

## Eco-island - Couran Cove environment kits

### *sun • sand • salt • survival*

- How living things survive in diverse island environments

<b>Suggested levels</b>	Outcome Levels 3 - 5 Years 5 – 9
<b>Key learning areas</b>	Science outcomes: LL <b>2.1</b> , 2.2, <b>2.3</b> , D2.5; LL <b>3.1</b> , 3.2, 3.3; LL <b>4.1</b> , 4.3; D4.5 LL <b>5.1</b> , 5.3; EB 3.1, 3.3, EB 4.1
<b>Overview</b>	South Stradbroke Island has a range of natural environments. With this kit, students will: <ul style="list-style-type: none"> <li>• compare five distinct island environments</li> <li>• explore the relationship between organisms and the mechanisms they possess to cope in each environment</li> <li>• extend this experience to a study of their own environment.</li> </ul>
<b>Purpose</b>	<ul style="list-style-type: none"> <li>• To investigate the ways in which the environment can impact upon the survival of organisms</li> <li>• To determine the selection pressures that exist in a range of environments</li> <li>• To conduct a field sampling exercise using transects to determine where certain organisms occur based on the environmental features and pressures of their location.</li> </ul>
<b>Resources</b> Kit Contents	<ul style="list-style-type: none"> <li>• Specimens of 45 flora &amp; fauna species – <a href="#">see list</a></li> <li>• Descriptor card for each species, including: <ul style="list-style-type: none"> <li>○ adaptations to environment</li> <li>○ feeding relationships</li> <li>○ photograph and physical data</li> </ul> </li> <li>• Five habitat information folders presenting images and information about each environment</li> <li>• Abiotic material from each environment indicating human impact</li> <li>• 'Best Beak' activity:</li> </ul>

	<ul style="list-style-type: none"> <li>○ Picture book: "Best Beak in Boonaroo Bay" by Narelle Oliver</li> <li>○ Six bird skulls displaying different tool functions</li> <li>● "South Stradbroke Island" by Lindy Salter, a comprehensive guide to the nature and history of the island</li> <li>● Teaching resources <ul style="list-style-type: none"> <li>○ CD-ROM</li> <li>○ also on the Queensland Museum website - <a href="http://www.qm.qld.gov.au/education/programs/eco-online">www.qm.qld.gov.au/education/programs/eco-online</a></li> </ul> </li> </ul>
<b>Learning Experiences</b>	<p><b>Orienting</b></p> <p>Stimulate discussion about students' prior knowledge of adaptations of organisms to their environment.</p> <p>Teacher:</p> <ul style="list-style-type: none"> <li>● Use specimens and habitat photos to show students some mismatched combinations eg. 'Mud whelk in woodland', 'Forest Red Gum on sandy beach'. Ask students to suggest other combinations that would <i>not</i> survive</li> <li>● Ask questions about how familiar organisms cope with their environment (eg. Why are polar bears white? Why are ducks and eagles so different? Why do dogs pant when it's hot?)</li> <li>● KWL brainstorm activity – list answers to the questions: <ul style="list-style-type: none"> <li>○ What do you <b>K</b>now?</li> <li>○ What do you <b>W</b>ant to know?</li> <li>○ And at the end of the unit, what have you <b>L</b>earnt?</li> </ul> </li> <li>● Select a specimen from the kit and lead students to find evidence of its habitat or behaviour based on its structure.</li> </ul> <p>Students:</p> <ul style="list-style-type: none"> <li>● Unpack kit and group each environment's specimens with its foldout 'habitat display'</li> <li>● Look for links between an organism's features and the nature of its environment.</li> </ul> <p><b>Enhancing</b></p> <ul style="list-style-type: none"> <li>● Bird Beaks: <ul style="list-style-type: none"> <li>○ Read "Best Beak in Boonaroo Bay"</li> <li>○ Have students examine beak collection and discuss what sort of 'tool' each one might be</li> <li>○ Compare student suggestions with "Best Beak" fact sheet</li> <li>○ Extension: discuss other animal features that could make a similar display, eg. "Best Feet", "Best Covering". Students could investigate and present finding as sets of cards or web pages.</li> </ul> </li> <li>● Five habitats: <ul style="list-style-type: none"> <li>○ Divide class into five groups; provide each with one of the</li> </ul> </li> </ul>

'habitat displays' and the accompanying group of specimens.

- Students study specimens and information cards to identify environmental adaptations and interesting features of their habitat's plants & animals.
- Each group prepares an oral presentation for the rest of the class on the nature of their environment and its flora and fauna.
- Contrasting environments:
  - Provide each group with copies of habitat information for the 5 environments (the same text as the Habitat Displays)
    - [beach dunes woodland swamp mangroves](#)
  - Have each group study data and provide a brief oral report to the group on the variation across the island of one of these factors:
    - Sunlight exposure
    - Soil
    - Stability
    - Shelter
    - Water & Salinity

### **Synthesising**

- Transect activities
  - This kit is based on 5 environments encountered on a walk across South Stradbroke Island. Based on the model provided by the kit, have students plan a similar study of habitats in the local area eg. a transect from the school grounds to a local creek
    - Develop a checklist for data collection at each locality
    - Formulate a plan for presenting the findings of the local study

### **Extension activities**

- ['Plants losing water' experiments](#)
- Environmental problem solving – below are two ongoing management issues at Couran Cove. Have students take on stakeholder roles (eg. environment officer, tourist, resort marketing, groundsman) to debate possible solutions:
  - Agile Wallabies
    - Remnant Sth Old population needs to be protected
    - Few natural predators on island
    - Over-population is putting pressure on plant species and creating dune erosion
    - Uni study recommended culling/removal to control population
  - Mosquitoes
    - There are many mosquitoes in parts of the island
    - They cause discomfort for resort guests
    - They provide food for many small animals

	<ul style="list-style-type: none"> <li>▪ Spraying insecticide could harm many other species</li> </ul>
<b>Links to support material</b>	<ul style="list-style-type: none"> <li>• Eco-Online Case Study – <a href="http://www.qm.qld.gov.au/features/eco-online">www.qm.qld.gov.au/features/eco-online</a></li> <li>• Couran Cove Island Resort Fact Sheets - <a href="http://www.couran-cove.com.au/downloads/">www.couran-cove.com.au/downloads/</a></li> <li>• Nature’s Nautical Nurseries - <a href="http://www.dpi.qld.gov.au/extra/nnn/teachers_resources_home.html">www.dpi.qld.gov.au/extra/nnn/teachers_resources_home.html</a> Including: <ul style="list-style-type: none"> <li>○ ‘Save the Mangroves’ role play - <a href="http://www.dpi.qld.gov.au/extra/nnn/activity_savemangroves.html">www.dpi.qld.gov.au/extra/nnn/activity_savemangroves.html</a></li> <li>○ Make a model wetland plant - <a href="http://www.dpi.qld.gov.au/extra/nnn/activity_modelwetland.html">www.dpi.qld.gov.au/extra/nnn/activity_modelwetland.html</a></li> <li>○ Graphing population exercise - <a href="http://www.dpi.qld.gov.au/extra/nnn/activity_graphing.html">www.dpi.qld.gov.au/extra/nnn/activity_graphing.html</a></li> </ul> </li> <li>• Australian National Botanical Garden (information about plant adaptations, in particular xerophytes) <a href="http://www.anbg.gov.au/education/pdfs/mallee-2002.pdf">www.anbg.gov.au/education/pdfs/mallee-2002.pdf</a></li> <li>• Beaks and Feet – Connecting Form and Function <a href="http://www.classtech2000.com/techined/archnom/feet/feet.htm">www.classtech2000.com/techined/archnom/feet/feet.htm</a></li> </ul>
<b>Comments</b>	<ul style="list-style-type: none"> <li>• Adaptations that organisms possess may be: <ul style="list-style-type: none"> <li>○ <b>behavioural</b> (affect way of life)</li> <li>○ <b>structural</b> (affect body morphology)</li> <li>○ <b>physiological</b> (affect body function) in nature</li> </ul> </li> <li>• An organism does not consciously ‘choose’ ways of coping or adapting, rather the environmental pressure that it faces determines whether or not it will survive. Those organisms possessing the key survival mechanisms already will live on to reproductive age and pass on that mechanism to its offspring. This is the selection process.</li> <li>• Different environmental pressures exist in different environments – these might include: <ul style="list-style-type: none"> <li>○ exposure to extremes of heat and cold</li> <li>○ tidal influence and wave battering</li> <li>○ the presence or absence of sunlight, water, oxygen, soil nutrients</li> <li>○ sediment movements</li> <li>○ soil or water pH</li> </ul> </li> </ul>
<b>Risk Assessment</b>	<ul style="list-style-type: none"> <li>• Some students may be allergic to fur or feathers of specimens in the kit</li> <li>• Protective gear such as sturdy footwear, sunscreen, and a broad-brimmed hat are recommended for outdoor transect activities</li> </ul>

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Queensland Museum