

DEPTH STUDIES WITH TARONGA ZOO – TEACHER RESOURCE

Year 11 Biology and Earth and Environmental Science

WILDLIFE AT RISK

Biodiversity is not a luxury – it is a necessity. Global trends indicate wildlife population numbers are decreasing dramatically due to natural and human influences. Taronga’s Conservation Society is perfectly placed to engage students with depth studies.

Students will connect directly with Taronga’s scientists and experts to deepen their understanding of the risks threatening populations and our conservation efforts. Students will design initiatives that empower people to take action to reduce threats to wildlife and ecosystems.



DEPTH STUDY OUTLINE

AT SCHOOL – PRE EXCURSION ACTIVITIES

Students are encouraged to explore:

- the cause and effect of different impacts on species.
- Taronga’s scientists and their research projects.
- past conservation projects that have been created thanks to the Taronga Green Grant.
- data sets from Taronga conservation or research projects.

AT THE ZOO

Students will enjoy:

- Workshops delivered by working scientists, keepers and teachers at the zoo about human impacts and efforts to increase population numbers.
- Analysing data from authentic research and conservation projects.
- Seeing technologies used in conservation science.
- Animal encounters.

BACK AT SCHOOL – POST EXCURSION ACTIVITY

Students are encouraged to design an innovative wildlife-focused conservation initiative that will help protect wildlife and secure a sustainable future for our planet.

OUTCOMES

Knowledge and Understanding:

- **BIO11-10** describes biological diversity by explaining the relationships between a range of organisms in terms of specialisation for selected habitats and evolution of species
- **BIO11-11** analyses ecosystem dynamics and the interrelationships of organisms within the ecosystem
- **EES11-11** describes human impact on the Earth in relation to hydrological processes, geological processes and biological changes

Working Scientifically:

- Questioning and predicting **BIO11-1 / EES11-1**
- Communicating **BIO11-7 / EES11-7**
- Analysing data and information **BIO11-5 / EES11-5**
- Problem solving **BIO11-6 / EES11-6**

AT SCHOOL - PRE EXCURSION ACTIVITIES



CASE STUDY - THE BELLINGER RIVER TURTLE

In February 2015 a mystery virus wiped out a healthy population of turtles. This population only exists in the Bellinger River in Northern NSW. Taronga's Herpetofauna team and Western Sydney University are currently working together to prevent Bellinger River Turtle extinction. Watch

<https://www.youtube.com/watch?v=FgDBSJrwGjA>

TARONGA SANCTUARY AND THE GREATER BILBY

Australia has had a level of mammalian extinctions in the past 200 years unparalleled in recorded history. As a consequence of these losses and ongoing conservation concerns for these species, in March 2015 the NSW government pledged \$100 million over five years to protect the threatened species of NSW. Within that pledge is a program to reintroduce locally extinct mammals. These reintroductions will be in three locations: Mallee Cliffs National Park, Sturt National Park and Pilliga State Conservation Area. Each of these release sites will require numbers of genetically and behaviourally robust specimens for translocation and release. The UNSW Wild Deserts consortium, of which Taronga is a member, has responsibility for the Sturt National Park reintroduction. The establishment of a 110 feral-predator proof enclosure at Taronga Western Plains Zoo will allow Taronga to provide some of the animals required for such important conservation endeavours as the reintroduction of mammals to the Sturt National Park. The Taronga Sanctuary initially will be a space in which the greater bilby will be bred for release in these vital projects. Our long term ambition is to manage multiple threatened species prior to re-introduction within this space.

Greater Bilby Recovery Plan - <https://bit.ly/2lu7slk>

Greater Bilby Summit 2015 - <https://bit.ly/2rC4K2D>

CONSERVATION IN ACTION

Visit [Taronga Science: Conservation in Action](#) and for a chosen conservation project identify:

- the driving question for the project
- what species it aims to impact
- what data collection was involved in the project
- how the projects success will be measured.

SCIENTISTS AT WORK

Get to know [Our Scientists](#) before you meet some of them in person at the zoo.

CONSERVATION GRANTS

Past conservation projects that have been created thanks to the inaugural [Taronga Green Grant](#) are listed below. For each winner summarise their solution, what species they are impacting and why you believe their project has been successful.

- [Take 3](#)
- [Wildlife Witness](#)
- [The last straw](#)

SAVING OUR SPECIES

The Office of Environment and Heritage is working hard to help save threatened species from extinction in NSW. Learn more by exploring:

- [Saving Our Species 2016-21](#)
- [Saving Our Species Videos](#)

INTRODUCED SPECIES

Since colonisation, many species of animal have been introduced into Australia from other countries. They include cane toads, goats, foxes, deer, rabbits, pigs, cats, dogs and horses. Learn about these [Pest Animals](#).

AT THE ZOO - SAMPLE PROGRAM

This excursion will contribute five hours to a depth study

Time	Activity		
10.00am	Welcome and Acknowledgement of Country, Venue Centenary Theatre		
10.10 - 10.45am	What happened to the Bellinger River Snapping Turtle? Bellinger River Snapping Turtle: mortality investigation, virus ecology and husbandry By Jane Hall, Adam Skidmore Venue: Centenary Theatre		
10.45 - 11.00am	Morning Tea Break		
11.00 - 11.30am	Behaviour Change Campaign and Conservation Bel Fairbrother. Venue: Taronga Institute of Science and Learning Lecture Theatre		
	Choose 1 of the options below		
11.45-12.15pm	Connecting Wildlife Dr Jo Day has undergone research on a network of bushland reserves that were created to preserve the landscape and prevent further deterioration of habitat. There is little hard data on the effectiveness of the corridors but, there is anecdotal evidence that many wildlife corridors linking these reserves are not working effectively, increasing the risk of inbreeding and loss of biodiversity. Jo will discuss her research and the challenges facing our Wildlife due to deforestation. Venue: Taronga Institute of Science and Learning	Impact of Marine Debris and Satellite Tracking of Sea Turtles Satellite tracking will provide a better indication of release success, especially if the satellite tags remain functional for an extended period of time once the turtles are released to sea. Tracking can help indicate the level of impact of marine pollution/human interaction on turtles and provide critical information about habitat use and debris has on the environment. Learn about this fascinating project being led by the team at Taronga Wildlife Hospital. Venue: Taronga Wildlife Hospital	Taronga Sanctuary and the recovery of the Greater Bilby Australia has had a level of mammalian extinctions in the past 200 years unparalleled in recorded history The establishment of a 110 feral-predator proof enclosure at Taronga Western Plains Zoo will allow Taronga to provide some of the animals required for such important conservation endeavours as the reintroduction of mammals to the Sturt National Park. The Taronga Sanctuary initially will be a space in which the greater bilby will be bred for release. Venue: Taronga Institute of Science and Learning
12.30-1.00pm	The Bellinger River Snapping Turtle Breeding Program Tour <i>Group 1:</i>	lunch and free time	
1.00-1.30pm		The Bellinger River Snapping Turtle Breeding Program Tour <i>Group 2:</i>	lunch and free time
1.30-2.00pm	lunch and free time		The Bellinger River Snapping Turtle Breeding Program Tour <i>Group 3:</i>

A student workbook will be emailed before the zoo excursion

BACK AT SCHOOL- POST EXCURSION ACTIVITY

TARONGA WILDLIFE GRANT

Ever had an idea that could change the world?

Can you rid Australia of cane toads? Can you reduce our waste? Can you help stop habitat loss or protect a threatened species?

Taronga is a not-for-profit conservation organisation with a goal to secure a shared future for wildlife and people. Taronga is offering funding for innovative wildlife-focused conservation initiatives that will help protect our wildlife and help secure a sustainable future for our planet.

Be part of the solution, not the problem - “with funding and access to 1.7 million people a year, what would you do to make Australia a safer place for wildlife?”

Create a video (no longer than five minutes) or written application (no longer than 4 pages) which addresses the following:

- Describe the targeted issue and explain why this issue is a threat with far reaching impact on wildlife.
- Describe how you would address this issue.
- Describe the specific activities you plan to undertake with clear milestones you hope to achieve.
- Describe which community, habitat, species will the proposal impact?
- What potential pitfalls can you see and how will you overcome them?

Keep the below criteria in mind:

Vision: Does the proposed project help secure a shared future for wildlife and people?

Target issues: Is the identified issue a genuine conservation threat with far reaching impact?

Appropriate action: How likely is it that the targeted action will create a positive tangible conservation outcome?

Have potential pitfalls been addressed?

Realistic: How likely is it that your targeted action will be achieved, given available resources?

Scope of conservation impact: Will this project impact at a population, species, habitat, ecosystem or global level?

Innovation: Is this a novel method for tackling a conservation issue?



RESOURCES

Atlas of Living Australia

<https://www.ala.org.au/>

Atlas of Living Australia – Northern Corroboree Frog
Map -

<https://bie.ala.org.au/species/urn:lsid:biodiversity.org.au:afd.taxon:740a610f-33be-426f-86c2-1b036b9cd02d>

Charts -

<https://bie.ala.org.au/species/urn:lsid:biodiversity.org.au:afd.taxon:740a610f-33be-426f-86c2-1b036b9cd02d>

Atlas of Living Australia – Southern Corroboree Frog

<https://bie.ala.org.au/species/urn:lsid:biodiversity.org.au:afd.taxon:2be14329-b4a1-4fb7-b00f-0ab5d521296d>

Corroboree Frog Recovery Program website

<https://www.corroboreefrog.org.au/resource-hub/reference-material/>

NSW Guide to Surveying Threatened Plants

<http://www.environment.nsw.gov.au/research-and-publications/publications-search/nsw-guide-to-surveying-threatened-plants>

Pest Animals

<http://www.environment.nsw.gov.au/pestsweeds/pestanimals.htm>

ResearchGate

<https://www.researchgate.net/>

ResearchGate – Michael McFadden

https://www.researchgate.net/profile/Michael_Mcfadden5

The Last Straw

www.thelaststraw.com.au/

Saving our Species 2016-21

<http://www.environment.nsw.gov.au/research-and-publications/publications-search/saving-our-species-2016-2021>

Saving our Species Videos

<http://www.environment.nsw.gov.au/Topics/animals-and-plants/threatened-species/saving-our-species-videos>

Save Our Species – The Southern Corroboree Frog

<http://www.environment.nsw.gov.au/research-and-publications/publications-search/help-save-the-southern-corroboree-frog-pseudophryne-corroboree>

Taronga Green Grants

<https://taronga.org.au/conservation/wildlife-conservation/taronga-green-grants>

Taronga Science: Conservation in Action

<https://taronga.org.au/taronga-science>

Taronga Science: Our Scientists

<https://taronga.org.au/taronga-science#scientists>

Wildlife Witness

www.wildlifewitness.net

Greater Bilby recovery plan

<https://www.environment.gov.au/system/files/resources/37646d5b-a355-45d6-9c78-604833626a37/files/m-lagotis.pdf>

Greater Bilby Recovery Summit Conservation Plan

http://www.cpsg.org/sites/cbsg.org/files/documents/STBF_BILBY_SUMMIT_2015_CONSV_PLANN.pdf