Fish & Game NEW ZEALAND

WETLANDS OF WESTLAND
Teachers Resource

Level 2, Year 3 to 5 Students

Contents

Introduction

Fish & Game manages, maintains and enhances sports fish and game birds, and their habitats, in the best long-term interests of present and future generations of anglers and hunters. We are a not-for-profit organisation, funded through the sale of fishing and hunting licences.

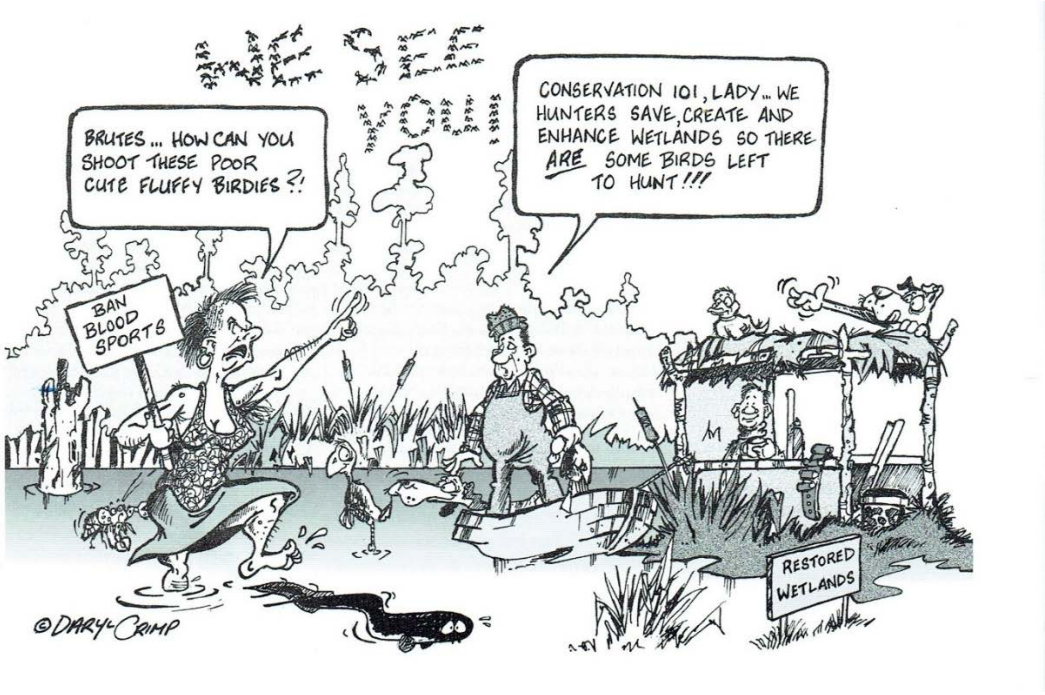
The licence money is used to protect and improve the quality of New Zealand's rivers, lakes and wetlands. We do this because good quality habitat is the key to having plenty of fish to catch and birds to hunt.

This resource has been developed to educate students about the importance of wetlands within the West Coast region whilst encouraging them to participate in protecting, restoring or building a local wetland area that will support the habitat requirements of the local duck populations.

Although the Mallard duck is focused on within this resource, it is known that to protect one species and its habitat that all wildlife present will flourish.

The resource is divided up into worksheets and Powerpoint presentations.

A special thank you goes to Landcare Research Trust and The University of Waikato Science Hub for making resources available for use in this publication; also the Department of Conservation West Coast, RAMSAR; Grey, Marlborough, Greater Wellington and Taranaki Regional Councils, LEARNZ, Fish and Game Staff from throughout New Zealand, in particular Erin Garrick and Cohen Stewart of Southland Fish and Game, and Jenn Sheppard (Auckland University)of the Mallard Research Group; John Dyer and David Klee from Auckland/Waikato Fish and Game; Blake Abernathy past Field Officer.



NZ Curriculum

Level 2

The Wetlands of Westland resource is aimed at Year 3 to 5 students working at levels 2 of the New Zealand Curriculum. It is aligned with the vision, principles, values and key competencies of the New Zealand Curriculum and links to the science and social sciences learning areas.

The activities in the Wetlands of Westland resource develops students understanding the importance of maintaining and preserving wetland areas, which will protect and enhance the wildlife that rely on these habitats for survival. The resource also promotes the importance of keeping wetland areas healthy and life-sustaining.

VISION

This resource focuses on student being:

- Connected: to the land and the environment
- Actively involved: as contributors to the well-being of New Zealand – social, cultural, economic and environmental.

PRINCIPLES

This resource supports the principles of:

- Leaning to learn: students reflect on their own learning processes and learn how to learn
- Future focus: sustainability

VALUES

This resources models and explores the key value of:

- Ecological sustainability which includes care for the environment

KEY COMPETENCIES

This resource fosters in students the key competency of

- Thinking: to make sense of information, experiences and ideas.

Achievement objectives

LEARNING AREA	STRAND	ACHIEVEMENT OBJECTIVE
The Arts	Visual arts – developing ideas; communicating and interpreting	Student will: • Investigate and develop visual ideas in response to a variety of motivations, observation, and imagination. • Share the ideas, feelings, and stories communicated by their own and others' objects and images
English	Speaking, writing and presenting; Listening, Reading and viewing	Students will: • use oral, written, and visual languages to create meaning and effect • uses a large and increasing bank of high-frequency, topic-specific, and personal-content words to create meaning
Mathematics and Statistics	Geometry and measurement; statistics	Students will: • Create and use appropriate units and devices to measure volume and capacity and time
Science	Nature of Science: Investigating in Science	Students will: • Explore and describe natural features and resources • Describe how natural features are changed and resources affected by natural events and human actions
	Nature of science: Living world: Life processes and Ecology	Students will: • Recognize that all living things have certain requirements so they can stay alive • Recognize that living things are suited to their particular habitat

Learning outcomes

- Awareness and sensitivity to the environment and related issues
- Build knowledge and understanding of what you know about wetlands and the impact of people on it
- Explore key concepts and relate them to your local situation
- That all living things have a life cycle
- A healthy habitat is needed to sustain life

Learning Activities

Introduction to Wetlands
- What is a wetland
- Why are wetlands important
- Types of wetlands
- Where does all the water go

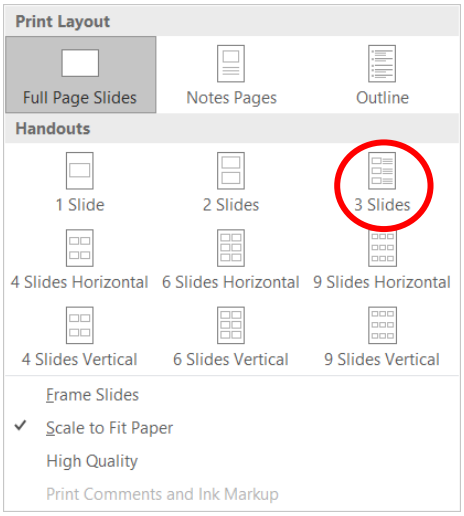
Wetland life
- Plants of the wetland
- Who lives in the wetland
- Introducing NZ duck species

The Mallard Duck
- Lifecycle
- Habitat
- Food requirements
- Breeding success
- Predators

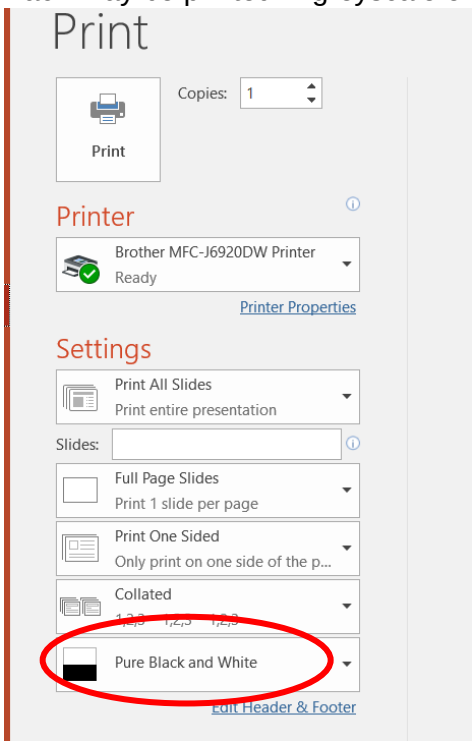
Design a wetland duck pond
- Produce an artwork of a wetland area

Each section has a powerpoint presentation to accompany it. In some parts of the powerpoint presentation there are links to external media files which will require an internet connection, screen and sound capabilities.

There are teacher notes at the base of each screen to guide the teaching.
For student notes you can print off the power point presentation as indicated.



Each may be printed in greyscale or pure black and white:



PART 1 – What is a Wetland?

TEACHING AND LEARNING ACTIVITIES	WHAT YOU WILL NEED
At the start of this presentation students are asked what they already know about wetlands. The description of a wetland is introduced. *Slide 4 – Wetland Rap* This media file runs for 4 minutes and 11 seconds *Slide 6 – What is a wetland?* This media files runs for 4 minutes and 26 seconds. Discuss with students the key points of what a wetland is. How can this be related to the area where they live? Students to research RAMSAR and how New Zealand is involved for the world-wide conservation of wetlands. References: (Wetland Trust, 2017) (RAMSAR, 2017)	Power point presentation "what is a wetland?" Internet access to view media files White board and marker for brain storming Worksheet Activity 1 – How Wetlands are Made includes a list of resources needed to complete the experiment Students to have internet access to research RAMSAR
Learning outcomes: Students will learn what a wetland is and understand the importance of wetlands in New Zealand	

THE WATER BANK

ramsar.org

www.worldwetlandsday.org

PART 2 – Why are Wetlands important?

TEACHING AND LEARNING ACTIVITIES	WHAT YOU WILL NEED
This presentation introduces students to the importance of wetlands; how a wetland functions; how the 3 P's work on a local wetland area. *Slide 3* - Wetlands 101 – 3Ps. This media file runs for 5 minutes and 41 seconds *Slide 5* – students to discuss how this wetland can provide, purify and protect. Purify – examples - stock effluent from the paddocks; fertilizer run off; storm water from the roadway (oil, fuel), bird fecal matter before it goes into the Grey River Provide – examples - ducks, other bird life, insects, sandflies, mosquitos, dragon flies, mayflies, eels, aquatic plants and water for the surrounding trees Protect – is a catchment for the rain runoff from the road, paddocks which will stop the Grey River from receiving high volumes of water; will also stop the paddocks from flooding *Slide 6* - Activity 2 – please refer to the Worksheets for instructions and student handout. *Slide 7 and onwards.* Provides an opportunity for students to use maps and find their local area which will show how many important wetlands are in this area. References: (Greater Wellington Regional Council, 2009, June), (Greater Wellington Regional Council, 2005, May) (Sargent, Hole, & Leggett, 2004)	Powerpoint presentation "Why are Wetlands important?" Internet access to view media files Worksheet – Activity 2 – How Wetlands Work This worksheet includes a list of items required to complete the experiment.
Learning outcomes: Students will understand how a wetland works to ensure wildlife have a healthy habitat to live and the environment around the wetland is protected. Students will identify significant wetland areas in their local region.	

PART 3 – Types of Wetlands

TEACHING AND LEARNING ACTIVITIES	WHAT YOU WILL NEED
This powerpoint gives a basic overview of wetlands present in the West Coast region. Activity 3: Types of Wetlands worksheet. References: (Greater Wellington Regional Council, 2005, May) (Johnson & Rogers, 2003, October), (Department of Conservation, 2017) (New Zealand Plant Conversation Network, 2017) (Wetland Trust, 2017) (Johnson & Rogers, 2003, October), (Abernathy)	Powerpoint presentation "Types of wetlands." Activity 3 Types of Wetlands worksheet printed out for students to complete
Learning outcomes: Students will be able to identify some characteristics of West Coast wetlands.	

PART 4 – Where does all the water go?

TEACHING AND LEARNING ACTIVITIES	WHAT YOU WILL NEED
This section engages students to think about where water disperses during rainfall. Students will learn what a catchment is. *Slide 3* – this media file runs for 1 minutes and 10 seconds. Activity 4: What's in my river catchment? This involves students thinking about where drains, storm water and other water run off goes within their local area. References: (Greater Wellington Regional Council, 2005, May) (Sargent, Hole, & Leggett, 2004)	Power point presentation "Where does all the Water go?" Internet access to view media files Worksheet Activity 4 – The River Catchment where I live
Learning outcomes Students can identify a catchment area. Students can identify potential harm to the water way, either man made or from nature. Students become aware of the environment in their local area.	

PART 5 – Plants of the Wetlands

TEACHING AND LEARNING ACTIVITIES	WHAT YOU WILL NEED
This presentation introduces students to the zones of wetland plants; what type of plants they will find in areas around a wetland. *Slide 9* – this media file runs for 2 minutes and 45 seconds. References: (Department of Conservation, 2010), (Greater Wellington Regional Council, 2017) (Meikle),	Power point presentation Plants of the wetland Internet access to view media files
Learning outcomes Students can identify the wetland zones and the suitable plants that zone.	

PART 6 – Who lives in the Wetland?

TEACHING AND LEARNING ACTIVITIES	WHAT YOU WILL NEED
This presentation shows some of the wildlife that live in a wetland. It is an introduction to New Zealand duck species. Protected and non-protected / Game birds are discussed. Activity 5: Who lives in a wetland? Wordfind. Activity 6: Quack Quack Quiz References: (Greater Wellington Regional Council, 2009, June), (Landcare Research, 2017),	Power point presentation Who lives in the wetland? Internet access to view media files Print of "who lives in the wetland? Wordfind" for students to complete Print off the Duck species sheets to assist students to answer the Quack Quack quiz.
Learning outcomes Students can name some wildlife that live in a wetland. Students will be able to identify NZ duck species. Students will understand the difference between protected waterfowl and game birds.	

PART 7 – Introducing the Mallard Duck

TEACHING AND LEARNING ACTIVITIES	WHAT YOU WILL NEED
This presentation introduces: • New Zealand's most common duck, • lifecycle • breeding • diet • duckling survival • What Fish and Game does *Slide 5:* The Mallard Lifecycle – allow a minimum of 10 minutes to view the media file within this slide. Activity 7: Mallard Duck Lifecycle. *Slide 19:* This media file about the Mallard Research project that Fish and Game is conducting runs for 8 minutes and 24 seconds. References: (Garrick, Duckling survival and habitat selection of brood-rearing mallard (Anas platyrhynchos) females in Southland, New Zealand, 2015), (Garrick & Stewart, Mallard (Anas platyrhynchos) brood use of ponds in Southland, New Zealand, 2015), (Amory, 2013), (Abernathy),	Power point presentation Introducing the Mallard Duck Internet access to view media files Print of 'Mallard Duck Lifecycle' for students to cut out the pictures and place in order.
Learning outcomes Students will understand that wildlife have a lifecycle. Students will learn about the research Fish and Game conducts.	

PART 8 – Predators

TEACHING AND LEARNING ACTIVITIES	WHAT YOU WILL NEED
Students to discuss prior to viewing the powerpoint presentation: What predators the Mallard duck might have? An overview of eat predator is given. This is based on research Fish and Game has conducted. References: (Garrick, Duckling survival and habitat selection of brood-rearing mallard (Anas platyrhynchos) females in Southland, New Zealand, 2015)	Power point presentation Predators **WARNING: THIS PRESENTATION DOES SHOW THE HUMANE KILLING OF A STOAT** Internet access to view media files
Learning outcomes Students will be able to identify predators and appropriate predator control.	

PART 9 – Mr Mallard's Pond

TEACHING AND LEARNING ACTIVITIES	WHAT YOU WILL NEED
This is the opportunity to bring all the previous learning together. Students are to produce an artwork, drawing, painting or model of what Mr Mallard's pond could look like. Handouts will assist students with plant selection, wildlife their pond can attract and basics on wetland restoration. References: (Southland Community Nursery, 2017), (Meikle), (Abernathy), (Garrick & Stewart, Mallard (Anas platyrhynchos) brood use of ponds in Southland, New Zealand, 2015), (Greater Wellington Regional Council, 2009, June)	Power point presentation Mr Mallard's Pond Worksheet Activity 9 for students Handouts for students are located in the folder labeled "handouts".
Learning outcomes Students will design a pond that will reflect all previous learning.	

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Glossary of Terms

Term	Meaning
Acclimatize	Become accustomed to a new climate or new conditions
acidic	having the properties of an acid, or containing acid; having a pH below 7
Aquatic Plant	Is a plant that has adapted to living in water – either saltwater or freshwater
Biodiversity	The variety of land and animal life in the world or in a particular habitat
Brood	A family of birds or other young animals produced at one hatching or birth
Drake	Male duck
Duck down	The down of birds is a layer of fine feathers found under the tougher exterior feathers. Very young birds are clad only in down.
Emergent (plants)	An emergent plant is one which grows in water but which pierces the surface so that it is partially in air.
Endemic	A native plant or animal only found in a certain place
Estuarine	Relating to the estuary – i.e. an estuarine animal is an animal found at an estuary
fledge	(of a young bird) develop wing feathers that are large enough for flight.
Hen	Female birds
Hybrid	The offspring of two animals of different species or varieties (synonyms: cross-breed)
Incubation	When a bird, etc. incubates its eggs, it keeps them warm until the young come out, and when eggs incubate, they develop to the stage at which the young come out
Invertebrates	An invertebrate is an animal without a backbone. Invertebrate animals include fruit flies and sea sponges. Your backbone allows you to stand up straight, and it also allows you to be grouped with the other vertebrates: animals with backbones. Invertebrates are the opposite: they have no backbone.
Nutrients	a substance that provides nourishment essential for the maintenance of life and for growth

Plumage	The birds feathers collectively
Predator	An animal that natural preys on others
Protected	aim to preserve (a threatened species or area) by legislating against collecting, hunting, or development.
Spawning site	The area where the mass of eggs is deposited by fishes, amphibians, mollusks, crustaceans, etc.
Species	A group of living organism consisting of similar individuals capable of exchanging genes or inter-breeding. A kind or sort.
Survival Rate	Survival rate is a part of survival analysis. It is the percentage of people/animals in a study or treatment group still alive after an event.
Vegetation	plants considered collectively, especially those found in a particular area or habitat.
Water fowl	ducks, geese, or other large aquatic birds, especially when regarded as game.