Royal Albatross Centre Education

Conservation Management of Seabirds

A Biology Programme for
Secondary Students
at the **Royal Albatross Centre**

Programme Booklet for Teachers
2020

Programme Overview

Objective: To identify threats to Albatross, investigate protection methods (eg. monitoring and enhancement) and discuss human impact on the ecosystem (positive and negative).

Programme Description: Take part in activities which illustrate the monitoring and protection methods that the rangers use to increase the fledging rate of the Royal Albatross. Weighing birds, trapping predators and assessing hazards are just a few examples.

Time:	2 hours
Age Focus:	Year 9-12
Curriculum Area:	**Science – Living World, Biology**
Cost:	$4/person

Spend the day on Otago Peninsula

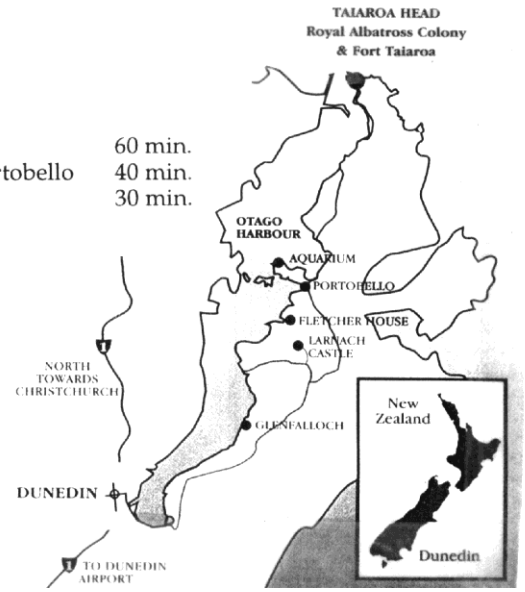
New Zealand Marine Studies Centre:

There are a number of connecting programmes available at the NZ Marine Studies Centre and Aquarium. For programme details and bookings check out www.marine.ac.nz

Location

Travel Times (one way):

Dunedin to the Royal Albatross Centre, Taiaroa Head	60 min.
Dunedin to NZ Marine Studies Centre (Aquarium), Portobello	40 min.
Royal Albatross Centre to NZ Marine Studies Centre	30 min.



Programme Plan:

Time	Activity
0	Arrive, meet guide at reception - *please arrive 10 minutes early*
0 min	**Tour Rm** (30 min) - *overview of programme* - *introduce concepts of protection, enhancement, monitoring* - *introduction worksheet*
30 min	**Observatory** (30 min) - *Albatross viewing* - *Monitoring activity and worksheet*
1 hr	**Displays** (30 min) - *Weighing of chicks* - *Enhancement activity and worksheet*
1.5 hrs	**Education Rm** (30 min) - *Albatross protection* - *"What would happen If" activity and worksheet* - *Impact of plastic pollution* - *Hands-on-Head wrap-up game*
2 hr	**Depart**

Tour Guidelines

1. **Supervisors**

- Role of supervisors is to:
    - ensure that the students act in a responsible manner.
    - assist the students with the activities.
    - keep the noise level down and the group together.

2. **Dress warmly**

- It is always windy and cold at Taiaroa Head.

3. **Arrive 10 Minutes Early**

- If you are late, the time of your visit may be cut short as the observatory time is fixed and other tours are scheduled immediately after yours.
- Please allow time for a toilet break before the programme begins.

4. **Group Size**

- Please note only 25 people are allowed in the observatory at once.
- Please organise your students and supervisors into groups of 25 or less before arrival.

5. **Programme Length**

- The programme is 2 hours long (includes 15-30 minutes in the Richdale Observatory).
- Please plan to have morning or afternoon tea before or after the programme (not during).

6. **Lunch Areas**

- Areas suitable for lunch include:
- Pilots Beach, just below the headland, is a great place to view fur seals but please do not approach or disturb them.
- grassy area to the east of the Royal Albatross Centre.
- Education Room maybe available if the weather is wet (please check availability with Royal Albatross Centre staff in advance).

Shop and Cafeteria

- Please keep students out of these areas unless they are planning to make a purchase.

No Smoking

- To reduce the fire risk to the colony, smoking is not permitted.

Pre-trip Preparation

In order to ensure that students get the most out of the programme we suggest that some pre- and post-trip work is done in the classroom prior to the visit to the Royal Albatross Centre.

1. Risk Assessment

Review guidelines on the web site and review with trip supervisors.
(http://www.albatross.org.nz/education/educational-resources/)

2. Pre-trip Activities

Use the activities on the web site and the resources listed to introduce the students to albatross and the Taiaroa headland.

3. Background Information

Review the information provided in this booklet. Further information about albatross and the Taiaroa Headland site can be found on the web site and in the reference list

4. Work Sheets

Programme worksheets are attached and available on web site. Please make copies for your students as they will be used during the programme. Answer sheets are also attached to help with follow-up in the classroom.

5. Tour Guidelines

Please review the Tour Guidelines with your students and supervisors prior to the trip to the Royal Albatross Centre.

6. Teacher led activities at Taiaroa Head

Extend your visit to Taiaroa Head by exploring the headland. Identification guides will help you find other species of birds and mammals that use the headland. Lunch at Pilot's Beach and look at how humans interact with the environment.

7. New Zealand Marine Studies Centre

Combine at the Royal Albatross Centre programme with a visit to the NZ Marine Studies Centre and Aquarium. Spend the morning at the Aquarium and the afternoon with the Albatross or vice versa. The programmes are complementary and together create a unique learning experience for your class (http://www.marine.ac.nz/

Resources

Royal Albatross Centre Activity Sheets
(download from www.albatross.org.nz/education/educational-resources/

SECONDARY
Conservation Management Worksheets
These worksheets follow the programme objectives and monitoring enhancement and protection of the Royal Albatross.

ALL LEVELS
Seabird Solutions Facts Sheets and Lesson Plans
Information about seabirds and conservation issues.

Wildlife Viewing Guide
Wildlife viewing activity guide for teachers.

Wildlife Information Guide
Species to look for at Taiaroa Head and information.

Environmental Action Planner - "Tracking our Trash"
This action planner for Teachers gives an example of how students can make the vision to reduce the amount of rubbish going into the sea a reality.

Marine Rubbish Activity - "Tracking our Trash"
This activity takes students a few steps beyond just picking up trash from the local beach. By identifying the type of rubbish they can look at the source, harm rating on wildlife and find out how long it will take to break down in the ocean.

Problem with Plastic
Information on how our plastic rubbish is affecting wildlife in dramatic ways.

Relevant Web Sites

www.albatross.org.nz/education/educational-resources/
The education part of the Royal Albatross Centre website. Lots of activities and information to download.

www.albatross.org.nz
The Royal Albatross Centre site with background information on the colony and history of Fort Taiaroa.

www.doc.govt.nz/royalcam
Royal Cam s a 24-hour live stream of an albatross next during the breeding season.

www.doc.govt.nz/get-involved/conservation-education/resources/seabirds
Southern Seabird Solutions fact sheets and lesson plans
Excellent resources

www.savethealbatross.net
Save the Albatross campaign by RSPB and Birdlife International.

www.forestandbird.org.nz/campaigns/off-the-hook
Facts about the threatened seabirds and information on the campaign to prevent seabird deaths in the fishing industry.

www.wwf.org.nz/what_we_do/species/seabirds/
World Wide Fund for Nature site with information on conservation issues surrounding albatross.

www.albatrossencounter.co.nz/albatross/
A tourism operation in Kaikoura. Has a conservation section and information on what birds (including albatross) can be seen.

http://science.howstuffworks.com/great-pacific-garbage-patch.htm
http://science.howstuffworks.com/clean-up-garbage-patch.htm
How stuff works articles on the problem the Pacific ocean is facing with plastics and how we can 'potentially' clean it up.

Conservation Management of the Northern Royal Albatross (Answers)

Programme Focus

– to look at the 3 main concepts of conservation management.

Protection = aspects that minimize detrimental human effects

Enhancement = aspects that improve on nature

Monitoring = regular checks to monitor bird health and determine long-term trends

What are the threats facing albatross?

Limited numbers
Long line fishing
Pollution

Why is Taiaroa Head an important site for the Northern Royal Albatross ?

Only mainland breeding colony
Endangered species
New colony (est. 1900-1936)
Public viewing
Continuous monitoring (>60 yrs)
Management & research possible
Knowledge gained, techniques learned

Monitoring Activity - Answers

Monitoring – regular checks to determine long term trends

Department of Conservation Rangers monitor the Royal Albatross at Taiaroa Head on a daily basis. These are some examples on what they do.

- *Recording of Colour bands, stainless number band for identification*
- *Regular checkups for the birds, two to three times/day – Jan to April, once a day – April to Jan*
- *Weather and other environmental conditions (eg. grass growth)*
- *Weight of chicks or developmental stage of eggs (light box)*
- *Location of birds mapped*
- *What juveniles are around (who is with who)*
- *Wildlife sightings (eg Krill in water etc.)*

Good conservation management depends on good baseline data. What are the problems associated with collecting extensive baseline data on Royal Albatross?

- *Limited staff time and funds*
- *Time – due to the Albatross being a long lived species*
- *Problem may not be evident, so the information needed may not have been collected in the past*
- *Location, other breeding areas are difficult to reach*
- *Baseline data collection is hard to justify – funders often want the data to answer specific questions (crisis management)*
- *This is monitoring activity not research*

A research programme in combination with the monitoring activity is very important to help the survival of the Albatross. Describe one aspect of research that is being carried out at the moment.

1. *Flight loggers put on the foot of adults to track where they are going, what they are doing and how long they are spending doing it…*
2. *Ongoing baseline data collected*

- *survival rates*
- *changes in population*
- *changes in population behaviour (related to a range of things from disturbance, wind/weather)*

3. *Monitoring of adult breeders for management of nests and productivity*

Enhancement Activity - Answers

Enhancement – aspects that improve on nature

There maybe more than one answer to each method.

1.

Intervention Methods	*Effect of these Methods*
1. Dummy Eggs	G. Used to hold pairs at nest, after something has happened to their egg, to provide natural foster parents when needed.
	B. Used as a training tool for those pairs who consistently break eggs
2. Revegetation	M. Removal of introduced plants like thistles, possibly decreases blowfly numbers. Introduction of native plants could increase the moisture in soil and areas of shade as well as increase the nesting material available.
3. Incubator	K. Chicks are hatched in an environment where the membranes are kept moist and there is no fear of fly strike.
4. Hand Rearing	N. Chicks fed by wildlife rangers when one or both parents do not return to the nest.
5. Fostering	J. Deserted eggs or chicks are placed in the nest of pairs who have lost their offspring or are better parents.
6. Flight Rescue	D. Birds that do not succeed in their first flight and are unhurt are returned to the colony for a second try
7. Supplementing Nesting Material	E. Mint added to the nest is effective in repelling flies about the hatching period - preventing fly strike on young.
8. Trapping	L. Used to control or eradicate introduced pests (blowflys) and predators (cats, mustelids) that affect the survival of the eggs and young
9. Security Fence	Q. Used to control access of humans and canines to the nesting area

10. Restricted Viewing	A. Used to reduce disturbance during courtship and egg laying
11. Window tinting	O. Used to reduce visual disturbance to nesting birds *(evident in long term data set which showed a change in where juveniles were displaying)*
12. Banding	P. Used to keep a reliable record of bird presence, breeding attempts, family history and immigrants to the population.
13. Drug Treatment	I. Used to control bronchial infections, treat fungal and bacterial infections, and wounds from bites.
14. Manual Treatment	C. Hand removal of maggots before they enter the body cavities
15. Microhabitat Manipulation	F. Fog spraying of water over sitting birds and surrounding vegetation to raise humidity and reduce temperature through evaporation to prevent heat stress.
	H. Introduction of hay bales around the nest to protect very young chicks from foul weather and introduction of large screens to provide sun shade for young chicks in hot weather.

Outline any negative aspects to these management techniques?

1. *Disturbance (visual and noise)*
2. *Handling by humans*
3. *Eggs / chicks may be rejected by parents*
4. *Transfer of eggs from nest to nest or to incubator could spread infection*
5. *Revegetation may provide more cover for predators, change areas where juveniles display, flowering plants may increase blowfly population and could affect flight patterns over headland – which could affect nesting and displaying areas.*

2. How can the rangers tell if the birds are stressed?

- *When stressed, albatross can show signs of shaking, backing away and/or spitting.*

3. Do you think these enhancement techniques should be used to increase the fledging rate of Royal Albatross at Taiaroa Head?

- *Management has increased the fledging rate by ~20%*
- *75% of non managed offspring survive to 5 years, only 60% of those that are managed survive to 5 years*

(see Clive Robertson's paper attached – Effects of Intervention on the Royal Albatross Population at Taiaroa Head, 1937-2001)

- 75% of non managed offspring survive to 5 years, only 60% of those that are managed *(probably would have died without help)*
- Survival rate of managed offspring to 5 years depends on the degree of management
- Most successful of managed offspring were those that were fostered to natural parents (75%), recovered from the harbour (71%), high level of manual intervention (hand rearing, incubator, drugs) – only 50% survivorship to five years.
- Note there is a long lag time before the benefits of intervention are seen (6-10 years before available to breed at the colony)
- In the past 12 years (heavily affected by both climatic and blowfly influences) only 33% of chicks would have fledged without significant intervention – this was raised to 72% by intervention.

Managed chicks – defined as those that have had significant hand rearing, been fostered, spent time in incubator, recovered from harbour after failed first flight or been managed in some way to avoid death.

Preventative Intervention – required to reduce the risk of something more serious occurs.

What would happen if? - Answers

Protection = aspects that minimise detrimental human impacts

What would happen if…	Impact	Management Techniques	How can YOU help prevent it happening or help with the management of the situation?
Dunedin had an unusually hot summer?	- *incidence of fly strike increases as adult stands up and leaves egg, chick exposed* - *heat stress* - *increase of dead embryos ("glad-wrapped" chick)*	- *fly traps, manual removal of maggots* - *water spraying* - *move egg to better area or to incubator*	- *actions / publicity campaigns to reduce global warming* - *better weather predictions*
Toxins entered the food chain and killed off significant numbers of fish?	- *reduced food supply for adults and chicks* - *toxins in food which affect chicks and/or adults* - *possibly nil if fishspecies effected are not targeted by albatross*	- *supplemental feeding* - *monitor what is happening in the marine environment* - *look at other species is about all we can do because of lack of $$*	- *reduce marine pollution* - *may be a natural occurrence – should we do anything?*
An albatross broke a wing?	- *not able to fly to feeding / breeding areas*	- *kill the bird (as very difficult to fix – could be very costly)* -	- *campaign to reduce the number of power lines or ariel structures that the birds could fly into*

What would happen if…	Impact	Management Techniques	How can YOU help prevent it happening or help with the management of the situation?
An albatross got caught on a fishing hook?	- *birds will drown* - *long line fishery is the main problem* - *Northern Royals generally not getting caught* - *If juvenile, almost nil effect on the colony*	- *use of streamers to keep birds away from baited hooks* - *reduce the time baited hooks at surface, launching below surface, not using frozen bait* - *use noise to scare birds away* - *refer to displays*	- *publicity to raise public awareness of the situation* - *letters to decision makers* - *education of fishermen* - *lobby for observers on all boats* - *research into fishing techniques that will reduce the problem*
An albatross landed in the parking lot?	- *bird will be frightened, disorientated* - *public may disturb it*	- *move bird back into the colony if possible (may be difficult to catch)* - *keep the public away until it flys away itself*	- *educate the public about how they could stress the bird by trying to get too close for photos etc.* - *investigate if the size of the reserve should be increased?*
A boat went aground at Aramoana and spilled oil?	- *probably would have little impact on the Albatross, however an oil spill further out at sea where the birds are feeding would have a major impact – on feathers would affect ability to fly and insulating properties of feathers, if ingested would be toxic to birds* - *at Aramoana would have impact other species that live on the headland (seals, shags, gulls, penguins etc.)*	- *Otago Regional Council has an oil spill recover plan with a section on management of wildlife – birds would need to be caught and cleaned* - *Oil needs to be contained as soon as possible to reduce spread and contact with wildlife*	- *educate the public on how impacts of an oil spill and strategies to reduce the impact* - *train people to help with the wildlife rescue in the event of a spill* - *lobby decision makers to ensure all oil tankers in NZ waters have double hulls etc.*

What would happen if…	Impact	Management Techniques	How can YOU help prevent it happening or help with the management of the situation?
The number of stoats, ferrets and wild cats in the area increased?	- *the number of eggs and chicks killed or bitten would likely increase (Last chick eaten was 5 yrs ago 2 yrs ago one was bitten, by a cat?)* - *other species impacted*	- *trapping, shooting, poisoning (note success is measured by the number of chicks/eggs not eaten, not by the number of animals caught in traps)*	- *educate the public about the impact of these animals* - *develop a campaign to get cats fixed, and not to let unwanted kittens go wild* - *run workshops for landowners to train and encourage them to trap these animals on their properties*
An albatross ate discarded plastic thinking it was food?	- hard plastic could damage internal organs - *difficult to pass through system, gets retained in stomach, reduces room for nutritional food, lowers fitness (items found include squid lures, plastic wrap, rubber gloves, hair roller…)*	- *remove any plastic that is regurgitated near the nest site* - *identify the items and publicise what they have eaten*	- *beach/playground clean ups* - *reduce waste (lunch box/school waste)* - *reduce rubbish and other pollutants going down storm water drains* - *educate the public about the impact of rubbish on the birds*
There was a fire in the reserve?	- *Would kill the eggs and chicks as they are unable to fly away* - *reduce nesting material and damage nesting habitat* - *severity of the impact depends on the time of year (losing chicks in one season may not be too damaging)*	- *fire prevention* - *fire control* - *removal if eggs and chicks would be ideal but staff must get themselves safe as a first priority* - *revegetation*	- *prevent smoking in the area* - *educate the public on the fire dangers* - *revegetation*
The signal station was shifted to Port Chalmers	- *would remove the guide wires and reduce the chance of the birds flying into them and being hurt* - *24 hour security of the site would be lost*	- *security fences* - *security cameras??*	- *educate the public about the danger of ariel wires to these birds*