### Stage 2 Geography Unit of Work

<table>
<thead>
<tr>
<th>The Earth’s Environment: National Park Case Study</th>
<th>Stage 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Other KLAs:</strong> Integrated with the Term 2 English program based on Tears in the Jungle</td>
<td><strong>Duration:</strong> 10 weeks</td>
</tr>
<tr>
<td><strong>Note:</strong> Teachers are to differentiate and provide scaffolding to suit the needs of their class.</td>
<td><strong>Definitions for geography terminology:</strong> <a href="http://syllabus.nesa.nsw.edu.au/hsie/geography-k10/glossary/">http://syllabus.nesa.nsw.edu.au/hsie/geography-k10/glossary/</a></td>
</tr>
</tbody>
</table>

### Unit Description

Students explore the climate, natural vegetation and native animals of places in Australia and Indonesia. They develop an understanding of the diversity of living things, how they affect each other, and the interdependence of living things and the environment. They examine the importance of natural vegetation and natural resources and learn about the ways people, including Aboriginal and Torres Strait Islander Peoples, value environments. Students identify sustainable practices, recognising that there are differing views on how sustainability can be achieved and they recognise how science knowledge helps people to understand the effect of their actions on the environment.

### Key Inquiry Questions

- How does the environment support the lives of people and other living things?
- How do different views about the environment influence approaches to sustainability?

### Content Focus

**Students:**

- investigate the importance of natural vegetation and resources to animals and people
- investigate the ways people, including Aboriginal and Torres Strait Islander Peoples, value environments
- investigate sustainable practices that protect environments and indigenous people

### Outcomes

**GEOGRAPHY**

Students:
- examine features and characteristics of places and environments GE2-1
- describe the ways people, places and environments interact GE2-2
- examine differing perceptions about the management of places and environments GE2-3
- acquire and communicate geographical information using geographical tools for inquiry GE2-4

**Report Comment:**
In Term 2, students explored sustainable practices that protect environments and investigated the ways the community, including Aboriginal Peoples, value national parks. Comparisons were drawn between Kuringai National Park, in NSW and Tanjung Puting National Park, in Indonesia. ⭐⭐⭐⭐ [confidently employed/used/is learning to use] tools, such as digital maps, to identify key geographical features.

<table>
<thead>
<tr>
<th>Geographical concepts</th>
<th>Geographical inquiry skills</th>
<th>Geographical tools</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The following geographical concepts have been integrated into the unit:</strong></td>
<td><strong>The following geographical inquiry skills have been integrated into the unit:</strong></td>
<td><strong>The following geographical tools have been integrated into the unit:</strong></td>
</tr>
<tr>
<td><strong>Sustainability:</strong> the capacity of the environment to continue to support our lives and the lives of other living creatures into the future</td>
<td><strong>Acquiring geographical information</strong>&lt;br&gt;• develop geographical questions to investigate (ACHGS019, ACHGS026)</td>
<td><strong>Maps – M</strong>&lt;br&gt;• world map, globe, maps of Australia and Indonesia</td>
</tr>
<tr>
<td><strong>Space:</strong> the significance of location and spatial distribution, and ways people organise and manage spaces that we live in</td>
<td><strong>Collect and record relevant geographical data and information, for example, by observing, by interviewing, conducting surveys, or using maps, visual representations, the media or the internet (ACHGS020, ACHGS027)</strong></td>
<td><strong>Fieldwork – F</strong>&lt;br&gt;• observing, measuring, collecting and recording data, conducting surveys or interviews</td>
</tr>
<tr>
<td><strong>Environment:</strong> the significance of the environment in human life, and the important interrelationships between humans and the environment</td>
<td><strong>Processing geographical information</strong>&lt;br&gt;• represent data by constructing tables, graphs and maps (ACHGS021, ACHGS028)</td>
<td><strong>Graphs and statistics – GS</strong>&lt;br&gt;• tally charts, pictographs, data tables, column graphs, simple statistics</td>
</tr>
<tr>
<td><strong>Interconnection:</strong> no object of geographical study can be viewed in isolation</td>
<td><strong>Interpret geographical data to identify distributions and patterns and draw conclusions (ACHGS023, ACHGS030)</strong></td>
<td><strong>Spatial technologies – ST</strong>&lt;br&gt;• virtual maps, satellite images, global positioning systems (GPS)</td>
</tr>
</tbody>
</table>
example, written, oral, digital, graphic, tabular, and visual, and use geographical terminology (ACHGS024, ACHGS031)
• reflect on their learning to propose individual action in response to a contemporary geographical challenge and identify the expected effects of the proposal (ACHGS025, ACHGS032)

<table>
<thead>
<tr>
<th>Content</th>
<th>Teaching, learning and differentiation</th>
<th>Assessment / evidence of learning</th>
</tr>
</thead>
</table>
| Students will: examine features and characteristics of places and environments GE2-1 describe the way people, places and environments interact GE2-2 examine differing perceptions about the management of places and environments GE2-3 acquire and communicate geographical information using | **Note:** A fundraiser, supported by the SRC, could be organised to donate money to save the orangutans' environment or adopt an orangutan etc. An incursion could be organised, where the Clarke brothers (Tears in the Jungle books) visit, to inform and motivate students about saving the orangutans.  
**Inquiry 1 - Natural characteristics of Borneo, Indonesia**  
**Weeks 1-3 Borneo focus**  
**Linked to English-lesson 2**  
WALT: locate Indonesia on a map and compare key features of Australia & Indonesia  
*Read Page 3 of Tears in the Jungle-book 1*  
Look at world map and discuss where Indonesia is compared to Australia. Talk about the size of Indonesia compared to Australia, difference in population, poverty in Indonesia etc. Could also look at a globe of the world, talk about countries that are closer to the equator have warmer weather.  
WALT: identify and label places on a map  
Students are exposed to a map of the world (in Tears in the Jungle-Book 1). Locate Sumatra/Borneo and Ku-ring-gai Chase National Park, Sydney, Australia. (Refer to answer sheet) | Student map (Blank Borneo Map) |
geographical tools for inquiry GE2-4

Label the following on the blank Borneo map:
- Australia
- Sydney
- Borneo
- Sumatra
- Colour the Indonesian Islands in yellow (Part of Borneo and half of New Guinea is not part of Indonesia) (Refer to Indonesia map)
- Locate the equator
- Track the route that the Clarke brothers took to get to Borneo (refer to map with answers)

Can use this website to compare Indonesia and Australia. (Note: some of the information has a sensitive nature). [https://www.ifitweremyhome.com/compare/AU/ID](https://www.ifitweremyhome.com/compare/AU/ID)

Extension: look at the Indonesian flag and what it represents.

**WALT**: define new vocabulary

Discuss and define what the following terms are:
- logging
- equator
- Klotoks (boat the Clarke brothers took to get to the park) p.5 1st book
- plantation
- dense
- tannins (p. 16 book 1)
- orphan

These definitions could be recorded on post it notes, then sorted, compared, adjusted and displayed.

*Linked to English program-lessons 3 and 11*
### 3. WALT: develop an understand of vocabulary

*Record specialist vocab from book. Build a word wall reference in room. Create an ongoing map and display of ‘fun facts’ & images in room. Brainstorm vocabulary. Spelling words. Students write down 5 facts about what they have learnt so far. Write a paragraph or more about why they think they use feeding platforms at the Care Centre. Students edit their work and find a buddy to share ideas.*

### 11. WALT: Understand what ‘deforestation’ is

**Read Page 46 & 47**

- **Deforestation - What is it?**
- **How to stop it?**
- **ICT research in pairs**
- **Discuss what deforestation is and why it is so devastating to the environment.**
- **Incorporate pages 33-37 2nd book.**
- **Use the internet to learn more about it and do a mini project**
- **Produce/present a limited pecha kucha**

### WALT: understand more information about national parks

In small groups conduct research about the Tanjung Puting National Park in Borneo where the Clarke brothers started their journey. The following are suggested topics.

- landforms and landscapes (focus on deforestation over the last few decades in Borneo)
- native flora (palm trees and their fruit)
- native fauna (focus on dung beetles which are vital to the cycle of life book 2 QR code-p.24) and threatened species (orangutans book 1-p.48/49) [https://www.natgeokids.com/au/discover/animals/general-animals/ten-facts-about-orang-utans/#/register](https://www.natgeokids.com/au/discover/animals/general-animals/ten-facts-about-orang-utans/#/register)
- climate statistics including temperature and rainfall averages (compare to Sydney) [http://www.holiday-weather.com/borneo/averages/](http://www.holiday-weather.com/borneo/averages/)
Useful website to use for researching the Tanjung Puting National Park: https://orangutan.org/rainforest/tanjung-puting-national-park/

Students could create a mind map, Pic Collage or Pecha Kucha etc to collate their information.

The other QR codes from book 2 may be useful when gathering data.

**Weeks 4 - 5 Sustainability of palm trees**

*Linked to English program-lesson 14*

**WALT: Understand the concept of sustainability**

- Discuss what sustainability is. Why do we need it?
- What is Palm Oil? Why it is used in all the products we eat?
- Encourage children to find products at home that have palm oil in them and bring to school.
- Put on a table, can use an app when shopping.
- Look at logos on food now showing where the ingredients are sourced. Put them on the table.

**WALT: identify the reasons for deforestation and the impact it has on the environment**

http://www.wwf.org.au/what-we-do/food/palm-oil#gs.9wW5Ir
This website has information about palm oil (to help teacher understanding of palm oil).

https://www.worldwildlife.org/pages/which-everyday-products-contain-palm-oil
Use the website above to discover which everyday products contain palm oil.

Scroll down to the ingredients list and discuss all of the different ingredients which contain palm oil:

**INGREDIENTS:** Vegetable Oil, Vegetable Fat, Palm Kernel, Palm Kernel Oil, Palm Fruit Oil, Palmitate, Palmitate, Palmitolein, Glyceryl, Stearate, Stearic Acid, Elaeis Guineensis, Palmitic Acid, Palm Stearine, Palmitoyl Oxostearamide, Palmitoyl Tetrapeptide-3, Sodium Laureth Sulfate, Sodium Lauryl Sulfate, Sodium Kernelate, Sodium Palm Kernelate, Sodium Lauryl Lactylate/Sulphate, Hyrdated Palm Glycerides, Etyl Palmitate, Octyl Palmitate, Palmityl Alcohol
CONTAINS: Palm oil

https://www.palmoilinvestigations.org/names-for-palm-oil.html
This website has another 200 ingredients which all contain palm oil.

Show students the following icons at the bottom of the webpage:
Look for the RSPO label to ensure you purchase products made with certified sustainable palm oil. This label gives you the confidence that the palm oil was produced in a socially and environmentally responsible way.

Can't find the RSPO label? Look for the Green Palm label! This label indicates products in support of the transition to certified palm oil. Proceeds from Green Palm certificates help growers fund the transition to sustainable palm oil.

Students investigate the importance of natural resources to people and animals and consider how they can be used sustainably.

http://interactive.guim.co.uk/boot/labs/niceandserious/palmoil/
This website has a lot of facts about palm oil, sustainability of palm oil and different viewpoints about harvesting palm oil.

Step 1: Watch introductory video in this website.
http://interactive.guim.co.uk/boot/labs/niceandserious/palmoil/
Click launch.

Step 2: Scroll down to ‘The destruction of Indonesia's forests’ (top left icon) and discuss the
Step 4: Think Pair Share: Why does deforestation of palm trees occur in Indonesia? Refer to page 36- Tears in the Jungle book 2 (lifespan of palm kernel of production of palm oil trees)

Step 5: Click on QR code in book 2 p.34 and watch video.
What is the impact of deforestation on the local environment both people and animals? Refer to Page 37 - Tears in the Jungle book 2.

Step 6: Click on top right icon and scroll down to ‘Palm oil production by country’.

Step 7: Scroll down to the ‘Impact of palm oil in pictures - gallery’ and discuss photos.

forest cover (colour) differences between 2000 map and the 2012 map. Ask students what do they think 2018 looks like now? (Think pair share)
Choose a photo from the gallery to do a ‘See Think Wonder’ activity. ‘Accountable talk’ amongst students should be encouraged!

_Extension: Scroll down to ‘Can palm oil be sustainable?’ discussion. Students can listen, determine and discuss these viewpoints._

Step 8: Click on the house icon and watch the video about the impact palm oil has had on income, prospects and hopes for families. Discuss any wonderings students may have.

Step 9: Click on the boat icon and look at the ‘Palm oil imports’ map. Palm oil is the most used vegetable oil in the world!

Step 11: Click on the flower icon and discuss the alternatives to palm oil (soybean and rapeseed) in the article. Explain that you don’t need as much fertiliser, pesticide or energy to harvest palm oil as you do with soybean and rapeseed.

Step 12: Discuss the last part of the website - how much rainforest has been cut down during the time spent on the website?

**Week 5 assessment opportunity:**

**WALT:** find out what the impact buying/consuming products which contain palm oil has on the environment.

Ask students to bring in a packaged snack from home (from their lunch box), or buy some JJ (chips) or something else packaged at the canteen. Look at the ingredients list on the packet and determine if the product contains palm oil. Students can use this website to understand all of the ingredients which contain palm oil.

[https://www.worldwildlife.org/pages/which-everyday-products-contain-palm-oil](https://www.worldwildlife.org/pages/which-everyday-products-contain-palm-oil)

[https://www.palmoilinvestigations.org/names-for-palm-oil.html](https://www.palmoilinvestigations.org/names-for-palm-oil.html)
Students write an explanation about this product (or another product which contains palm oil), and what the impact is on the environment? Students could research an alternative product to that particular snack which contains sustainable palm oil or does not contain palm oil. A product with either of these symbols:

![Green Palm](image1)

Alternatively students can create a poster which is persuasive/informative about the impact of deforestation and palm oil plantations.

**Inquiry 2 - Natural characteristics of Ku-ring-gai National Park, Australia**

**Weeks 6 and 7 - Excursions to Ku-ring-gai National Park (Gibberagong)**

*Students will undertake fieldwork to the national park and use fieldwork tools such as observations, photographs, field sketches, mapping and surveys to record the features of the national park, its uses and evidence of sustainable management practices.*

**Learning Experiences**

- **Explore Kalkari**
Kalkari Visitors Centre provides the students with an opportunity to learn about the features and human uses of the Ku-ring-gai Chase National Park. Within the building, the students will be able to observe and record a range of preserved animals to get a sense of the type of animals that call the Park home. Within the Centre, students will also be able to observe Aboriginal artefacts and learn about Aboriginal engravings - a significant feature of the Park.

- **Bush walk - Kalkari to Bobbin Head**
The bush walk provides an opportunity for the students to further understand the features of
Perception of environments

Students:
- investigate the ways people, including Aboriginal and Torres Strait Islander Peoples, value environments, for example: (ACHGK022, ACHGK023, ACHGK024)
  - discussion of why people value environments differently eg cultural, agricultural, commercial and recreational values
  - description of how custodial responsibility for Country/Place influences Aboriginal and Torres Strait Islander Peoples’ views

the National Park through the observation and recording of plants and animals. During the walk, caring for the environment will be modelled through walking on paths and ensuring all rubbish is taken home. The management of National Parks will be explored at sites indicating previous pest control and hazard reduction burning. Aboriginal bush resources and language will be explored during the walk with students able to learn about some traditional uses of plants from the area. Students will use a variety of fieldwork tools to gather and record observations including sketching, mapping, scratch-art and an investigation of the invertebrates of the bush during a minibeast search.

- Bobbin Head Mangroves
  The Mangrove ecosystem at Bobbin Head is home to a variety of different animals and is the nursery area of many fish as well as home to crabs and birds. During the exploration of the boardwalk area, the students will learn why this is such an important area and how they can protect areas like this when visiting.

- Final Discussion
  Students will have an opportunity to reflect and discuss the value of the Ku-ring-gai Chase NP and share why they value the park.

Note: At the Gibberagong excursion, a waste free lunch is required as there are no bins and students are taught how to be more environmentally aware. This can be linked with Waste Free Wednesdays at ODPS.

Weeks 6-10 Ku-ring-gai National Park focus

Outline of the Inquiry - What is a National Park?

Question: How do people value and perceive Ku-ring-gai National Park?

Inquiry Questions
- Where is Ku-ring-gai National Park? (Week 6)
- What are the features and uses of the national park? (Week 6)
- How was the land used before it became a national park? (week 7)
- Why was the national park created? What are its significant values? (week 7)
- How Aboriginal and Torres Strait Islander Peoples value Ku-ring-gai National Park?
- How do other people value Ku-ring-gai National Park?
### Students will:

- **Examine features and characteristics of places and environments GE2-1**
- **Describe the way people, places and environments interact GE2-2**
- **Examine differing perceptions about the management of places and environments GE2-3**
- **Acquire and communicate geographical information using geographical tools for inquiry GE2-4**

<table>
<thead>
<tr>
<th>How can Ku-ring-gai National Park be protected?</th>
</tr>
</thead>
</table>

**Acquiring geographical information**

- **Question:** How do people value and perceive Ku-ring-gai National Park?

http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=105817

(website with information for teachers)

**Processing geographical information**

Students use geographical tools to represent, organise and analyse the data and information.

---

**Week 6**

**WALT:** acquire information about national parks and develop an understanding about their features and uses.

**What is a National Park?** - Students think/pair/share their ideas.

(Teacher’s Guide - What is a national park? Stage 2 HSIE - saved in Term 2 HSIE folder on shared drive)

The primary role of these parks is to conserve the natural and cultural heritage values of an area and to provide representative samples that reflect the full range of landscapes and diversity of ecosystems. National parks are areas of land that protect native plants and animals and their habitats, places of natural beauty, historic heritage and Aboriginal culture. They provide a safe home for native plants and animals. They help keep the air and water clean. They help us to learn about the environment. National parks give us places to enjoy.

All the different plants and animals on Earth make up the variety of living things, or ‘biodiversity’. We share this planet with all these creatures and we must do our best to protect them. Many plants and animals can only live in certain areas. National parks protect some of these areas. We all need fresh air, clean water and food. Without them we would die. The leaves of plants make fresh air. Their roots hold the soil together, which stops erosion and helps keep our waterways clean. National parks have lots of plants so they play a big part in keeping our environment healthy. National parks are places of natural beauty. They are places for people to relax in and enjoy. Many people have fun bushwalking, camping or having a picnic. There are lots of things to do in a national park such as swimming, skiing, painting, taking photographs, enjoying the view and taking in fresh air. National parks are...
Acquire data and information:

- **Where is Ku-ring-gai National Park?**

  *Ku-ring-gai Chase National Park is situated within the Sydney Metropolitan Area, 20km north of the Sydney CBD. The park runs from St Ives to the shores of the Hawkesbury River at Brooklyn. The 14,882ha park also includes the stunning Barrenjoey Head, 1km across Pittwater at Palm Beach. Multiple entry points offer easy access – one of the many reasons this park is so popular with locals.*

  - Students use an atlas or Google maps to locate Ku-ring-gai National Park on a map of Australia.
  - Extension (using the above link) - estimate the width and length of the national park. Identify the location of north, south, east and west. Explore the walking tracks, noting distances of each.

- **What is climate like at Ku-ring-gai National Park?**


  - Observe and interpret the graphs showing variations in temperatures and precipitation. Predict and comment on best times of the year to visit the park and give reasons why. Look at the following link to check if your predictions of the best time to visit match with the Ku-ring-gai National Parks recommendations. Discuss the impact of climate on the environment and the impact of climate on people’s interactions with the environment.


- **What are the features and uses of the national park?**

  *With everything from jogging tracks to picnic areas and great places to whalewatch, Ku-ring-gai Chase National Park is excellent for outdoor activity. Hire paddle boats from Bobbin Inn, walk the Gibberagong track, horse ride the Perimeter trail or cycle from Mt Colah to Pymble station.*

Use the legend to identify and locate the different features and visitor facilities. http://www.nationalparks.nsw.gov.au/things-to-do/walking-tracks/gibberagong-walking-track/map  Click on the icons to find out more information about each activity.

Make a list of activities and add them to a blank outline map of the national park. Use a legend as a key for your map.

Discuss where specific activities are situated and why.

Extension - Which of these leisure activities may cause damage to the environment? Give reasons for your answers.

Weeks 7 - 8

WALT: investigate the importance of natural vegetation and resources to animals and people

- How was the land used before it became a national park?

(The park has been a conservation area since 1894. In the early days of the colony the Ku-ring-gai area was used mainly for timber extraction and boat building. Soda ash, salt and shell lime were also collected and manufactured in the area. A navigation light on Barrenjoey...
Head (1855) was replaced in 1868 by the Stewart Towers and in 1881 by the present lighthouse designed by Colonial Architect James Barret. A customs house also operated at Barrenjoey Head from 1843 to 1904. In the late 1870s, construction began on the railway to the Hawkesbury River. By the 1880s a number of boatsheds were in place and the Hawkesbury Railway Bridge (1886-1889) was completed (NSW NPWS 2002. There is evidence of Aboriginal people living in the area.)

- Why was the national park created? What are its significant values?
(From the 1880s, there was concern about the loss of native vegetation and the degradation of bushland in and around Sydney. Eccleston Frederic Du Faur successfully lobbied the NSW Government to establish a park near Turramurra to protect native flowers from a rapidly expanding neighbourhood. The conservation area “Ku-ring-gai Chase” was established in 1894 covering 13,500 hectares and administered by the Ku-ring-gai Chase Trust with Du Faur as managing trustee from 1894 until his death in 1915 (Australian Dictionary of Biography 1972, NSW NPWS 2002).


- Flora
- Students investigate which species of plants are threatened and vulnerable.


Students may wish to record their findings in the form of a Powerpoint, word document, pic collage, etc. or create an illustrated table that summarises the unique natural features of the national park.
Display large **photographs** of the natural features of the park.

- Research - Invite students to find other examples of plants and animals found in Ku-ring-gai National Park. This could be included as a homework or extension task.

Information for teachers - Located on the scenic Hawkesbury River and shoreline of Broken Bay, Ku-ring-gai National Park is the perfect place to explore by boat. You will be surrounded by the striking cliff faces, rainforests, eucalypt forests and mangroves of the national park. The heritage-listed Ku-ring-gai Chase National Park is Australia’s second oldest national park, and one of the Australia’s richest rock art sites.

*(flora - the place includes a complex pattern of vegetation communities such as heathland, woodland, open forest, swamps and warm temperate rainforest. The attributes and distribution of the vegetation communities within the National Park are strongly related to geology, soil, drainage and aspect. There are over 1,000 plant species recorded from the place (NSW NPWS 2002), including several species protected under the NSW Threatened Species and Conservation Act 1995: Caley’s grevillea (Grevillea caleyi), Bynoe’s wattle (Acacia bynoeana), a shrub (Haloragodendron lucasii), a shrub (Persoonia hirsuta), a shrub (Persoonia mollis spp.maxima) and a shrub (Asterolasia elegans). Additionally the following species have been listed as vulnerable: a shrub (Kunzea rupestris), a shrub (Darwinia biflora), Camfield’s eucalypt (Eucalyptus camfieldii), an orchid (Cryptostylis hunteriana) and a shrub (Tetratheca glandulosa) (NSW NPWS 2006a).)*

*(Fauna - The place is recognised as containing a rich vertebrate fauna, a reflection of the diversity of vegetation communities and habitats in the area and the Park’s location in one of the most diverse parts of Australia, the Sydney basin. There are over 160 species of avifauna recorded. There are 28 mammals recorded in the park and reserves of which 11 are bats. The herpetofauna (reptiles and frogs) is diverse with about 62 species record, including about 20 species of frogs. There is also a rich though poorly recorded invertebrate fauna, including over 100 species of butterfly and moths (NSW NPWS 2002; DEH 2006b; Ku-ring-gai Council)*
(There are 13 animals found in the place listed under the NSW Threatened Species and Conservation Act 1995. Regionally significant populations of several fauna species occur within the National Park including the spotted-tailed quoll (Dasyurus maculatus), the southern brown bandicoot (Isoodon obesulus obesulus), the koala (Phascolarctos cinereus), and the eastern bent-wing bat (Miniopterus schreibersii) (NSW NPWS 2002).

(Lion Island, at the entrance to Broken Bay, provides breeding habitat for several Environment Protection and Biodiversity Conservation Act 1999 (EPBC) listed Marine and Migratory bird species; including the wedge-tailed shearwater (Puffinus pacificus), the sooty shearwater (Puffinus griseus) and the little penguin (Eudyptula minor) (DEH 2006a). The breeding colony of little penguins on Lion Island has been the subject of long term research (Rogers et al 1995; Knight and Rogers 2004). Almost all breeding little penguins in the Sydney region are to be found on Lion Island, and long term studies have shown the reproductive success to be higher and more stable than populations at other locations.)

Plants and animals you may see at Ku-ring-gai National Park

Animals (Fauna)

**Long-nosed bandicoot (Perameles nasuta)** [http://www.nationalparks.nsw.gov.au/plants-and-animals/long-nosed-bandicoot](http://www.nationalparks.nsw.gov.au/plants-and-animals/long-nosed-bandicoot) A nocturnal marsupial and one of the smaller Australian native animals, the long-nosed bandicoot is found across eastern Australia. Populations in the Sydney region have dwindled since European settlement, leaving only endangered colonies in inner western Sydney and at North Head, near Manly. The long-nosed bandicoot has grey-brown fur and a pointed snout which it uses to forage for worms and insects.

**White-bellied sea eagle (Haliaeetus leucogaster)** [http://www.nationalparks.nsw.gov.au/plants-and-animals/white-bellied-sea-eagle](http://www.nationalparks.nsw.gov.au/plants-and-animals/white-bellied-sea-eagle) White-bellied sea eagles can be easily identified by their white tail and dark grey wings. These raptors are often spotted cruising the coastal breezes throughout Australia, and make for some scenic bird watching. Powerful Australian birds of prey, they are known to mate for life, and return each year to the same nest to breed.
Plants

Old man banksia (*Banksia serrata*) [http://www.nationalparks.nsw.gov.au/plants-and-animals/old-man-banksia](http://www.nationalparks.nsw.gov.au/plants-and-animals/old-man-banksia) Hardy Australian native plants, old man banksias can be found along the coast, and in the dry sclerophyll forests and sandstone mountain ranges of NSW. With roughened bark and gnarled limbs, they produce a distinctive cylindrical yellow-green banksia flower which blossoms from summer to early autumn.

Grass tree (*Xanthorrhoea spp.*) [http://www.nationalparks.nsw.gov.au/plants-and-animals/grass-tree](http://www.nationalparks.nsw.gov.au/plants-and-animals/grass-tree) An iconic part of the Australian landscape, the grass tree is widespread across eastern NSW. These Australian native plants have a thick fire-blackened trunk and long spiked leaves. They are found in heath and open forests across eastern NSW. The grass tree grows 1-5m in height and produces striking white-flowered spikes which grow up to 1m long.

Scribbly gum (*Eucalyptus haemastoma*) [http://www.nationalparks.nsw.gov.au/plants-and-animals/scrubbly-gum](http://www.nationalparks.nsw.gov.au/plants-and-animals/scrubbly-gum) Easily identifiable Australian native plants, scribbly gum trees are found throughout NSW coastal plains and hills in the Sydney region. The most distinctive features of this eucalypt are the ‘scribbles’ made by moth larva as it tunnels between the layers of bark.

Grey mangrove (*Avicennia marina*) [http://www.nationalparks.nsw.gov.au/plants-and-animals/grey-mangrove](http://www.nationalparks.nsw.gov.au/plants-and-animals/grey-mangrove) Grey mangrove is the most common and widespread mangrove found within intertidal zones across Australia, and throughout the world. Growing to a height of 3-10m, they thrive best in estuaries with a mix of fresh and salt water. They excrete excess salt through their long thick leaves, and absorb oxygen through their aerial root system.

Week 9
WALT: investigate the ways people, including Aboriginal and Torres Strait Islander Peoples, value environments

- **How Aboriginal and Torres Strait Islander Peoples value Ku-ring-gai National Park?**

  (The Guringai Aboriginal people originally inhabited the area, and the park showcases their rich cultural heritage. More than 350 Aboriginal sites have been recorded in Ku-ring-gai Chase National Park. They include rock engravings, burial sites, axe grinding grooves and places that show evidence of Aboriginal occupation. For many visitors, these sites and other relics are the most visible reminders of the area's rich, living Aboriginal culture. Find out about the program for how it is inspiring this younger generation of Aboriginal people to conserve their heritage and become involved in protected-area management activities.)

- **Caves and rock engravings** - For a great experience that highlights the best of the Aboriginal art in Ku-ring-gai Chase National Park explore the Aboriginal Heritage walk. **Aboriginal Heritage walk** - highlights rock art including **Red Hands Cave** (with ochre hand-prints) and engravings of the Guringai people of West Head in Ku-ring-gai Chase National Park. Take a virtual tour of Aboriginal Heritage walk captured with **Google Street View Trekker**.

- **http://www.nationalparks.nsw.gov.au/things-to-do/walking-tracks/aboriginal-heritage-walk** Explore this website and discuss the uses of the caves to the Aboriginal people (eg - occupation shelter. During the colder months, families would light a fire inside, warming the stones and themselves).

- **view** [https://www.youtube.com/watch?v=PFPGvV3Kbjs](https://www.youtube.com/watch?v=PFPGvV3Kbjs) (Aboriginal Heritage Sights and Sounds) Reflect on the lives of the people.

- Locate the Guringai Nation on a map. The Guringai Nation extended from Broken Bay in the north to Port Jackson in the south and as far south-west as Lane Cove River. There are six clans within the nation, and it's the Garrigal who lived at West Head.
West Head lookout. The people of West Head were virtually decimated by an outbreak of smallpox within a year of the arrival of the First Fleet.


- Creative Art activity (optional)- students create Aboriginal style rock paintings.

How do other people value Ku-ring-gai National Park?

- Recall how the area is valued by a range of people, e.g. bush walkers, hikers, horse riders, joggers, cyclists, fishermen, scientists. Also the national park offers a range of recreational activities which include picnic areas, paddle boat hire or canoe hire and great places to whale watch. [http://www.nationalparks.nsw.gov.au/things-to-do/walking-tracks/gibberagong-walking-track/learn-more](http://www.nationalparks.nsw.gov.au/things-to-do/walking-tracks/gibberagong-walking-track/learn-more)


Week 10

WALT: investigate sustainable practices that protect environments and indigenous people

- How can Ku-ring-gai National Park be protected

<table>
<thead>
<tr>
<th>Prohibited</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>● Gathering firewood</td>
<td></td>
</tr>
<tr>
<td>● Gathering firewood and the use of heat beads is not permitted.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>● Pets</td>
<td></td>
</tr>
<tr>
<td>● Pets and domestic animals (other than certified assistance animals) are not permitted. Find out which regional parks allow dog walking and see the OEH pets in parks policy for more information.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>● Smoking</td>
<td></td>
</tr>
<tr>
<td>● NSW national parks are no smoking areas.</td>
<td></td>
</tr>
</tbody>
</table>

Discuss why these rules apply to the park. What could happen if the rules were not obeyed?

Which other protective measures could be put into place to protect the park. Think/Pair/Share ideas

Explore - Park Management Activities -

- Students create a poster or digital page or PowerPoint slide with interactive features embedded.
- Or students complete a Venn Diagram comparing and contrasting the two environments Tanjung Puting National Park in Borneo, Indonesia and Ku-ring-gai National Park in Sydney. (Note: students are focusing on the characteristics of the environment – climate, fauna, flora, water dependent, sustainability).