of native timber to escape the axes and chainsaws of over 100 years of saw milling.
- The track passes through a narrow band of silver beech, which is normally found further inland, tree ferns and a stand of young totaras near the sea.
- Tahakopa Bay has the largest concentration of the native sand-binding plant, pikao (pingao) in Otago. This plant is also found in the sand dunes behind Tautuku Bay. Unfortunately, this plant is losing ground in its battle against an aggressive import, the introduced marram grass.

Pikao was a taoka (treasure) species for southern Māori as it was highly prized for weaving. The tough pikao leaf could be tightly woven into a strong pokeka (raincoat), which was regarded as thoroughly waterproof, or protective garments such as shields or chest protectors (poho-taupa) worn by warriors.

Access

- Access to the Tahakopa Bay Scenic Reserve is from the north side of the Tahakopa River Bridge, 1.5km north of Papatowai, which is 28km southwest of Owaka.

Walking tracks and times

- The Old Coach Road track starts from the car park and picnic area on the north side of the Tahakopa River Bridge.
- It follows an old coastal route for horse-drawn wagons around the curve of the river to the beach at Tahakopa Bay, directly across the estuary from Papatowai.
- Walking time is about one hour for the return trip on a wide, flat track.
- Allow extra time for activities planned in the forest and on the beach.
- It is possible to walk east along the beach for about 4.5kms and then rejoin the Old Coach Road as it traverses the hill to Purakauiti. Then return to the MacLennan estuary via Puaho Road. This is a full day's walk. Talk to the warden at Tautuku for detailed maps and advice on track and sea conditions.



Picnic Point – site information

What's special about this site

- This section of coast is one of the least modified in the Catlins.
- The bush walk to Picnic Point is a good introduction to the Catlins forests. The crowns of large rimu and matai emerge from the canopy of kamahi and rata. The undergrowth is rich in ferns, spleenworts, vines and epiphytes.
- A large range of coastal rainforest species is identified by marker posts.

Access

- This track is one of the most popular walks in the Catlins for all ages and all seasons.
- Access is sign-posted from the Papatowai domain/picnic ground on the Tahakopa River estuary.

Walking times

- An easy bush walk through coastal forest from Papatowai to Picnic Point takes 20 minutes each way.
- A return trip via the beach takes about 15 minutes.
- Allow at least an hour depending on the activities planned.

Site activities

Pre-visit

- Locate your school and the Catlins Coast on a map. Work out how long it will take to get there by bus. Find the nearest marae (there may have been ones closer to the Catlins Coast in former times). Work out how long it would have taken for people to walk there. What other forms of transport could have been used over the past 200 years? Debate the environmental impact of these different forms of transport, for example; sealed and unsealed highways.
- The Catlins Coast provides habitat for plants, insects, fish, birds and other wildlife. Find pictures of these plants and animals and sort them according to their habitat: marine, estuarine, forest, wetland, etc. Can you notice any order or patterns in physical characteristics and habitat? Compare native with exotic species. Which ones are entirely dependent on the Catlins Coast for their survival?
- The human impact on natural resources in the Catlins has been significant. Firstly, the period of Māori settlement followed by the arrival of European settlement with the sealers, whalers, foresters, farmers, residents and now the tourists. In one way or another they have all left their mark on the environment. Identify the ecological impact of these activities on land and marine resources, and subsequent changes to the human population. What evidence of these activities might you see (or not see) during the visit?
- Learn a waiata or a story about *Te Wao Nui Ā Tāne*. For example the song “*Te Kōpere*” by Hirini Melbourne (Melbourne, n.d.) which is about the colours of the rainbow in the forest. Explore the meaning of this waiata, and how the colour names are associated with the names of trees and birds in the forest.
- Various sites on the Internet calculate your ecological footprint—the area of the Earth needed to support your lifestyle. Calculate and compare your ecological footprint with that of a Māori person of the same age living in this environment 200 years ago. What does this mean for sustainability?
- Mahika kai, food gathering, was an important activity of Māori. Read the story of *Te Waka Huruburumanu* (Huria, 1996) and/or *The People of the Place: Mahika Kai* (Dacker, 1990). Brainstorm why the Catlins Coast was a significant mahika kai area and list the foods that it contributed to the food basket of Ngāi Tahu. How has this changed over time? Consider the significance of this activity to the on-going involvement of Ngāi Tahu through the Claim Settlement Act of 1998.
- Visit the environmental education website at Christchurch College of Education. Find the game called “*Possum Picnic*”, (Law, 2002a). Play this game and explore the interdependence of people and environment. How is this “game” being played in the Catlins? How will you investigate this question during your visit?
- Place names often tell us about important features of the physical environment and about the natural resources. Find Māori and Pākehā names for this area and the stories associated with these names. Think of ways your visit will help you understand the significance of these names.
- People have lived here for a thousand years. Develop a timeline of who they were, how they lived and what technology they used. What does this tell you about their attitudes and values towards the environment? Invite a range of people to talk about their involvement with the Catlins Coast today.

- Visiting a DoC site requires us to take care of the environment and people who visit it. List possible hazards to people and the environment during your visit and suggest how these can be overcome or avoided. Write an outdoor safety code and have someone take responsibility for it during the visit. There are protocols involved in visiting a site of historical significance to Māori. How will you find out about them and observe the tikanga during your visit?
- Find keywords associated with the management of a coastal environment. Include words from the DoC website and Māori literature on resource management, such as; conservation, rāhuitanga, etc. Compare and contrast these terms and identify issues that might be significant for the management of this area. How does this link in with the protocols between DoC and Ngāi Tahu to achieve conservation policies, actions and outcomes in this area?
- Biodiversity is important for a sustainable environmental but it is under threat from the introduction of exotic species and the destruction of habitat,. Investigate these issues on a global scale and find out about New Zealand's Biodiversity Strategy by visiting DoC's website. Develop ways to investigate these issues during your visit to the Catlins Coast.
- Technology is purposeful activity for meeting the needs of people in the environment. Identify two pieces of technology used in this environment (before 1800 and since 1950). Compare the purposes for which they were designed and identify what this tells us about the people and the physical and biological environment. Were there any unintended consequences from using this technology? Suggest technologies that might be seen during the visit.
- List all the Māori words used in the introductory notes to the Catlins super sites. Identify which of these is in Kāi Tahu dialect. For example, the /ng/ in northern dialects is often replaced by /k/ - compare Kai Tahu and Ngāi Tahu. You may need this information to find the words in a dictionary. What do these terms mean? Suggest their significance to Kāi Tahu and the environment.
- Make a list of different groups of people who visit the Catlins Coast, why they come here, what their needs are, what they might expect to find here. Consider their cultural background, their attitudes and values, then during the visit, find evidence to suggest whether or not these needs are met. Suggest what could be done to address these issues and the likely effect on the environment.
- Visit the environmental education website at Christchurch College of Education, (Law, 2002a). Adapt games to suit a forest environment. For example: play "Making the Links" (Barry, 2002b) include such topics as; recreational use, farming, agricultural run-off, roading, endemic species, climate change, logging, local government, Māori owners, flooding, establishing a new tourist industry, etc.
- From the pre-visit activities you have studied, which aspect of the Catlins Coast interests you the most? Brainstorm how you will find out more about this during your visit. What skills and equipment will you need? Consider the environmental impact of any activity you undertake.

Post-visit

- Grow native tree seedlings in a small nursery at school or at home. Once seeds have germinated, transplant them into containers until they are big enough and strong enough to plant out. Consider the effect these trees might have on bird life and the environment in general.
- Share your knowledge and skills with others. There are many DoC super-sites in Otago/Southland. Make contact with a school near another of these sites and share your information about the Catlins with them. How are these sites interdependent?
- Take a story in Māori, such as “*Kei Raro i te Rākau*”, (Mahuika, 1990). Adapt the story to a Catlins Coast environment using birds seen during your visit. Use pictures taken during the visit and compose a similar story about the things you found under a large podocarp.
- Build a food web of the plants, insects, fish and birds that live in this environment. Examine the environmental impact of changes to the food web, for example, people releasing unwanted pets.
- Investigate traditional Māori concepts and technology of waste management in this environment. Compare these with today’s concepts and technology. What are the options for the future?
- Use tape-recorded sounds, voices and instruments to tell a story about the environment through sound. Use sound images that evoke memories and feelings for this place.
- Build an inventory of Māori technology required for mahika kai activities on this area. Which natural resources were required to build these and which resources are available here? Where could the other resources have come from? What does this tell you about the interdependence of sites in the Otago/Southland region? How will you display this information for others?
- Have students develop a set of statements about scenarios that might happen in the Catlins Coast from such things as thoughtless or unlawful behaviour, natural events, etc. Have others rate these statements on a 1 to 5 scale, giving reasons for their responses. Use this information to develop an action-oriented activity that takes account of the range of attitudes and values expressed.
- Different words we use evoke different feelings about the environment. Make a set of word cards using English and Māori words about the Catlins Coast and other environments. Give the set of cards to other people and ask them to rank the cards in order from “*most liked*” to “*least liked*” or “*don’t know*”. What does this tell you about how people value Catlins Coast? How would you run an advertising campaign to promote the value of Catlins Coast? What words would you use in the campaign?
- Hold a “*Hot Seat - site scenario*” about the removal of native trees from private land. Identify all the stakeholders: owners, farmers, local residents, tourists, forestry industry, Regional Council, Ngāi Tahu, DoC, a rimu, wood pigeon, Have each student take the position of one stakeholder, research the effects of the proposal on that stakeholder and be prepared to be put in the “*Hot Seat*” to justify and debate how the proposal will affect them.
- Brainstorm the benefits and disadvantages of tourism in the Catlins. Continually consider the impact on the environment and on the lives of the people living there. Debate issues, such as tar sealing the road through the Catlins, then undertake an action-oriented project to deal with issues that arose.

ACTIVITY 1: SOUND LOG

Take the opportunity to listen and record the sounds you hear in the environment. Compare these with sounds heard at other sites or at other times.

Materials:

- Sound log
- Pencils
- Clip board
- Tape recorder

Method:

Find a place by yourself and listen carefully.

Record these sounds, noting direction, distance, quality.

Finish the sound log by drawing in the different habitats.

Use a tape recorder to record sounds of the natural environment and of people moving through the forest.

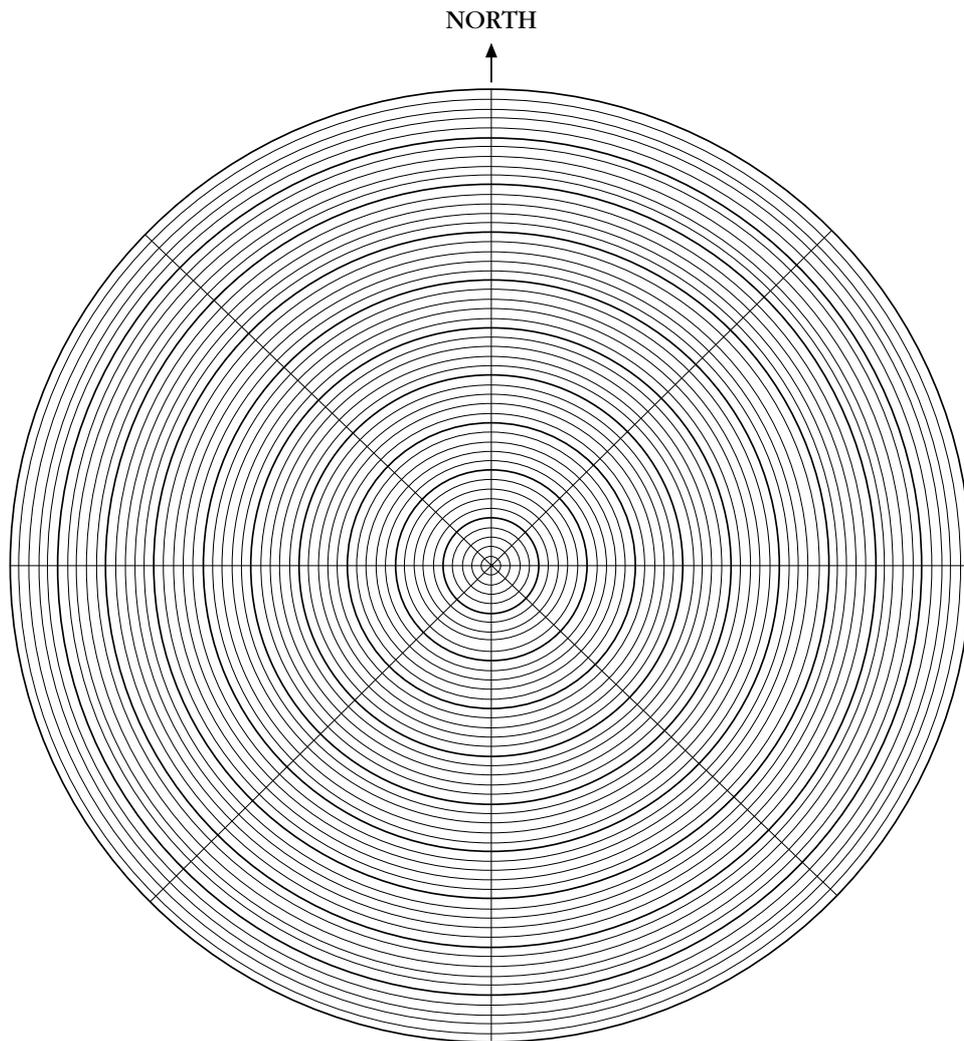
Sound Log

(see next page)

Processing Questions

- Compare the sounds of human and natural origin.
- How did these sounds make you feel?
- How would you change this soundscape?
- How would such changes impact on the environment?
- If all exotic species were removed from the site how would this change the soundscape?

Sound Log



Location:	Date:
Recorder:	Time:

Instructions:

1. Find a solitary space in the environment and sit in silence for 10 minutes.
2. Orient the sound log towards north.
3. Record any noise or sound that is heard on the graph paper with respect to its direction, distance, source, identity etc.
4. Identify the habitats from which each sound came and continue over page.

ACTIVITY 2: IN THE SPORT SHOP OR THE PHARMACY

Today, we buy most of our sports equipment from the sport shops and our medicines from the chemist. Prior to 1800, however, the local environment was the major source of these resources, though some may have come from other areas. However, this does not necessarily mean that they were inferior. In the case of medicines, many of the most common medicines originally came from natural sources.

An understanding of the physical properties, adaptations and behaviour of plants and animals was necessary to make effective use of available resources for fishing and medicine. Choose one of these and research the properties of plants that made them suitable for fishing gear or medicines. For example, kōwhai wood is one of the hardest woods in the New Zealand forest and was ideal for making the shanks of fishhooks. The young leaves of the koromiko were used for dysentery. The Māori Battalion used it during World War II.

Resources you will need:

- Species identification cards
- A resource person able to share stories about the uses of plants in fishing technology and/or medicine.

Method:

- Remind people about the safe use of plants and the importance of only using them with expert advice.
- Identify these plants in the Catlins Coast environment.
- Share stories about the physical properties of plants.

Process Questions:

- What did your findings tell you about the knowledge and lifestyle of people based on these resources?
- Compare traditional Māori fishing technology with the technology used today. What are the ecological implications for resource management?
- How does traditional knowledge about the physical properties of plants in the New Zealand forest relate to issues of intellectual property rights and resource management?
- Who should benefit from this knowledge and how can those rights be protected? Consider the legal issues of the WAI 262 claim before the Waitangi Tribunal.
- How do these rights relate to the rights of commercial plant breeders in this country who develop new varieties?

ACTIVITY 3: COLOURS AND SHAPES

People attach meaning and feelings to shapes and colours. Look at the DoC logo. What feelings and values do the colours and shapes evoke? People also attach meaning to the shape and colour of plants and animals in the environment. Māori legends and Aesop's fables are good examples. These meanings are often associated with human qualities and emotions.

In the legend of "The Kākā and the Kākāriki" (Graham, p.29) the kākā covets the bright plumage of its smaller cousin. Eventually, the birds exchange their plumage but unfortunately for the kākā the red feathers under the wing were highly prized by people who arrived from the Pacific. For them, red was associated with leadership and authority.

Materials:

- Paper and pencil
- List of colour names in Māori

Method:

1. Carefully observe the shapes of plants and leaves.
2. Make colour sketches or rubbings of these shapes.
3. Write down words you associate with these shapes and words to describe how you feel about them.

Process Questions and Activities:

1. What do these shapes and colours remind you of?
2. How do they make you feel?
3. How did you feel when you were in the forest?
4. What colours and shapes most express this feeling?
5. Take the sketches and rubbings you did and rank them in order from "most favourable" to "least favourable" then share ideas with others.
6. **Either:** use these ideas to design a logo to inform tourists in the Catlins about some attraction or danger, **or** write an allegorical story about some human quality related to a colour or shape found in the New Zealand forest.
7. What other myths and legends do you know relating to the plants and animals in various habitats of the Catlins Coast?

ACTIVITY 4: BUILDING A CANOE

Double hull canoes are more stable on the open ocean while single hulled canoes are more suitable in rivers. Single hulls were more versatile as they could be lashed together for ocean voyages and fishing.

Your job is to identify a tree suitable for building a canoe. You may select only one. If you make the wrong choice you will be without a canoe for a long time. That means your family will be unable to go fishing. If you cannot find a tree large enough, you could select one that will be large enough when your grandchildren are adults.

Materials and preparation:

- Carry out the activity “*Build a tree*” (Law, 2002) found on the environmental education website at the Christchurch College of Education.
- Have a keen eye, be able to identify a tōtara from other podocarps: miro, rimu, mātai and kahikatea.
- Prepare identification cards of the main podocarps found in the Catlins Forest.

Method:

NO TREE WILL BE DAMAGED. NO STUDENT WILL LEAVE MARKED TRACKS.

Look for signs of a tōtara that has a straight grain, with sound timber and the heartwood in the centre of the trunk. These signs include:

- growing on the valley floor
- growing in the centre of the bush
- no sign of epiphytes growing in the crown
- no sign of leaf damaged by possums
- a mature tree with a thick bark
- sound root system with no sign of soft, mushy wood.

Process Questions:

- Think about how prevailing winds and light falling on a tree might cause it to grow differently. Suggest how these factors affect a tree growing at the top of a hill, on a slope, near the edge of the forest. Why would these trees be less suitable for canoe building?
- If this tree was removed, what ecological effects would this have on the surrounding forest plants and animals?
- Think about how a tree gets its nutrients. Which signs, listed above, indicate that the tree has sound timber?

ACTIVITY 5: NATURE AWARENESS TREASURE HUNT

Materials:

- Instruction card
- Pen or pencil
- Paper
- Hand lens (optional)

Method:

- Students work in pairs to find and record the items listed on the cards. DO NOT COLLECT SAMPLES.
- After a period of time, students report their findings.

Nature Awareness Scavenger Hunt

Find evidence of the items below and explain the reason for their special feature (e.g., something that protects bird life - fences to separate people and birds.)

- Something that grows in water.
- Something that lives on this plant.
- Something with long, narrow leaves.
- Something people have used.
- Something people have done in the environment
- Something that tells people to be careful
- Something being done to improve the environment
- Something that protects bird life
- Something of special interest
- Something that is a sign of Tāwhirimātea (*God of Winds*)
- Something that feels smooth
- Something symmetrical

REMEMBER the Environmental Care Code.

- ✓ Stay on the tracks
- ✓ Treat plants and animals with respect
- ✓ Enjoy the environment

Process Questions:

- What do these things tell us about how people think and act in the environment?
- Brainstorm descriptive words about these objects that relate to all our senses. How could you use these words in a brochure to encourage people to care for the Catlins?

ACTIVITY 6: TREE TRANSECTS

The New Zealand forest is made up of many species of trees, ferns, lichens, mosses, etc. One way to have a close look at these is by taking a transect, a line between two points, and carefully identifying and counting all the different species that grow along that line.

Materials:

- A line or cord.
- Pencil and paper
- Identification cards

Method:

- Remember the Outdoor Safety Code for the protection of people and the environment.
- Divide into small groups.
- Place the line on the ground, perhaps between two large podocarps. Look at everything above and below the line.
- Record each species or plant and animal above and below the line. Record physical characteristics; how many, how tall, how wide, how thick, what colour, etc.
- After about 20 minutes, regroup and discuss findings.

Process questions:

- How many different species did you find?
- What patterns did you find e.g., growing on the same plant or on a fallen log, etc.?
- What patterns can you see in relation to size?
- What reasons can you give for these patterns?
- Where are the tiny plants and animals?
- How long would you need to identify all the plants and animals living along this transect?
- Were there any signs of other plants and animals having been there?
- What does this tell you about biodiversity?
- What questions arose for further research and investigation?

ACTIVITY 7: GLOBAL THREATS, LOCAL ENVIRONMENTS

Factors that affect the global environment also impact on local environments. For example, species extinction is taking place at a global level due to factors such as:

- **Introduction of exotic species** - which pose a threat to native species.
- **Destruction of habitat** - turning wild places into monocultural environments and/or wasteland.
- **Over-harvesting** - Humans are switching predators, able to change their diet. People currently harvest 50% of the annual plant growth on Earth.
- **Islandisation** - impoverishment of habitat - the smaller the habitat, the more vulnerable the biodiversity.
- **Pollution** - especially CO₂ and greenhouse gases.

Materials needed:

- Pens and worksheets
- Camera.

Method:

- Prior to the visit, make worksheets listing global factors that might impact on the Catlins Coast environment.
- During the visit, find as many examples as possible under each of the headings and identify what steps, if any, are being taken to limit or reverse the impact.
- Identify any other headings that you may have overlooked but which are relevant to this site. List examples of the effects and strategies, if any, being used to address them.
- Use a camera to record examples of these global patterns in the local environment.

Process Questions:

Prepare a report of findings then:

- Compare how many of these global patterns are a direct result of human intervention rather than natural processes.
- Compare the possible impact of conservation strategies with the strategies of rāhuitanga and kaitiakitanga.
- What would happen if human intervention stopped?
- How do you feel about these issues?
- What values and behaviours underpin these feelings?

ACTIVITY 8: SELECTING A SITE

If plants and animals adapt to their environment by changing their physical characteristics and to a lesser extent their behaviour, how do people adapt?

If you had to live in this environment and only use the natural resources found here, where would you choose to live? What materials would you use to build your shelters?

Think about where the sun is; where the prevailing winds come from; whether or not you need a defensive position, how many people there are, whether it will be a permanent or temporary settlement, water supply, etc.

What other things do you need to take into consideration?

Traditional settlements are often wāhi tapu-areas with special restrictions. It may not be appropriate to take food on to such sites. What other tikanga should be observed? How will this influence your planning to visit these sites?

Materials:

- Map of the Catlins Coast with contours marked.
- Pencil and paper.

Method:

- Explore the Catlins Coast together, visiting a range of possible sites.
- Stand quietly at each location and use all of your senses to get the feel of each place. Write a couple of keywords about how you feel at each location.
- Divide the class into groups. Each group will decide on a suitable site to build their settlement.
- Return to a central point and then in groups decide on a suitable site, plan the layout of the settlement and design of the dwellings giving reasons for each choice.
- Locate the settlement on the map then draw a plan of the settlement OR make a scale model in sand or other material. Share results with others.

Extension Activity:

- Where were the traditional settlements here?
- How do these choices compare with your own? What are the advantages and disadvantages?
- Look at the design of the traditional whare rau (Dacker, p.21). How do your designs compare?

RESOURCES AND REFERENCES

In planning your site visit, the following resources and web sites may be of interest:

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Porteous, Tim. (1993) *Native Forest Restoration: A Practical Guide for Land Owners*. QEII National Trust.

Tangaere, J. (1986). *Nga Kai Moana*. Wellington, Learning Media.

Whakataka-Brightwell, M. (1994). *Waka*. Wellington, Ministry of Education.

Video

Wild South documentary (approx. 20min), *Te Noboaka o Tukiauwau (The Sinclair Wetlands)*.

Web sites

www.eednz.org.nz

A comprehensive directory of environmental education resources available on-line. Highly recommended

www.doc.govt.nz

Gives a broad range of information on the Department of Conservation and offers excellent links to specific information on many species of birds, animals, plants, insects and pests. Also has on-line access to resource kits for schools.

<http://www.earthday.net/footprint.stm>

Earthday Network (2002). Ecological Footprint Quiz, Redefining Progress,

www.nzbirds.com

A great site for identifying New Zealand birds with easy index to use and great pictures.

www.greenpages.org.nz

A link with a directory of conservation organisations in New Zealand.

www.forest-bird.org.nz

The Forest and Bird Protection Society is New Zealand's largest non-government conservation group.

www.nzaee.org.nz

The New Zealand Association for Environmental Education has a comprehensive directory of sources of information available on-line.

<http://www.niwa.cri.nz/rc/freshwater/fishatlas/key.htm>

Atlas of New Zealand freshwater fish compiled by the National Institute of Water and Atmospheric Research (Niwa) has a guide to identifying fish by their appearance or name.

<http://www.ew.govt.nz/ourenvironment/water/wetlands/plantsandanimals/fishaccess.htm>

This Environment Waikato site deals with native fish access between the sea and the wetlands where they spawn.