EXPLORING ECOSYSTEMS

Stage 5: Science & Technology
SC5-14LW, SC5-2VA

Explore the fragile nature of Ecosystems by studying a threatened Australian environment and a specific threatened species that Taronga is helping to conserve. Meet animals, learn detailed examples of interactions in food webs and hear how Taronga is contributing to species recovery plans for threatened Australian animals to maintain native food webs.

OUTLINE

AT SCHOOL

Watch the videos to discover how ecosystems change when species are removed then reintroduced or even when an ecosystem is facing intense pressures.
Investigate the role of the Platypus and Booroolong Frog within their ecosystems. What are the threats they face? How could this affect all other aspects of the ecosystems in which they live?

AT THE ZOO

Create a food web using Taronga exhibit species (teacher sample on page 5 and 6) and your Technology. Using an iPad, smart phone or other technology, take photos of Taronga Zoo animals on exhibit in the Rainforest Trail and the Great Southern Ocean to create food webs on your device.

ZOO WORKSHOP

Meet some Australian animals from the Sydney region to design a living food chain and discuss food webs.
Hear about the important work Taronga is doing to challenge the threats that are against the Platypus and the Booroolong Frog in the wild. Discover how Taronga is doing vital work to reintroduce this important animal back into its wild environment.

BACK AT SCHOOL

Discuss the impacts on a food web when an animal is in decline, where would new pressures be placed?
Create a way to promote the importance of the Platypus and Booroolong Frog in their ecosystems. Your students' aim is to promote positive human activities in these environments and encourage kids and adults to support conservation endeavours relating to these animals?

TARONGA ZOO
For the Wild

AT SCHOOL- BEFORE THE ZOO

Explore the fragile nature of Ecosystems by studying a threatened Australian environment and a specific threatened species that Taronga is helping to conserve.

DISCOVER THE WONDERFUL WORLD OF SUSTAINABLE ECOSYSTEMS

Construct and interpret food chains and food webs, including examples with the platypus and frogs.

Watch these two examples of the interconnection in ecosystems.

Wolves Change Rivers - Observe and discuss what happens to an ecosystem when a predator that disappeared was reintroduced and what happened to the ecosystems of Easter island when things went too far! - Easter Island

BOOROOLONG FROG

Research the Booroolong Frog, one of Australia's endangered animals.
•Identify the distribution of the Booroolong Frog in NSW.
•Identify the habitat of the Booroolong Frog.
•What are the threats to survival of the Booroolong Frog?
•Why are frogs important to food webs?

PLATYPUS

Research one of Australia's native consumers, the platypus.
•Identify the ecosystems the platypus is found in and the role of the platypus in its ecosystem.
•Are there any Biotic and Abiotic (Threat) factors affecting the ecosystems which are causing a decline in platypus numbers?
•Describe the threats impacting the landscape.
•What impact will the decline in platypus numbers have on the rest of the ecosystem? Does it matter? How does this affect the whole ecosystem?

TARONGA ZOO
For the Wild

AT THE ZOO

A guided (or self-guided) investigation
Engage with animals, explore detailed examples of interactions in food webs and hear how Taronga is contributing to species recovery plans for threatened animals in the wild.

USE YOUR OWN DEVICE

(self-guided)

As students make their way around the zoo, they take photos of the animals on display and use them to create food webs on their device.

The best locations in the zoo to complete this activity are the **Rainforest Trail** and **Great Southern Oceans.**

Preload your devices with apps ready to create on the day.
Suggested apps for Food Web design:
-Inspiration Maps
-Lucid chart

DISCOVER (workshop)

- The impact of changes to food webs due to human impact and what we can all do to promote sustainability and conservation of species in their native environments.
- How Taronga Zoo is helping in the conservation of the Platypus and the Booroolong Frog!

EXPLORE (self-guided)

- Complete your Rainforest Trail, taking photos of all of the animal species using your iPad, smart phone or other technology. Construct a food web using species on exhibit in the Rainforest Trail.
- A predator is missing from the web created from the ecosystem just explored! Students choose one predator that can be found in the Zoo and justify how this predator fits into the Rainforest Web.
- Back at school, students can present their food web and chosen Predator, justifying how it completes their Asian Rainforest Web.

Photographer: Lorinda Taylor

CONNECT (workshop)

- Meet up close some more Australian animals from the Sydney area.
- Find out how these animals form a food chain and their importance in food webs.
- Hear from Zoo Educators how these animals are being affected in their native environment by human activity and what impact that is having on population numbers and the food webs.

TARONGA ZOO
For the Wild

AT SCHOOL-AFTER THE ZOO

How can our knowledge of food webs, landscape and landform threats of the Platypus and the Booroolong Frog effect change:
- in local and/or global understanding about the landscape issues affecting the Platypus and Booroolong Frog.
- in the support of conservation efforts of Taronga Zoo and other organisations for the Platypus and/or Booroolong Frog.

HELP MAKE THE CHANGE

Your students will now use the knowledge they have gained from their visit at Taronga Zoo, their own class work and research to make a local/global impact on people's understanding of the issues affecting the Platypus and/or the Booroolong Frog and encourage people to have a real, positive impact on the conservation of these species.

CREATE A CONSERVATION PROMOTING WEBPAGE

Your class/school can create knowledge about the threats to the Booroolong Frog and/or the Platypus and promote conservation and sustainability in the global community .

Ideas to think about:
-What do other conservation websites look like?
-What layout will provide visitors to your webpage easy access to information?
-What information/pictures should you include on the webpage?
-What links will you provide for people to become more involved in the conservation efforts of the Booroolong Frog and/or the Platypus?
-How will you know your webpage is effective?
(Hint: Keep track of how many people visit your webpage using a free webpage hit counter)
-Will tasks for the webpage be divided amongst the class?

CREATE A LOCAL/ GLOBAL AWARENESS CAMPAIGN

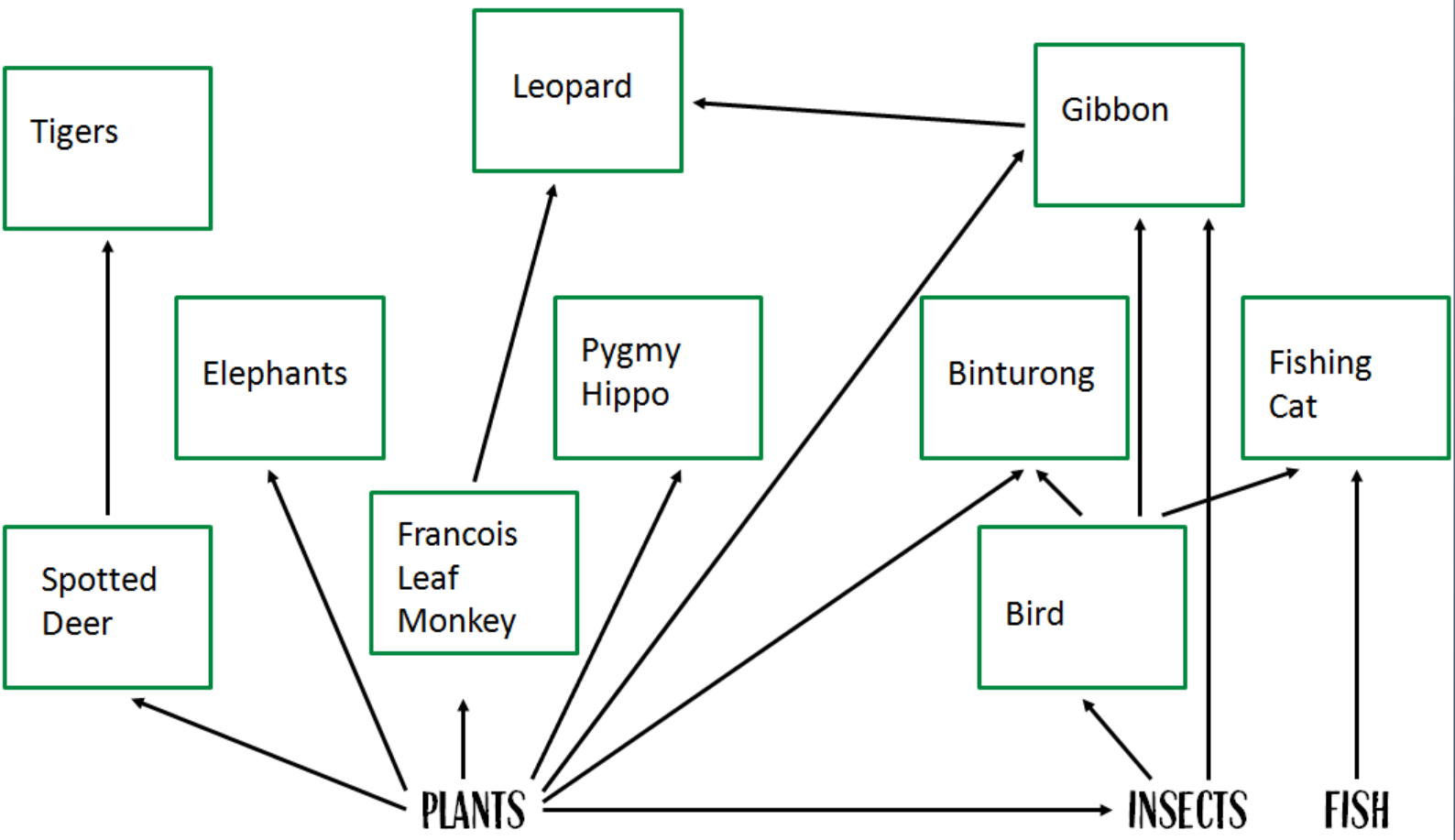
Students should be involved in the decisions about the local/global awareness campaign.
Deciding on a local or global campaign will depend on where you live (if you live near a Platypus or Booroolong Frog population, a local campaign might be more effective).
The ideas below may assist you to guide the students in the creation of their campaign.

Ideas to think about:
-What are the major threats to Platypus and/or Booroolong Frog populations?
-What are the conservation efforts for the Platypus and/or Booroolong Frog?
-What will be the goals/outcomes of your campaign?
-What do people need to know about your campaign?
-How do people find out about your campaign?
-What format will the campaign take? (e.g. flyers distributed to local community or fishing clubs, meeting with/presenting ideas to the Environmental Officer of your local council, awareness and raising money at school for conservation efforts, informative conservation promoting website)

TARONGA ZOO
For the Wild

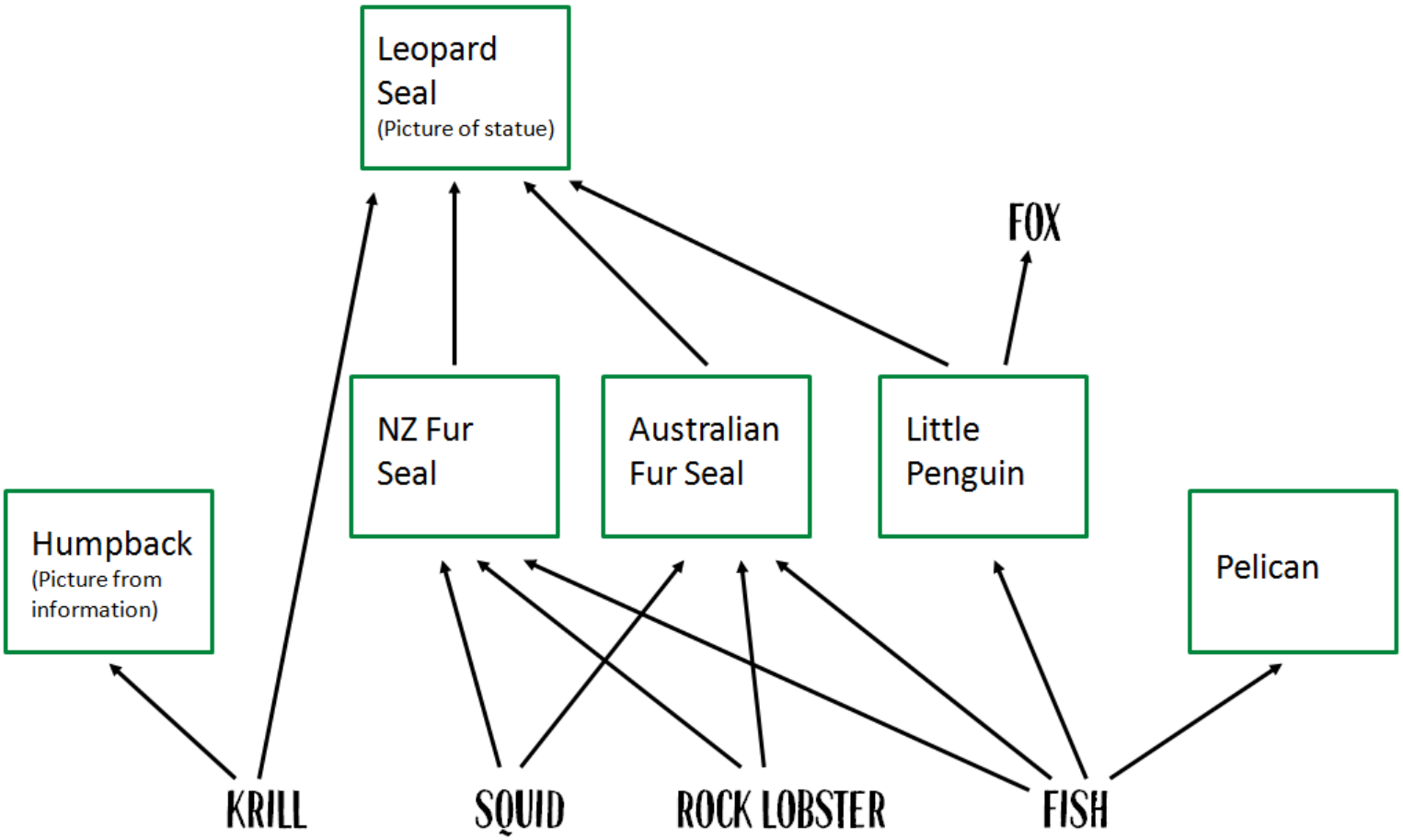
RAINFOREST TRAIL FOOD WEB - TEACHER SAMPLE

If students complete the self-guided activity well, they should create a food web containing the photos of the animals below.



GREAT SOUTHERN OCEAN FOOD WEB - TEACHER SAMPLE

If students complete the self-guided activity well, they should create a food web containing the photos of the animals below.



RESOURCES

Booroolong Frog Resources

http://www.environment.gov.au/resource/booroolong-frog-litoria-booroolongensis-national-recovery-plan

'Supporting the Underfrog'
https://www.youtube.com/watch?v=m6QuprQDcPg

http://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10484

http://www.environment.nsw.gov.au/determinations/BooroolongFrogEndSpListing.htm

http://www.iucnredlist.org/details/41029/0

http://www.iucnredlist.org/details/classify/41029/0#threats

http://www.amphibianark.org/litoria-booroolongensis/

http://keys.lucidcentral.org/key-server/data/050d0302-080d-4b0b-8603-0f05010c030b/media/Html/Litoria_booroolongensis.htm

http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=1844

Create Your Own Website Resource

http://www.weebly.com/

Conservation Resources

http://taronga.org.au/conservation
http://taronga.org.au/support-us/philanthropy/conservation-science-initiative/become-part-our-future

Platypus Resources

https://platypus.asn.au/home/distribution/

http://www.environment.nsw.gov.au/animals/theplatypus.htm

http://taronga.org.au/animals-conservation/conservation-action/conservation-partnerships/platypus-australia

http://www.sustainingriverlife.org.au/RiverAnimals/14PlatypusChallengesofbeingtopofthefood.aspx

Food Web/Food Chain Resources

Rainforest Food Chain and create a food web
http://www.environment.nsw.gov.au/resources/education/rainforestfoodchains.pdf

Wolves Change Rivers
https://www.youtube.com/watch?v=6dk0DGCa7ow

Easter Island
https://www.youtube.com/watch?v=gfbQA-Krx9Q

SYLLABUS LINKS

Science & Technology

LIVING WORLD

OUTCOME

A student:

> Analyses interactions between components and processes within biological systems SC5-14LW

CONTENT

• Multicellular organisms rely on coordinated and interdependent internal systems to respond to changes in their environment.

• Conserving and maintaining the quality and sustainability of the environment requires scientific understanding of interactions within, the cycling of matter and the flow of energy through ecosystems.

VALUES AND ATTITUDES

OUTCOME

A student:

> Shows a willingness to engage in finding solutions to science-related personal, social and global issues, including shaping sustainable futures SC5-2VA