# Eco-island - Couran Cove environment kits

# what's on the menu?

## - Feeding relationships in diverse island environments

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| **Suggested levels** | Years 5 – 9 |
| **Key learning areas** | Science Outcomes:<br>LL **2.1**, 2.3, D 2.5;<br>LL3.1, **3.3**,<br>LL **4.1**, D4.5 |
| **Overview** | Students use plant and animal specimens to build food webs and explore the importance of biodiversity. |
| **Purpose** | • To investigate feeding relationships in an island environment<br>• To provide a model for students to develop webs of their local flora and fauna. |
| **Resources –**<br>Kit Contents | • 20 fauna & flora specimens – see list<br>• Descriptor cards for each specimen, including:<br>o feeding relationships<br>o adaptations to environment<br>o photograph and physical data<br>• "South Stradbroke Island" by Lindy Salter, a comprehensive guide to the nature and history of the island.<br>• Teaching resources<br>o CD-ROM<br>o also on the Queensland Museum website - www.qm.qld.gov.au/education/programs/eco-online |
| **Learning Experiences** | **Orienting**<br>KWL:<br>• Stimulate discussion about students' prior knowledge of feeding relationships and food webs with a KWL brainstorm activity – list answers to the questions:<br>o What do you **K**now?<br>o What do you **W**ant to know?<br>o And at the end of the unit, what have you **L**earnt? |

Classifying:

- Explain that organisms in an ecosystem can be classified as *producers*, *consumers* or *decomposers*.
    - *Producers* create their own food through the process of photosynthesis
    - *Consumers* must hunt or forage for the nutrients they need to survive. They can be classified into three sub-groups:
        - Herbivores
        - Carnivores
        - Omnivores.
    - *Decomposers* obtain nutrients by breaking down parts of organisms into simple forms.
- Distribute specimens and their matching information cards to groups of students. Have them use 'Feeding Relationship' information from the card to classify each specimen into one of the above groups.

Food Chains:

- Select a 'producer' from the kit, eg. Forest Red Gum, and build a simple food chain from it, eg:
    - Forest Red Gum > Cicada > Squirrel Glider > Lace Monitor
- Have students suggest other food chains represented by the kit's specimens. Record these by placing specimens or cards in rows.
- Consider the implications of removing a species. What if:
        - spraying mosquitoes removes all the insects?
        - loggers remove all the Forest Red Gums?
        - accumulated pollution kills all the predatory birds? (Just as food sources are important, so are predators, to keep species from over-population)
    - In a simple food chain with limited species biodiversity, these scenarios are disastrous.

**Enhancing**

Food Web Activity 1:

- Give each student a specimen card (print extra copies of producer and herbivore cards to make up the numbers if necessary)
- Have students stand in a circle, displaying their cards
- Give one student a ball of string; they hold onto the end and pass the ball to someone whose specimen is their predator or prey, eg. an Eastern Brown Snake could pass to a Stick Insect that it eats or a Kookaburra that eats it. The challenge is to see if the group can continue passing until everyone in the group is connected to the 'web'.
- Consider the implication of taking out a species. Have a student sit down ('die out'). Ask the 'specimens' connected to this one if they

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| | have any alternate food sources, or alternate predators to keep their population under control. If so, they survive (stay standing); if not, they die (sit) and the process is repeated with organisms they are connected to. Try several different scenarios to compare the outcomes.<br>• Compare the 'web' with the simple 'food chains' made earlier. The web should be seen to be more resilient because creatures have multiple predators and prey. Use this illustration to show how increased biodiversity makes the ecosystem more sustainable.<br><br>Specimen study:<br>• Select a specimen from the kit (eg. Echidna or Squirrel Glider) and lead students to find evidence of its feeding, protection strategies and adaptation to environment, based on what can be observed of its structure<br>• Distribute specimens to individuals or small groups; each prepares a brief oral report for the class, based on what they have learnt by carefully observing their specimen. Use one of these templates to collect data:<br>o www.mms.eq.edu.au/docs/Object-Analysis-Specimens.doc<br>o www.mms.eq.edu.au/docs/Three-step-Object-Analysis.doc<br><br>Food Web Activity 2:<br>• Set out specimen cards on large bench or mat, with producers at the bottom and carnivores at the top<br>• Based on what students now know of feeding relationships, identify links between organisms<br>• Record links with chalk or lengths or string – see how many you can find for each organism. Notice how top predators have many more links than creatures further down that may have more specialised food sources<br>• Revisit the earlier discussion about the implications of a species dieing out.<br><br>Predator/Prey simulation game<br>• An outdoors simulation game for the whole class.<br><br>Creature Card Game 1 – 'Who eats Who?'<br>• A game for a pair of students with a set of specimen cards - extra copies can be downloaded from here: pdf 746K<br><br>Creature Card Game 2 – 'Who am I?'<br>• A game for a pair or small group of students with a set of specimen cards - extra copies can be downloaded from here: pdf 746K |

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| | **Synthesising**<br>Local Environment:<br>• This kit is based on a specific area of woodland on South Stradbroke Island. Develop content for another version of this kit, based on your local environment<br>• Students develop a list of local species:<br>  o Record observations ("What lives here?")<br>  o Add to this data by accessing:<br>  ▪ websites, eg. www.mms.qld.edu.au/wild-things-webquest/myfiles/mylinks.htm<br>  ▪ books, eg. www.qmuseum.qld.gov.au/organisation/publications/guides/index.asp<br>  ▪ local experts, including wildlife officers - http://www.epa.qld.gov.au/<br>• When they have a comprehensive list, allocate species to individual students or small groups to create a local set of 'specimen cards' modelled on the ones with the kit. |
| **Links to support material** | • Eco-Online – www.qm.qld.gov.au/education/programs/eco-online<br>• Couran Cove Island Resort Fact Sheets - www.couran-cove.com.au/downloads/<br>• Wild Things WebQuest - How can we help wild creatures live in our school grounds? Includes ideas for local species survey - www.mms.qld.edu.au/wild-things-webquest/<br>• Gould League - Food Webs - Lots of information and fun activities about how animals fit into food webs - www.gould.edu.au/foodwebs/ |
| **Risk Assessment** | • Some students may be allergic to fur or feathers of specimens in the kit. |