Biodiversity

A Resource for Schools

What is biodiversity?

The word "biodiversity" describes the variety of biological life - plants, animals, fungi and even micro-organisms. It describes the diversity of ecosystems on land, in water and in the ocean.

It is a term that encapsulates the whole diversity on earth including the diversity within species, and between species, from their genetic diversity to the ecosystems they live in.

The Resource Management Act defines biological diversity as the variability among living organisms, and the ecological complexes of which they are a part, including diversity within species, between species and of ecosystems.

All forms of life are interconnected and biodiversity is essential for the continued existence of a healthy planet.

New Zealand's biodiversity is unique and within Taranaki we have species of plants and animals that are largely confined to this region and found nowhere else in the world.

How is the Council involved in biodiversity?

The bulk of the Taranaki Regional Council's day-to-day work has always benefited biodiversity.

Protecting and enhancing biological diversity is a factor in:

- The development of regional plans that set rules and conditions for use of resources.
- The processing of consent applications.
- The protection of regionally significant wetlands.

- Undertaking control of pest animals and pest plants.
- Assessing and removing barriers to fish passage.
- The riparian and sustainable land management programmes.

The Council has also identified and catalogued 155 Key Native Ecosystems with high biodiversity values.

Who else is involved in Taranaki?

Official agencies, District Councils, iwi, land owners, industry, national organisations and local community groups are all involved in biodiversity work in Taranaki.

The Department of Conservation, Ministry of Fisheries, Ministry for the Environment and Ministry of Agriculture and Forestry are among the official agencies involved. Big national organisations include Forest and Bird, Fish and Game, the QEII Trust, the Ornithological Society and the NZ Landcare Trust.

The NZ Herpetological Society is a smaller national organisation but importantly, it is based in Taranaki. The Environment Monitoring and Action Project (EMAP) has a Taranaki-Wanganui co-ordinator based in New Plymouth.

Taranaki is also lucky to have a good number of locally-based community groups dedicated to specific aspects of biodiversity. These include:

- **East Taranaki Environment Trust**, which has made a huge effort to protect around 3,000 hectares of kiwi habitat, benefiting not only our national bird but a wide range of other native fauna.
- **Nga Motu Marine Reserve Society**, which aims to establish a network of marine reserves in the region.
- **Ngati Tara Oaonui Sandy Bay Society**, which promotes and supports conservation activities in the Sandy Bay area at Oaonui. Their activities include fencing, pest control and putting up signs to protect NZ dotterels and other threatened bird species.
- **Rapanui Grey-Faced Petrel Trust**, which assists in the management, conservation and monitoring of the Rapanui grey-faced petrel colony, particularly management of the predator exclusion fence.
- **Rotokare Scenic Reserve Trust**, which aims to eradicate all introduced mammal pests from the Rotokare Scenic Reserve, re-establishing the native ecosystem for educational purposes and also as a possible future haven for endangered native species.
- **Taranaki Farm Shelter and Forestry Association**, which promotes the planting of shelter and trees for shelter.
- **Taranaki Kiwi Trust**, which promotes the restoration and protection of sustainable kiwi populations in Taranaki. Its flagship project is in Egmont National Park where, in partnership with DOC and the BNZ Save the Kiwi Trust, a large predator trapping operation covers 6,500 hectares.
- **Taranaki Tree Trust**, which is dedicated to the preservation and development of the region's ecosystems and landscapes.
- **Te Wera Aboretum Trust**, which promotes, conserves, develops and preserves the exotic and native plant collection at Te Wera Aboretum.

What are the key threats to Indigenous Biodiversity?

The pressures on biodiversity have taken three forms:

- habitat destruction – removing and grazing of forests, draining wetlands, fragmenting and degrading remnant ecosystems.
- invasive animals and weeds – introduced species such as possums, rats and old man's beard that prey on, or compete with, native species or degrade their habitat.
- hunting – hunting, fishing and gathering.

Curriculum Links

Science

Making sense of Planet Earth and beyond

Achievement Aims

To investigate how people's decisions and activities change planet Earth's physical environment, and develop a responsibility for guardianship of planet Earth and its resources.

Making sense of the living world

Achievement Objectives

In their study of the living world, students will use their scientific knowledge, skills, and attitudes to:

- Gain an understanding of order and pattern in the diversity of living organisms, including the special characteristics of New Zealand plants and animals;
- Investigate and understand relationships between structure and function in living organisms;
- Investigate and understand how organisms grow, reproduce and change over generations;
- Investigate local ecosystems and understand the interdependence of living organisms, including humans, and their relationship with their physical environment.

Maths

Statistics

Children will have opportunities to recognize appropriate statistical data for collection and develop the skills of collecting, organizing and analyzing data, and presenting reports and summaries.

Number

Children will have opportunities to:

- Develop an understanding of numbers, the ways they are represented, and the quantities for which they stand;
- Develop accuracy, efficiency and confidence in calculating – mentally, on paper, and with a calculator.

Measurement

Children will have opportunities to:

- Develop knowledge and understanding of systems of measurement and their use and interpretation;
- Develop confidence and competence in using instruments and measuring devices.

Social Studies

Place and Environment

Achievement Objective

- Students will gain and apply knowledge, ideas, and skills to understand interactions between people and environments.

RESOURCES

Full Study Units

The following full study units are available for downloading from the Taranaki Regional Council website: http://www.trc.govt.nz-environment/eduction/resources for teachers/resources/full study units

Trees for the environment - Lessons in this unit cover:

- How trees live and breathe
- Tree parts
- Trees and habitat
- Tree adaptations
- Rivers love trees
- Erosion
- Traditional Maori use of trees
- Life cycle of trees
- Collecting seeds and growing trees
- Trees in danger

Land Management - Lessons in this unit cover:

- Soil composition
- Erosion
- Forms of erosion
- Erosion control
- Riparian management
- Land management options
- What can we do ?

Living with the river – Te Awa – Lessons in this unit cover:

- River terms
- Mapping
- From mountains to the sea
- Pollution
- Water temperature
- Chemistr - pH
- River flow
- Turbidity
- Art
- Maori Tikanga and Reo
- Written language and poetry
- River life
- Storwater or sewage, where does it all go ?
- River safety
- Photo interpretation

The Coast-Te Takutai Moana - Lessons in this unit cover:

- The Taranaki Coast
- Erosion and sand dunes
- The Pupu pool
- Pollution – oil spill
- Rubbish kills
- Fishing limits
- Marine Protected Areas
- Safety at Coast and Sea

Wetlands – Lessons in this unit cover:

- Mapping and diagram of wetland terms
- How wetlands are made
- Pollution
- Water temperature
- Chemistry – pH
- Turbidity
- Pond life
- Art-illustration
- Evaluation-Knowledge test

Hard copies of all full study units are available on request.

Mini Study units

All mini units are available for downloading from the Taranaki Regional Council website www.trc.govt.nz/environment/education/resources for teachers/resources/mini study units

Why not do a possum study? – Lessons in this mini unit cover:

- Introduction, names representing TRC animal pest control
- Possums - What do we know, what do we want to know about possums?
- Possums are pests
- What methods do we have available for controlling possums
- Safety implications
- What can you do ?

Native freshwater fish of Taranaki – Lessons in this mini unit cover:

- Background information
- Research
- Fact sheets
- Speech/debate
- Poster
- Word find
- Letter to editor
- What can we do?

Pest Animals in Taranaki – Lessons in this mini unit cover:

- Research
- Fact sheets
- Poster
- Mapping
- Super tracker
- Game

Pest plants in Taranaki – lessons in this mini unit cover:

- What's in a name ?
- Fact sheet
- Biological control
- Spread the word, not the plant
- Control –Yes or No
- Word find
- Letter to the editor
- Do the public know ?
- Bebop
- Press and display
- Play the game

Other Related Documents

- A full copy of the Taranaki-Where We Stand-State of the Environment Report 2009 is available on request
- Class sets of the summarized report are also available on request
- Pest Management Strategy for Taranaki-Animals
- Pest Management Strategy for Taranaki –Plants
- Dairying and Clean Streams Accord-Regional Action Plan
- Information Sheet-Wetlands
- The Importance of Riparian Management

Related Links –Taranaki

- Taranaki Regional Xplorer
- Taranaki Iwi Contacts
- East Taranaki Environmental Trust
- Egmont National Park (Department of Conservation)
- Fish and Game-Taranaki Region
- New Plymouth District Council - Sustainable District
- Rotokare Scenic Reserve Trust
- Taranaki Kiwi Trust
- Taranaki tree Trust

General Information on Biodiversity available on the Council website: http://www.trc.govt.nz"

What is Biodiversity ?

- What are the Biodiversity issues in Taranaki ?
- How is the Taranaki Regional Council involved in Biodiversity ?
- Who else is involved in Taranaki ?
- The Taranaki Regional Council's Biodiversity Strategy;
- Inventory of Key Native ecosytems.

SITE (Schools in the Environment) issues with links to Biodiversity. All SITES can be downloaded from the Council website:
http://www.trc.govt.nz/environment/education/site/newsletter.htm

- No 4/8/42/43 - Living with the river
- No 6/39 - Animal Pests
- No 7/16/36/38/44 - Our Coast or Rock Pools
- No 10/30/37 - Trees for the Environment
- No 11 Te Maunga - The Mountain
- No 12/23/26 - The Taranaki Environment
- No 13 - Sustainable Land Management
- No 14/27/28/32 - Native Freshwater Fish
- No 17/40 - Pest Plants
- No 19 - Streambank planting
- No 22/35 - Wetlands
- No 24 - The Pond Community
- No 29 - Lake Rotorangi
- No 47 - Biodiversity

Information Sheets – Pest Animals

Information sheets on the following pest animals are available on the website:
http://www.trc.govt.nz/environment/animals/info+sheets.htm or on request from Kevin Archer at the Taranaki Regional Council.

- Brushtail possum
- Brown hare
- European Rabbit
- Feral Cats
- Feral deer
- Feral Goats
- Feral pigs
- Magpies
- Rooks
- Wasps
- Rats
- Argentine Ants

Information Sheets - Pest Plants

Information sheets on the following plants are available on the website: http://www.trc.govt.nz/environment/plants/info+sheets.htm or on request from Kevin Archer at the Taranaki Regional Council.

- Australian sedge
- Brush wattle
- Climbing Spindleberry
- Darwin's barberry
- Giant Buttercup
- Giant Reed
- Giant Gorse
- Gunnera
- Japanese Walnut
- Mignonette vine
- Old mans'beard
- Oxygen weed
- Pampas
- Ragwort
- Senegal tea
- Spanish heath
- Thistles
- Undaria
- Wild broom
- Wild ginger