

OUR LOCAL THREATENED SPECIES'
STAGE 3 GEOGRAPHY

LESSON PLANS

**A RESOURCE FOR TEACHERS OF THE
CESSNOCK AND MAITLAND LOCAL GOVERNMENT AREAS**

Prepared as part of the Hunter Valley Threatened Flora Recovery Program.

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An update to the 2015 Geography K-10 Syllabus was undertaken in August 2017 by Jane Smith of Rumbalara Environmental Education Centre.

THE TEACHER RESOURCE KIT

Background

The Lower Hunter Valley Threatened Species Teacher Resource Kit is part of a broader Hunter Valley Threatened Flora Recovery Plan. The Kit will contribute towards the objectives of the draft Recovery Plan for the Kurri Sand Swamp Woodland, an endangered ecological community (EEC), and also to the objectives of recovery plans currently being prepared for the threatened plants *Persoonia pauciflora*, *Acacia bynoeana* and *Eucalyptus parramattensis subsp. decadens*. It will also support strategies and actions in other environmental plans including:

- Recovery plans for threatened animals that live in the area.
- The Hunter Local Strategic Plan 2016 - 2021 of the Hunter Local Land Services

The Kit aims to promote awareness of, and increase involvement in, threatened species conservation in the Lower Hunter Valley area of NSW. It promotes experiential learning in the study of local threatened species through field work and other research such as surveying, mapping and computer activities. It targets school students and teachers but could also be used to help develop appropriate knowledge, skills, attitudes and practices in other groups and the broader community.

The Kit was specifically designed for primary schools in the Cessnock and Maitland Local Government Areas of the Lower Hunter Valley. It could also be used by schools in other areas with reference to their own local threatened species.

School programming

Central to the Kit's resources is this unit of work based on the [Stage 3 Factors That Shape Places](#) outcomes and indicators in the [NSW K- 10 Geography syllabus](#). Local threatened species and their ecosystems (such as woodlands, forests, and wetlands) can also be used to represent global environments and issues in Australia. They can help explain how various beliefs and practices influence the ways in which people interact with, change and value their environment and be used to identify how individuals and groups can act in an ecologically responsible manner.

The unit of work could be programmed by schools in several ways including as:

- A new Stage 3 Geography unit of eight lessons e.g. as a replacement for a non- local existing unit of work such as the previous 'Rainforest' unit or the previous environmental case study on Kosciuszko National Park in the HSIE component of the Stage 3 Connected Outcome Group (COG A) unit on Living Land.
- Part of a cross-KLA unit in schools that are not programming COG unit.



FROM THE GEOGRAPHY K-10 SYLLABUS (2015)

Outcomes

This unit of work helps students to achieve the following outcomes in the K-10 Geography Syllabus.

A student:

- **GE3-1** describes the diverse features and characteristics of places and environments
- **GE3-2** explains interactions and connections between people, places and environments
- **GE3-3** compares and contrasts influences on the management of places and environments
- **GE3-4** acquires, processes and communicates geographical information using geographical tools for inquiry.

Key Inquiry Questions:

How do people and environments influence one another?

How do people influence places and the management of spaces within them?

The following geographical **concepts** are to be integrated throughout stage 3:

- **Place:** the significance of places and what they are like eg characteristics of places on a global level.
- **Space:** the significance of location and spatial distribution, and ways people organise and manage spaces that we live in eg global patterns of spatial distribution; how people organise and manage spaces in their local environment.
- **Environment:** the significance of the environment in human life, and the important interrelationships between humans and the environment eg how the environment influences people and places; how people influence the environment; the effect of natural disasters on the environment.
- **Interconnection:** no object of geographical study can be viewed in isolation eg how environments influence where people live; ways people influence the characteristics of their environments; diversity of cultures and peoples around the world.
- **Scale:** the way that geographical phenomena and problems can be examined at different spatial levels eg environmental and human characteristics of places on local, regional and global scales; the effect of global events on people and places locally, regionally and globally.
- **Sustainability:** the capacity of the environment to continue to support our lives and the lives of other living creatures into the future eg extent of environmental change; environmental management practices; sustainability initiatives.
- **Change:** explaining geographical phenomena by investigating how they have developed over time e.g. changes to environmental and human characteristics of places.

The following geographical **inquiry skills** are to be integrated throughout stage 3:

- **Acquiring geographical information:**
 - develop geographical questions to investigate and plan an inquiry (ACHGS033, ACHGS040)
 - collect and record relevant geographical data and information, using ethical protocols, from primary data and secondary information sources, for example, by observing, by interviewing, conducting surveys, or using maps, visual representations, statistical sources and reports, the media or the internet (ACHGS034, ACHGS041)
- **Processing geographical information**
 - evaluate sources for their usefulness (ACHGS035, ACHGS042)
 - represent data in different forms, for example plans, graphs, tables, sketches and diagrams (ACHGS035, ACHGS042)
 - represent different types of geographical information by constructing maps that conform to cartographic conventions using spatial technologies as appropriate (ACHGS036, ACHGS043)
 - interpret geographical data and information, using digital and spatial technologies as appropriate, and identify spatial distributions, patterns and trends, and infer relationships to draw conclusions (ACHGS037, ACHGS044)
- **Communicating geographical information**
 - present findings and ideas in a range of communication forms as appropriate (ACHGS038, ACHGS045)
 - reflect on their learning to propose individual and collective action in response to a contemporary geographical challenge and describe the expected effects of their proposal on different groups of people (ACHGS039, ACHGS046)

The following geographical **tools** are to be integrated throughout stage 3:

Maps (M)

- large-scale maps, small-scale maps, sketch maps, political maps, topographic maps, flowline maps
- maps to identify location, latitude, direction, distance, map references, spatial distributions and patterns

Fieldwork (F)

- observing, measuring, collecting and recording data, conducting surveys and interviews
- fieldwork instruments such as measuring devices, maps, photographs, compasses, GPS

Graphs and statistics (GS)

- pictographs, data tables, column graphs, line graphs, climate graphs
- multiple graphs on a geographical theme
- statistics to find patterns

Spatial technologies (ST)

- virtual maps, satellite images, global positioning systems (GPS)

Visual representations (VR)

- photographs, aerial photographs, illustrations, flow diagrams, annotated diagrams, multimedia, web tools

Subject Matter:

The teaching and learning activities will help students learn about the following subject matter outlined in the K-10 Geography Syllabus:

- Geographical terminology
- Communities, regions and environments in Australia and in the world
- Patterns of human involvement and use of environments
- Effects of human and natural changes on environments
- Ecologically sustainable development of environments
- Different perspectives about the maintenance and improvement of environments

Lesson sequence:

There are seven lessons in this unit of work as follows:

1. Threatened species around the world
2. Our local threatened species
3. Threats to our local species
4. Location of our local threatened species (field excursion)
5. Findings from the excursion
6. Actions to protect local threatened species
7. Personal and school action actions

Teaching and learning activities are described for each lesson. Relevant outcomes and indicators, literacy and numeracy links, links with objectives in the NSW Environmental Education Policy for Schools and resources required are also provided for the lessons.

Literacy and Numeracy links

The unit of work provides opportunities for students to explore literacy through expositions, reports, explanations and recounts. It also provides opportunities in numeracy through activities such as mapping. Literacy and numeracy links are noted at the bottom of each lesson in italics.

Links with other Key Learning Areas

As a Geography unit of work it directly links to outcomes in other KLAs including:

- Science – ST3-10LW, ST3-11LW
- English EN3-1A, EN3-2A, EN3-3A
- Mathematics – MA3-17MG, MA3-18SP

Environmental Education Policy for Schools

The Environmental Education Policy for Schools is mandatory in all NSW government schools. This unit of work provides opportunities for students to develop knowledge, skills, values and attitudes related to the curriculum objectives in the Policy. If threatened species are found in or near schools, there may also be opportunities through Lesson 7 to address objectives related to the school's management of resources and management of school grounds. The unit of work could therefore be part of the School Environmental Management Plan (SEMP)

Resources for this Unit of Work

The Lower Hunter Valley Threatened Species Teacher Resource Kit is designed for the easy access of resources by both teachers and students. The following resources are included to support the lessons in this unit of work:

Teacher Information Sheets:

1. Threatened species
2. Habitats and Ecosystems
3. Biodiversity
4. Threats

Student Information Sheets:

5. Woodlands
 - 5A. Tiny Wattle
 - 5B. Dirty Gum
 - 5C. Woodland birds
6. Forests
 - 6A. North Rothbury Persoonia
 - 6B. Small-flower Grevillea
 - 6C. Heath Wrinklewort
 - 6D. Owls
 - 6E. Swift Parrot
 - 6F. Gliders
 - 6G. Spotted-tail Quoll
7. Wetlands
 - 7A. Black-necked Stork
 - 7B. Green and Golden Bell Frog

Student Activity Sheets

List of field excursion sites

Maps:

- Bushland areas in the Lower Hunter Valley Conservation Reserves in the Lower Hunter Valley
- Threatened Species records in the Lower Hunter Valley

Lists of actions to help conserve threatened species:

- For schools
- For individuals

Further Assistance

For more information and guidance related to threatened species in the Lower Hunter Valley contact the NSW Office of Environment and Heritage on (02) 4927 3119.

LESSON 1: Threatened species around the world

Teaching & learning activities

Students discuss the meaning of the term 'threatened species' (teachers refer to Information Sheet #1). In this class discussion, they brainstorm examples of well-known threatened species of animals or plants found in the world. These 'possible threatened species' are listed on the board.

In pairs, students are allocated a 'possible' threatened species from the list on the board. They then research whether the animal or plant is a threatened species using the Internet and/or books in the library. Pairs discuss and write a brief joint exposition arguing whether or not their animal or plant is a threatened species.

Pairs read their exposition to the class and the animals or plants listed on the board are confirmed (or not) as threatened species.

The idea that a group of plants and animals living together (called an 'ecological community') can also be 'threatened' is introduced to the students (teachers refer to Information Sheet #2). It should be stressed that although the individual plants in the community may not be threatened themselves, the 'mix' of plants may only be found at a few locations in the world.

(*Literacy links*: writes an exposition and chooses relevant information from a range of texts)

Syllabus Outcomes

GE3-1 Describes the diverse features and characteristics of places and environments

Content:

Students:

- investigate the ways people change the natural environment in Australia and another country, for example:
 - examination of how people, including Aboriginal and Torres Strait Islander Peoples, have influenced each country's environmental characteristics e.g. land clearing

Objectives - Implementing the Environmental Education Policy in your school

Students will develop knowledge and understandings about:

- the nature and function of ecosystems and how they are interrelated (K1)
- Students will develop skills in:
- applying technical expertise within an environmental context (S1)

Resources required:

- Internet and/or library access
- Information Sheets 1 and 2 (for teachers) from the Kit

LESSON 2: Our local threatened species

Teaching & learning activities

Students as a class are shown sketches/ photos of local threatened species of plants and animals from the Kit. Students indicate if they recognise any of the threatened species. As they are shown the sketches/photos, students compile their own list of these local threatened species using Activity Sheet 1.

After their lists have been compiled, students play a recall game called 'Guess the Threatened Species'. How to play the game:

1. Unnamed sketches/photos of species are placed on board
2. Species names (scientific or common names) are written on small pieces of paper and placed in a box or container
3. Each student pulls out a name and then indicate what name goes with what species
4. The game is completed when all species are named correctly.

As a case study, students read the information sheet (Information Sheet #5) about the Kurri Sand Swamp Woodland. After defining the term 'woodland' using the sheet in the Kit, students research the location of woodlands as global environments using an atlas or the Internet. Using a blank world map, they then show the range of woodlands across the world. Then using a dot, they show the location of the Kurri Sand Swamp Woodland on the world map to highlight its very limited range.

(Numeracy link: uses mapping skills)

Syllabus Outcomes

GE3-1 Describes the diverse features and characteristics of places and environments.

GE3-2 Explains interactions and connections between people, places and environments.

Content:

Students:

- investigate the ways people change the natural environment in Australia and another country, for example:
 - examination of how people, including Aboriginal and Torres Strait Islander Peoples, have influenced each country's environmental characteristics e.g. land clearing

Objectives - Implementing the Environmental Education Policy in your school

Students will develop skills in:

- applying technical expertise within an environmental context (S1)

Resources required

- Activity Sheet 1
- sketches and photographs of threatened species from the Kit
- pieces of paper with names of local threatened plants, animals and communities on them
- box or container
- Internet access or atlases
- Information Sheet #5
- copies of blank world map

LESSON 3: Threats to our local species

Teaching & learning activities

Students define the term 'threat' through a dictionary exercise (teachers refer to Information Sheet #4). Through class discussion, students predict what might be the main threats to the local threatened species identified in Lesson 2.

Students in small groups are each provided with a copy of the information sheets on threatened species, including the Kurri Sand Swamp Woodland. The groups read each sheet and then list and tally the threats to local threatened species using Activity Sheet 2. The results are discussed as a class and compared with the predictions of main threats.

Students individually choose one of the main threats to local threatened species identified. They then write a short explanation of how people's beliefs or practices might cause this threat. A sample of these explanations is read to the class.

As a class, students 'envison' (build a mental picture of the future) what may happen to local threatened species if these threats continue. Using a flow chart or other method, they each show how the current threats could lead to these future situations. The results are then discussed by the class.

(Literacy link: writes explanation

Numeracy link: tallies scores)

Syllabus Outcomes

GE3-2 Explains interactions and connections between people, places and environments.

GE3-3 Compares and contrasts influences on the management of places and environments

Content:

Students:

- investigate the ways people change the natural environment in Australia and another country, for example:
 - examination of how people, including Aboriginal and Torres Strait Islander Peoples, have influenced each country's environmental characteristics eg land clearing
- investigate how people influence places
 - identification of ways people influence places and contribute to sustainability
 - examination of a local planning issue; the different views about it and a possible action in response to it

Objectives - Implementing the Environmental Education Policy in your school

Students will develop knowledge and understanding in:

- the impact of people on environments (K2)
- Students will develop skills in:
 - identifying and assessing environmental problems (S2)
 - communicating environmental problems to others (S3)

Resources required

- Activity Sheet 2
- Information Sheet 4 (for teachers)
- Copies of student Information Sheets
- Dictionaries

LESSON 4: Location of our local threatened species

Teaching & learning activities

Organise and conduct a field excursion to an appropriate local site using the information in the Field Excursion Sites section of the Kit. The aims of this excursion are for the students to locate various threatened species in their local area and to further investigate the threats to these species.

Prior to the excursion ensure that students are aware of safety procedures e.g. sun protection, appropriate footwear.

On the excursion, students are provided with a map of the local area (e.g. from a road directory or from Google Earth at www.earth.google.com). They show the location of the site on this base map.

Using Activity Sheet 3, students sketch and describe threatened plants and/or the Kurri Sand Swamp Woodland community (refer to Lesson 2). Students can refer to Information Sheets to help identification. They also describe the health of the plant by noting any dead parts or leaves.

(Numeracy link: uses mapping skills)

Syllabus Outcomes

GE3-1 describes the diverse features and characteristics of places and environments

GE3-2 explains interactions and connections between people, places and environments

GE3-3 compares and contrasts influences on the management of places and environments

Content:

Students:

- locate the threatened plant species found on the base map using symbols.
- record any evidence of threats (refer to Lesson 3) to the threatened species at the site. They could do this using a video recorder, digital camera or notes.

Objectives - Implementing the Environmental Education Policy in your school

Students will develop knowledge and understandings about:

- the impact of people on environments (K2).

Students will develop skills in:

- identifying and assessing environmental problems (S2)

Resources required

- Activity Sheet 3
- Base map of area in and around field excursion site/s
- Copies of student Information Sheets
- Digital camera/ video recorder (optional)

LESSON 5: Findings from the excursion

Teaching & learning activities

Students share the findings of the excursion as a class. The local threatened species found are listed on the board and records (e.g. photographs) of their health and threats displayed and discussed.

Based on this discussion, students each write a recount on the excursion including sites visited, threatened species encountered and their threats. Samples of recounts can be posted on the school website.

It is most likely that only threatened plant species and the Kurri Sand Swamp Woodland were found on the excursion. If so, as a class, students discuss why they didn't find threatened animals. Using Activity Sheet 4, students then postulate as to how they might find and study local threatened animals (refer to Information Sheets and Lesson 2). They then share their research methods with the class.

Students are provided with a map of 'Threatened Species Records in the Lower Hunter Valley' that can be obtained from the Map section of the Kit. Students locate their field excursion site on the map. They then use the scale on the map to list on Activity Sheet 5 what local threatened species have been recorded within one, five and ten kilometres of the site. Using the Information Sheets for these species, they also note where else in the world these species are found. Students then share their findings with the class.

(Literacy link: writes recount

Numeracy link: uses mapping skills)

Syllabus Outcomes

GE3-4 acquires, processes and communicates geographical information using geographical tools for inquiry

Content:

Students:

- present findings and ideas in a range of communication forms as appropriate.
- reflect on their learning to propose individual and collective action in response to a contemporary geographical challenge and describe the expected effects of their proposal on different groups of people.

Objectives - Implementing the Environmental Education Policy in your school

Students will develop knowledge and understandings about:

- the impact of people on environments (K2).
- identifying and assessing environmental problems (S2)
- communicating environmental problems to others (S3)

Resources required

- Notes, video footage, digital photographs from excursion
- Activity Sheets 4 and 5
- Copies of student Information Sheets
- Copies of map of 'Threatened Species Records in the Lower Hunter Valley' from Kit

LESSON 6: Actions to protect local threatened species

Teaching & learning activities

Using the Internet or books, students choose a non-local threatened species or community found in a 'woodland', 'forest' or 'wetland' environment (the same environments as where the local threatened species are found). They then research ways that this species is protected and write a short report on their findings.

Using these ideas and the findings of the excursion, students complete Activity Sheet 6 by identifying possible ways to protect the local threatened species through minimising their threats. They also consider ways to help the species increase their numbers. They share their ideas with the class.

One way to protect threatened species is by including them in reserves such as national parks. Students explore this by comparing the map 'Threatened Species Records in the Lower Hunter Valley' with the map of 'Conservation Reserves of the Lower Hunter Valley' from the Kit. Through class discussion, they then make an observation of the percentage of threatened species records that are found in these local conservation reserves.

If some of the threatened species are not protected in reserves then other methods must be used. Using the Threatened Species section of the Department of Environment website (www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species), students investigate ways to protect threatened species and tick these off (or add) to the list in Activity Sheet 6.

(Numeracy link: uses mapping skills)

Syllabus Outcomes

GE3-3 compares and contrasts influences on the management of places and environments.

Content:

Students:

- Investigate how people influence places
 - description of who organizes and manages places eg local and state governments
 - identification of ways people influence places and contribute to sustainability
 - examination of a local planning issue; the different views about it and a possible action in response to it

Objectives - Implementing the Environmental Education Policy in your school

Students will develop knowledge and understandings about:

- the principles of ecologically sustainable behaviour (K4)

Students will develop skills in:

- adopting behaviours and practices that protect the environment (S6)

Resources required

- Internet/ library access
- Activity Sheet 6
- Copies of map of 'Threatened Species Records in the Lower Hunter Valley' from Kit
- Copies of the map of 'Conservation Reserves of the Lower Hunter Valley' from Kit

LESSON 7: Personal and school action

Teaching & learning activities

Using Activity Sheet 7, students conduct a survey on local threatened species using a small sample (e.g. friends, parents, relatives). They then collate responses as a class.

Using the results of the survey as a basis, students in small groups develop a community education campaign to promote the protection of local threatened species. It could include:

- An original slogan e.g. 'Don't let our species go to pieces'
- A poster/ song/ poem
- An advertisement (radio/newspaper/ television) on 'What can you do to help?'

As a class, students discuss what actions they could take individually and as a school to help protect local threatened species. List the possible actions and compare to the list available in the Teacher Resource Kit.

As a class, students design content for the school website that includes samples of the community education campaign, ideas for school and individual action. Alternatively, they present a segment on protecting local threatened species to the school assembly using this content. They could also review the actions in their School's Environmental Management Plan based on what they have learnt.

Students individually complete Activity Sheet 8 on how they will protect local threatened species.

(
Literacy link: presents information gathered through research)

Syllabus Outcomes

GE3-2 explains interactions and connections between people, places and environments

GE3-3 compares and contrasts influences on the management of places and environments

Content:

Students:

- Investigate how people influence places
- identification of ways people influence places and contribute to sustainability
- examination of a local planning issue; the different views about it and a possible action in response to it

Objectives - Implementing the Environmental Education Policy in your school

Students will develop skills in:

- adopting behaviours and practices that protect the environment (S5)
- Students will develop values and attitudes relating to:
- a commitment to act for the environment by supporting long-term solutions to environmental problems (V3)

Resources required

- Activity Sheets 7 and 8