



Out-Of-S.I.T.E.

A regular feature about schools involved in learning for the environment

Student attends conference



Spotswood College student Evelien van de Ven was sponsored by the Taranaki Regional Council to attend this conference. She reports:

On Tuesday the 2nd of April I left for Christchurch where I was to attend the youth Enviro School 2002; a biannual event held by Lincoln University to help educate environmentally aware youths about the environment.

On arrival at Lincoln village we (there were 51 of us) had 2 hours of lectures. By the end of the week we had listened to at least 15 hours of lectures. This was a good thing, because in those hours I heard a lot of thought provoking and worrying facts that made me think.

I concluded from these lectures one essential fact: We have to start being careful.

I mean this in the sense of how we treat our environment, which is fragile and took at least 600 million years without human interference to make.

One of the environmental issues that interested me most was the burning of fossil fuels and the impact that it has on

the environment. This topic was presented to us by Dr. Godfrey Boyels, a lecturer who came all the way from Britain to present the issue. He indicated that if we do nothing, our non-renewable resources will soon run out, and that switching to renewable resources will prove to be both reliable and cost-effective in the long-term. In the short term, though, it would be very costly to make the switch from burning fossil fuels, to using renewable resources such as solar panels and wind power stations. The individual production of these is slow and costly.

Dr Boyels also showed us some examples of communities who did find ways to use their renewable resources and are now benefiting from it, both economically and socially.

This triggered me to think of Taranaki; it's windy enough for wind power, and isn't New Plymouth supposed to be the sunniest town in the North Island? I know it sounds like a very big undertaking but please consider it as a future option.

Also, of course, I would like to thank the Taranaki Regional Council for kindly sponsoring me to this event and I hope I will be able to make a difference in the future.

Evelien van de Ven.



Bits'n'Pieces

Manukorihi Intermediate

Year eight pupils from Manukorihi Intermediate School undertook a study of worms with their teacher Mrs Niwa. The Taranaki Regional Council provided them with a small worm farm to help kick-start the study. The students found a ready disposal system for the school food scraps and 'traded' worm casting and rum (the liquid from the worm farm used for fertiliser) with other teachers in exchange for more food for the worms. They have established an association with the local worm industry and have a number of larger bins operating.



Mini Units

Two mini units on animal pests and plant pests are ready for use by teachers. I would still like feedback on the activities, or suggestions for other activities that may be included in these units, so will keep them in the 'draft' stage for the present. Telephone if you would like copies.

Answers from page 3:

Word find: The Sugar Loaf Islands

Estuary hunt: 1) cat's eye 2) mussel 3) swan 4) crab 5) whitebait 6) pingao 7) godwit 8) pukeko 9) kahawai 10) sedge

Bird feet: a) y, b) x, c) z, 1) 9, 2) 8, 3) 7

Complete the paragraph: 1) special 2) life 3) cycle 4) birds 5) journeys 6) native 7) depend 8) fresh 9) salt 10) breeding 11) eggs 12) plants 13) young 14) sea

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TARANAKI REGIONAL COUNCIL
NEWSLETTER TO SCHOOLS

A rather hectic first term is now behind us. It has been great to see the large number of teachers involving their students in studies related to the environment. A significant proportion of these activities has been focusing student attention on education **in** the environment and to a lesser extent **about** the environment. It is to be hoped that we can shift our planning to another stage where we can include **for** the environment. A simple progression might include:

in - a study of a local stream
about - exploration of the habitats and adaptations of the stream creatures
for - students involved in planting stream banks to improve the habitat.

Later this year an opportunity for schools ready to make the change to this extended approach will be available via teacher development workshops aimed at implementing the Environmental Education Guidelines into their schools. Sharleen Maddox of Devon Intermediate School, Andrew Thompson of New Plymouth Boys' High School and I had the honour of attending a four-day workshop at the Craigieburn Environmental Education Centre in Canterbury where we were trained to deliver seminars to our local schools. An invitation for schools to be involved will arrive early in Term 2 with training to be undertaken in Term 3. As there are conditions pertaining to eligibility schools should watch out for this information and return it as soon as possible as places will be strictly limited.

The weather on World Water Day (March 22) certainly lived up to its name! A number of schools were programmed to sample their local waterways on this day, but rain the preceding day and overnight put paid to these plans. Hopefully next year we can encourage more groups to participate in this fun activity and forward their results for inclusion on the National Waterways Project website.

Finally, welcome back to the new term. If the Council can assist in your planning, or support you in your practical activities, please give me a call.

Graeme



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ESTUARIES



This issue of SITE takes a look at the special environment created within an estuary. The coast to the north and south of our region has estuaries that provide specific habitats for our flora and fauna. You might consider investigating this habitat later in the year and identify the plants and animals that make them special.

Visit the ROCK POOLS Workshop

An overwhelming response was generated by the workshop offered to teachers in Term 1. My original estimate was that we might attract about twenty participants. When the total reached ninety our planning had changed to three afternoon workshops! The weather put paid to the Monday session but all teachers who wanted to participate were catered for in the other two sessions. A most pleasing aspect of these workshops was the number of teachers who followed them up with visits to the pools with their students. The input and expertise offered by Fiona Putt (Taranaki Regional Council's Marine Ecologist) highlighted the value of having the support people available for this type of workshop.



Environmental Award

Stratford High School Year 10 Geography students are involved in a programme related to the water quality of the Patea River. The programme has been in place for two years and is being extended this year to include some planting along the Patea River in conjunction with the Stratford District Council.



Photo: Taranaki Regional Council Chairman, David Walter presents Wayne Smith with the Stratford High School's Environmental Award.

ESTUARIES



What is an estuary?

An estuary is the place where a river flows into the sea, mixing fresh water with salt water. As the river flows downstream little particles of sand and mud are carried along in the water. When the river water meets the seawater it is slowed down which allows the mud and sand to sink. Over many years a muddy layer builds up forming mudflats. These are covered by water at high tide, but when the tide goes out, the mud is exposed to the air.

Why are they special?

Although they may look smelly and dirty, estuaries provide a wonderful habitat for many of our native species. Plants, fresh water fish, birds, crustaceans and invertebrates all use this special place for part of their life cycle. The regular ebb and flow of the tide means that the large areas of sand and mudflats are constantly being covered and exposed. This regular refreshing makes the water in estuaries one of the most fertile habitats in the world.

Estuaries are about four times more productive in plant matter than farmland.



Mimi Estuary

Why do some rivers not have large estuaries?

Many of the rivers and streams that flow out of the Egmont National Park are relatively short and steep. As the bed of these rivers is mostly rocks and boulders they don't carry the same amount of mud and silt. The mouth of these rivers is more likely to be deposits of sand and gravel rather than mud. Most of the rich silt and mud estuaries are formed on rivers which flow from the eastern hill country or the marine terraces of north and south Taranaki.

About thirty species of fish use estuaries at some stage in their life cycle.

What plants grow in estuaries?

The main types of plants are sedges and rushes nearest the main river flow. As you move further away from the river flow, where the ground becomes more stable, the vegetation changes to flax, small shrubs and manuka. The vegetation in the estuary traps the sediment carried down the river from inland erosion. This sediment mixed with natural nutrients makes a rich, productive topsoil.



Tongaporutu Estuary

What animals live in estuaries?

The sedge and rush habitat provides vital protection for the native fish to use as a spawning ground. Members of the galaxiid species (inanga, kokopu, koaro) lay their eggs along the tidal vegetation to ensure their hatchlings are washed out to sea. Mud crabs (*helice crassa*), burrowing shrimps and worms use the soft layers to provide them with protection. Fish such as mullet, kahawai, herrings and snapper forage among the estuary in search of food during incoming tides.



What birds use estuaries?

Many native and exotic birds use the estuary for an everyday food source or as a resting-place on their journey north or south. Bittern, shoveller, swan and oyster catchers are but a few of the New Zealand birds whose main food sources can be found on or in the estuary. Migrating birds such as dotterel and godwit stop over on their long journeys north or south. On periodic occasions the blue penguin have inhabited the Mimi estuary for breeding.

What changes have been made?

Modification of habitats

Extensive modification has been undertaken at some time at most of Taranaki's significant estuaries. All the northern estuaries have undergone extensive earthwork during the building of SH3 and during the installation of the Kapuni and Maui pipelines. The effect of human habitat, especially in the holiday seasons has a significant impact on birdlife. Small clusters of baches along the Taranaki estuaries also have the potential to affect water quality through disposal of sewage and rubbish. In general terms these modifications do not show great detrimental effect on the natural values that exist in our estuaries.



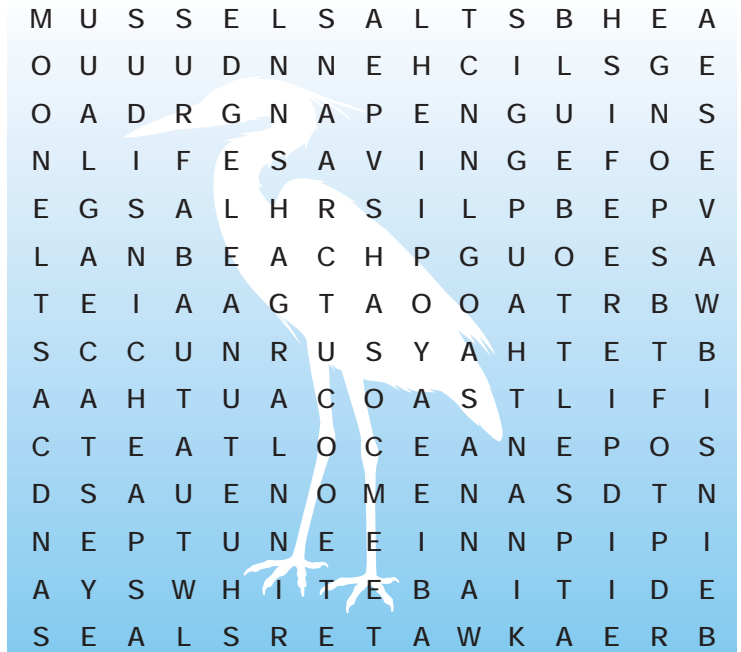
Waitotara Estuary

Junior Environmentalists Page

Word Find

Find the words in this wordfind. You can work forward, backward, up, down and diagonally. There will be 19 letters remaining, see if you can rearrange these to spell the name of a local Marine Protected Area. Write your answer here:

Mussels	Lifesaving	Penguins	Rip
Pipi	Navigation	Seals	Mudflats
Paua	Port	Sandcastle	Ebb
Whitebait	Buoy	Crabs	Kaimoana
Fish	Niche	Beach	Pier
Algae	Lichen	Tuna	Surf
Neptune	Waves	Moon	Reef
Kina	Tuatua	Sea	Tide
Bluebottles	Cat's eye	Sand	Coast
Salt	Breakwater	Ocean	
Anemone	Sponge	Shag	



Estuary Hunt

These creatures all use the estuary for survival. Use the list below to match a definition.

- 1) a univalve _____
- 2) a bivalve _____
- 3) a water bird _____
- 4) a crustacean _____
- 5) a freshwater fish _____
- 6) a dune plant _____
- 7) a migratory bird _____
- 8) a native bird _____
- 9) a marine fish _____
- 10) an estuary plant _____

godwit, crab, kahawai, cat's eye, whitebait, mussel, sedge, pingao, swan, pukeko.

Complete the paragraph

Use the words listed below to fill in the gaps in the paragraph.
native, breeding, birds, eggs, journeys, life, depend, young, special, fresh, cycle, salt, sea, plants

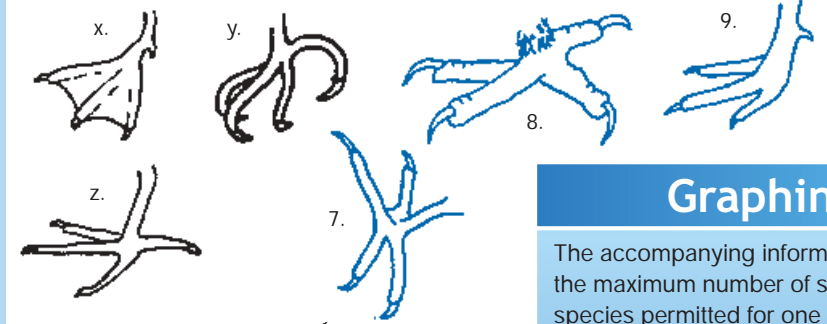
Estuaries are ^{1.}_____ places. Many creatures rely on an estuary to provide part of the necessities for their ^{2.}_____ ^{3.}_____. Thousands of ^{4.}_____ stop over at estuaries while on their migratory ^{5.}_____ to and from the northern hemisphere. Most of New Zealand's ^{6.}_____ fish also ^{7.}_____ on the estuary during their journey from ^{8.}_____ to ^{9.}_____ water or vice versa. Whitebait use the estuary as a ^{10.}_____ ground by depositing their ^{11.}_____ among the estuary ^{12.}_____ and then waiting for the outgoing water to carry the ^{13.}_____ to the ^{14.}_____.

Bird feet

Match the drawing with the correct description.

- Feet of birds that live:
- a. in a tree _____
 - b. on water _____
 - c. on land _____

- Special adaptations for birds that:
1. run _____
 2. hunt from the air _____
 3. climb in trees _____



Graphing

The accompanying information shows the maximum number of shellfish species permitted for one person. Use the information to draw a bar graph to show the limits.

Cockles	150
Kina (sea eggs)	50
Mussels	50
Oysters (dredge)	50*
Oysters (rock)	250*
Paua (ordinary)	10*
Paua (yellow foot)	10*
Pipi	150
Scallops	50*
Toheroa	prohibited
Tuatua	150
All others combined	50

*Size restrictions also apply