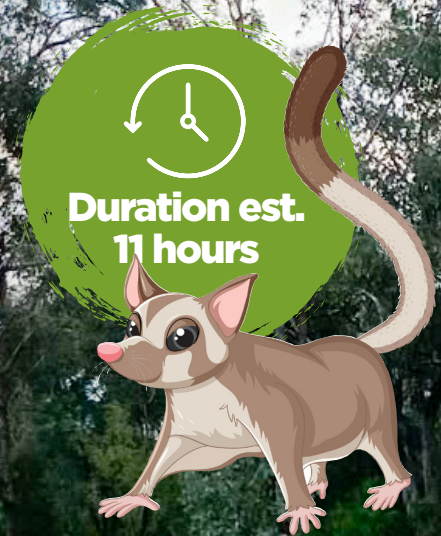


Stage 2

Grassy Box Woodland
Connections, Biodiversity
and Regeneration



Duration est.
11 hours



Tamworth Regional
LANDCARE
ASSOCIATION

Stage 2

Grassy Box Woodland – Connections, Biodiversity and Regeneration.

This unit provides students with opportunities to investigate a Grassy Box Woodland ecosystem in North West New South Wales through hands-on, inquiry-based fieldwork. Students explore biodiversity, soil health, food webs, and the interdependence of living and non-living components of the environment.

The unit emphasises observation, classification, and explanation of relationships within ecosystems, while developing an understanding of regenerative practices. Students investigate how ecosystems function and propose actions that actively restore, improve and regenerate the environment.

Aboriginal perspectives are embedded throughout, particularly the concept of Caring for Country, recognising the deep knowledge and regenerative land practices of Aboriginal peoples in maintaining healthy ecosystems.

Lesson 1: Mapping the Woodland and Understanding Grassy Box Woodland	Duration: 60min
Lesson 2: Soil Scrutiny	Duration: 75min
Lesson 3: Groundcover Close-Up	Duration: 60min
Lesson 4: Groundcover Café	Duration: 70min
Lesson 5: Litter Critters	Duration: 75min
Lesson 6: Understory Habitat Study	Duration: 75min
Lesson 7: Woodland Food Webs and Perspectives	Duration: 60min
Lesson 8: Lunch Time Biodiversity	Duration: 60min
Lesson 9: Biodiversity and Regeneration	Duration: 60min

Assessment Overview

Formative Assessment

Worksheets
Teacher observation
Group discussion

Summative Assessment

Food web explanation
Biodiversity reflection
Regeneration action proposal

Skills Assessed

Observation and data collection
Classification
Cause and effect reasoning
Systems thinking
Understanding of regeneration and environmental responsibility

Materials/Resources

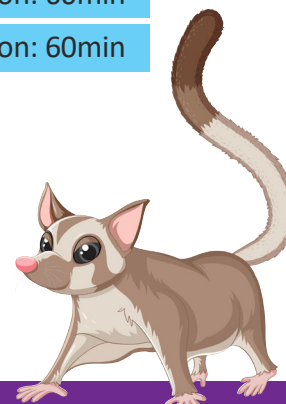
Soil testing materials
Quadrats- Lesson 3
Magnifiers
Worksheets
Local species reference
Soil Sister, Farming for the Future by Kylie Woodham Magner
The Hunt by Narelle Oliver ISBN: 085091874x
Leaf Litter. Exploring the Mysteries of a Hidden World. by Rachel Tonkin

Teacher Preparation

Select fieldwork sites
Prepare materials
Review local ecological context
Engage with local Aboriginal perspectives where possible.

WOODLANDS
DOWNLOAD

COLOURING BOOK
DOWNLOAD



Stage 2: Overview

Key Inquiry Questions

What is a grassy box woodland and where is it found?

How do plants, animals and soil depend on each other?

Why is biodiversity important?

How can humans regenerate and improve woodland environments?

How can we actively care for Country?

Outcomes

NESA Science and Technology
ST2-1WS-S
ST2-4LW-S
ST2-5WT

NESA HSIE (Geography)
GE2-1
GE2-2

Australian Curriculum
AC9S3U01
AC9S4U01
AC9HS3K02
AC9HS4K03

Key Concepts

Biodiversity: the variety of living things in an area and how they interact.

Interdependence: all parts of an ecosystem rely on each other

Soil food web: soil as a living system.

Nutrient cycling: recycling of organic matter into nutrients.

Regeneration: improving and restoring ecosystems so they become healthier over time.

Local Species (North West NSW)

Trees: White Box, Yellow Box, Blakely's Red Gum, Cypress Pine

Understorey Shrub Layer: Wattles, sennas and hotbush.

Groundcover: Kangaroo Grass, Wallaby Grass, native herbs and wildflowers

Animals: Echidna, Sugar Glider, Eastern Grey Kangaroo, Microbats

Birds: Kookaburra, Superb Fairy-wren, Galah, Wedge-tailed Eagle

Invertebrates: Earthworms, ants, beetles, fungi

Student Resource

Wondrous Box-Gum Grassy Woodlands Colouring Book
Throughout the unit, students are encouraged to engage with the Wondrous Box-Gum Grassy Woodlands Colouring Book to develop familiarity with the plants, animals and ecological relationships found within Grassy Box Woodland ecosystems.

The colouring book provides opportunities for students to:

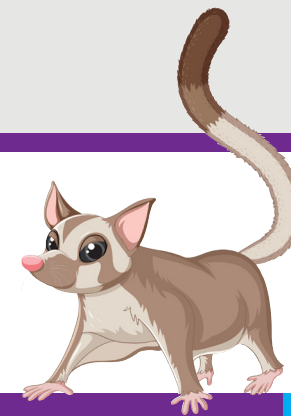
- Recognise native woodland species.
- Develop observation skills.
- Reinforce biodiversity concepts introduced throughout the unit.
- Build connections between classroom learning and field observations.
- Reflect on their learning through creative expression.
- Strengthen understanding of local species and habitats.

Looking After Country With Fire, Victor Steffenssen (ISBN: 9781741177)

The Lorax, Dr Seuss (ISBN: 000195458)

The Hunt, Narelle Oliver (ISBN: 085091874)

Soil Sister, Farming for the Future by Leaf Litter by Rachel Tonkin (ISBN: 0207198225)



Tamworth Regional
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Lesson 1

Mapping the Woodland and Understanding Grassy Box Woodland.

Worksheet

Site Features Mind Map
Map Observation Sheet

Assessment

Students identify features of a grassy box woodland and describe its location. Students begin to explain simple relationships between elements in the environment.

Aboriginal Perspective

Language: Warran - Tree root

Kamilaroi/Gomeroi Perspective

A map can show where a Grassy Box Woodland is and mark its trees, waterways, roads and boundaries, but it cannot show everything Kamilaroi people may know about that Country. Knowing a place can include pathways and water places, where resources are found, seasonal changes, cultural places, stories and relationships between different parts of the landscape. Like the roots of a tree extending beneath the ground, knowledge of Country can reach much further than what we first see on the surface.

Consider: A map might show where a creek, hill or woodland is, but not where food was gathered, where people travelled, places used for ceremony, places that are sacred or hold cultural significance, what happens there in different seasons, or the stories and cultural knowledge that belong to that place.

GLASSY BOX WOODLANDS
MAP DOWNLOAD

Teaching and Learning

Students are introduced to the concept of a Grassy Box Woodland as an ecosystem found in inland New South Wales, particularly North West NSW. Explain to the students the key characteristics- including scattered eucalyptus trees and a grassy ground layer.

Discuss: What is a Grassy Box Woodland?

A Grassy Box Woodland is a woodland ecosystem characterised by:

Trees

- White Box (*Eucalyptus albens*)
- Yellow Box (*Eucalyptus melliodora*)
- Blakely's Red Gum (*Eucalyptus blakelyi*)
- Understorey shrub layer (wattles, senna's and hotbush)

Ground Layer

- Native grasses
- Native herbs and wildflowers

Wildlife

- Birds
- Mammals
- Reptiles
- Insects
- Soil organisms



Unlike forests, grassy box woodlands have:

- Widely spaced trees
- Plenty of sunlight reaching the ground
- Diverse native grasses and herbs

These ecosystems provide important habitat for many species and play an important role in soil health, water infiltration and biodiversity.

Many of these woodlands have been cleared for agriculture. Remaining woodland patches are important because they provide habitat for native plants and animals and help maintain biodiversity.

Discuss with students why they believe only small patches of woodland remain today? Students examine maps of Australia and NSW to locate their region and identify where grassy woodlands occur. They complete a map worksheet identifying location, features and land use.

Students explore the site and complete a mind map identifying natural and built features. They begin linking features and identifying relationships such as trees providing habitat and soil supporting plant growth. The concept of interdependence is introduced.

Discuss with students the interdependence of feeders, predators, parasites and organic matter feeder and how they all co-exist.

GLASSLAND UNDERFOOT
POSTER DOWNLOAD

Extension Activity - 30min

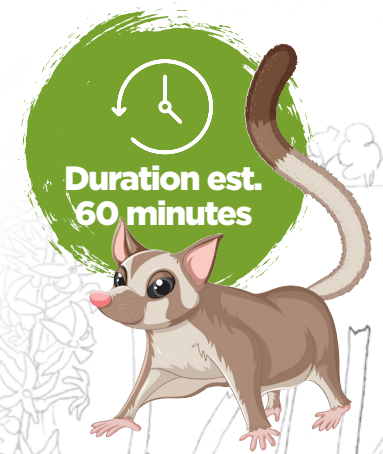
Working in pairs, students use teacher-selected websites, or online resources to research the plants, animals and other organisms commonly found within North West NSW Grassy Box Woodlands. Students select one category from the Local Species List (trees, groundcover plants, mammals, birds, invertebrates or soil organisms) and record examples, interesting facts and habitat requirements. Students share their findings with the class, contributing to a collective understanding of the biodiversity that exists within this ecosystem and creating a reference list for use throughout the unit.

Student Research Question: In pairs, research the local species that may be found within a Grassy Box Woodland in North West NSW. Investigate trees, groundcover plants, mammals, birds, invertebrates and soil organisms. Record at least three examples from your chosen category and identify how these species contribute to the health and biodiversity of the woodland ecosystem.

Lesson 2

Soil Scrutiny

Healthy soil = Healthy food = Healthy Humans.



Worksheet

Soil Components
Water Infiltration Experiment
Pencil Test

Assessment

Students record accurate observations and compare results.
Students explain how soil health supports plant growth and biodiversity.

Extension Activity

Read 'Soil Sister' by Kylie Woodham. Summarise the basic principles of the book and how healthy soil contributes to healthy food and thus healthy humans.

Aboriginal Perspective

Language: Dhawun - Soil

Kamilaroi/Gomeroi Perspective

For Kamilaroi people, differences in soil and land are part of knowing Country.

The colour and condition of the ground, the plants growing there, where water sits or moves and the shape of the landscape can all help build knowledge of a place. Over generations, knowing these differences helped people understand where particular plants and other resources could be found and which places were suited to different activities.

Compare: Look at two different areas of woodland ground. What differences can you see in the soil, plants or moisture that tell you these places are not exactly the same?

Teaching and Learning

Students investigate soil through hands-on testing. They identify components such as organic matter, water, air and organisms. Use Soil Scrutiny- Soil Components handout.

Students conduct water infiltration tests across different sites and compare results. They use the pencil test to investigate soil compaction. Use Water Infiltration and Pencil test handout sheet here.

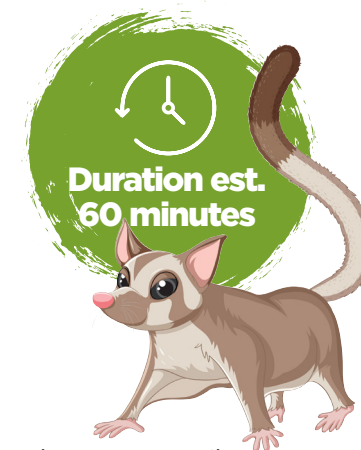
Introduces students to the concept of the soil food web, explaining that soil is a living system including plants, decomposers and animals.

Nutrient cycling is explicitly taught through the process of leaf litter breaking down and returning nutrients to the soil. Students analyse which soil is healthiest and justify their reasoning.

Healthy soil= Healthy food= Healthy Humans

Lesson 3

Groundcover Close-Up



Worksheet

Groundcover Close-Up

Assessment

Students classify plants accurately and describe differences in biodiversity between sites.

Aboriginal Perspective

Discuss how native plants are used for food, medicine and tools, and the importance of seasonal knowledge.

Aboriginal Perspective

Language: Galuuba - Clover
Kamilaroi/Gomeroi Perspective

Kamilaroi plant knowledge goes beyond identifying a species. Plants can be known through language, where and when they grow, and the purposes they may have as food, medicine, materials or for other cultural uses. Some plants may only be useful at particular stages or times of year. Knowing the groundcover of a woodland therefore means knowing individual plants and the conditions in which they grow.

Research: Knowing a plant can mean much more than knowing its name or what it looks like. It can also include knowing where and when it grows, its uses, and the knowledge connected to that plant. Research bush medicine plants local to the Kamilaroi/Gomeroi lands.

Teaching and Learning

Using the worksheet, 'Groundcover Close-Up'

Students use quadrats to sample groundcover plants. They count species and classify them into grasses and herbs.

Students may like to research native grasses and herbs specific to their area. Students compare biodiversity across different areas and discuss reasons for variation.

Discussion focuses on how plants use soil resources and contribute to the ecosystem by providing food, shelter and organic matter.

Research project: Using the research Groundcover Close-Up Worksheet, choose a native groundcover plant found in a Grassy Box Woodland and complete the research activities. Investigate the plant's features, habitat, ecological role and documented Aboriginal uses, including whether it was used for tucker, tools, bandages or other purposes.

Explore how the plant supports soil health, water infiltration, wildlife and biodiversity, and consider why protecting native groundcover is important for a healthy Grassy Box Woodland.

Teacher Resource:

https://drive.google.com/file/d/1g2_h3OG5OzxGQKTiihAWY0mfF35pFmyN/view



GROUNDCOVER CLOSE-UP
WORKSHEET DOWNLOAD

Lesson 4

Groundcover Café

Worksheet

Groundcover Café

Assessment

Students describe insects and explain their role within the ecosystem and complete the Groundcover Café worksheet.

Extension Activity

Read 'The Hunt' by Narelle Oliver.
Identify with students:
- Who was the predator?
- Who was the prey?
Discuss as a class

Aboriginal Perspective

Language: Gananganaa - Beetle (exact meaning/type to be confirmed).

Kamilaroi/Gomeroi Perspective

Insects are another part of reading woodland Country. Kamilaroi people learnt through repeated observation that the appearance or behaviour of insects can occur alongside changes in plants, weather and seasons. An insect appearing at a particular time may therefore be noticed together with flowering, rain, temperature or animal activity. Over generations, these observations build knowledge of the patterns occurring within Country.

Consider: If a particular insect suddenly appeared in large numbers, what other changes in the woodland would you look for?

Teaching and Learning

Using the 'Groundcover Café' worksheet, students conduct insect sweeps and observe invertebrates. They record features, behaviours and habitats.

Students link insects to their roles in ecosystems, including pollination, decomposition and as part of food chains. Discuss with students.



Lesson 5

Litter Critters

Worksheet

Leaf Litter Decomposition
Little Critter Recording Sheet

Assessment

Students explain how decomposition contributes to soil fertility and plant growth

Extension Activity

Read 'Leaf Litter' by Rachel Tonkin. Explore the principle concepts and themes of the book and discuss the simple food chains illustrated in the book.

Aboriginal Perspective

Language: Gagarr - Leaf litter

Kamilaroi/Gomeri Perspective

The woodland floor holds more than fallen leaves. For Kamilaroi people, knowing Country includes noticing and naming the different features beneath your feet and understanding how a place changes over time. Leaf litter, fallen bark, animal signs, plants, moisture and the condition of the ground can each tell us something about that place. Language is part of this knowledge, carrying names for Country and the things found within it.

Activity: Look closely at a patch of woodland floor. Identify something you would normally walk past and describe what it tells you about that place.

Teaching and Learning

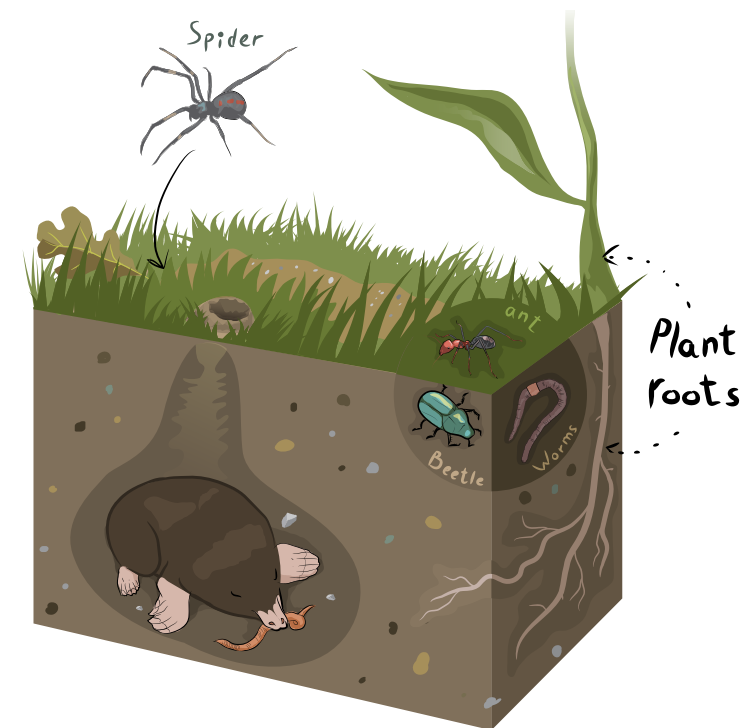
Students investigate leaf litter layers using sight, touch and smell using the worksheets.

They identify humus and topsoil and observe decomposition in action.

Students search for organisms within the litter and categorise their roles in breaking down organic matter, and discuss as a class.

Reinforce to the students, the role of nutrient cycling and links this to the soil food web.

Students develop an understanding that decomposition is essential for regenerating soil health.



Lesson 6

Understory Habitat Study

Worksheet

Healthy Environment
Fauna Survey
What's for Lunch-Food Chains in the
Woodland

Assessment

Students construct accurate food
chains and describe habitat needs.



Aboriginal Perspective

Language: Walaay - Home

Kamilaroi/Gomeroi Perspective

Landcare describes the woodland understory as habitat a place where animals find food, shelter and nesting sites. From a Kamilaroi perspective, Country can also be understood as home and belonging. People are not separate observers of the woodland; generations have lived within Country, known particular places and maintained relationships and responsibilities to them. A place can therefore be much more than somewhere that provides the things needed for survival.

Consider: What is the difference between describing somewhere as a habitat and knowing somewhere as home?

Teaching and Learning

Understorey Shrub Shake: Who Lives Here?

Students investigate the hidden biodiversity living within the understorey shrub layer of a Grassy Box Woodland.

Working in small groups, students carefully place a white sheet, light-coloured tray or large piece of paper beneath a native shrub. With teacher supervision, gently shake or tap one small section of the shrub over the sheet for approximately 5–10 seconds.

Students carefully observe the small animals that fall onto the sheet. They may find insects, spiders and other invertebrates that were previously hidden amongst the leaves and branches.

Using magnifying glasses or bug viewers, students observe and record:

- How many different types of creatures can you find?
- What features do they have - legs, wings, antennae or different body shapes?
- Where in the shrub might each creature have been living?
- What might it be eating?
- How might the shrub provide food, shelter, protection or a place to reproduce?
- Are some creatures predators while others may be herbivores, pollinators or decomposers?

Students can group their discoveries broadly as insects, spiders and other invertebrates, rather than needing to identify every species.

Compare Two Shrubs

If suitable shrubs are available, repeat the activity beneath a second shrub.

Students compare:

Which shrub supported the greatest variety of small animals?



Discuss why the results might differ. Consider the shrub's size, density, flowers, leaves, location, shade and surrounding vegetation.

Make the Habitat Connection

Bring the class together and ask students to construct a simple connection using their observations:

Shrub → Invertebrate → Bird or other woodland animal
For example:

Native shrub → Caterpillar → Superb Fairy-wren
Discuss how removing the shrub layer could affect animals much further along the woodland food chain.

Reflection

Before the shrub shake, could you see all the animals living in the shrub?

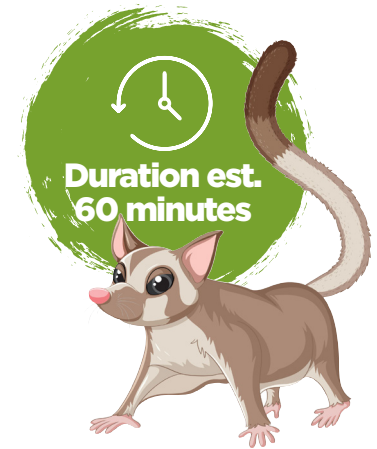
What does this investigation tell us about the importance of understorey plants for biodiversity in a Grassy Box Woodland?

Landcare Connection: A healthy woodland needs more than mature trees. Protecting and restoring the understorey shrub layer provides habitat, food and shelter for insects and other invertebrates, which in turn support birds, reptiles and other woodland wildlife.

Teacher note: Shake shrubs gently and briefly to minimise disturbance. Observe animals for a short period and then carefully return them beneath or onto the same shrub where they were collected. Avoid shrubs containing obvious nests, stinging insects or other hazards

Lesson 7

Woodland Food Webs and Perspectives



Worksheet

Food Chains

Assessment

Students explain relationships in food webs and predict impacts of change.

Aboriginal Perspective

Language: Gayiyabarra - Spiderweb

Kamilaroi/Gomeroi Perspective

A food web shows relationships through what eats what, but Kamilaroi relationships within woodland Country can reach further. Plants and animals may also be connected with people through food and resources, language and knowledge, cultural significance, totems and responsibilities. Totemic relationships are one example of how a person's connection with an animal, plant or other part of Country can carry responsibility as well as belonging.

Consider: How might your relationship with an animal be different if you also held a responsibility to care for it?

Teaching and Learning

Students develop more complex food webs by linking multiple organisms. Explore with students what happens when one part of the system changes or is removed.

Complete the Food Chains box worksheet arranging the plants and animals into the simple food chains boxes to show what eats what. Use the food pyramid as a guide.

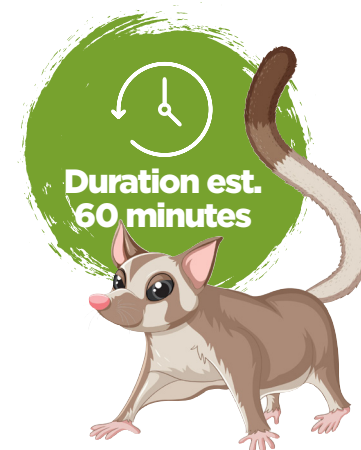


Image Source: Nviromedia



Lesson 8

Lunch Time Biodiversity



Worksheet

Lunch time Bio-diversity

Assessment

Students identify connections within food systems and explain interdependence.

Aboriginal Perspective

Language: Yuul - Food

Kamilaroi/Gomeroi Perspective

Before food came from supermarkets, living well within woodland Country required detailed knowledge of what Country could provide. Kamilaroi people needed to know where foods were found, when plants or animals were available, how they were gathered and prepared, and what changes in Country signalled the right time. Resources were used in many ways and with purpose, with knowledge passed on about how to make use of what was available rather than creating unnecessary waste. Food was therefore connected with Country, season, knowledge, activity and wellbeing.

Consider: If you had to rely on the woodland rather than a supermarket for food, what knowledge would you need throughout the year? Students to complete Mistletoe worksheet.

Teaching and Learning

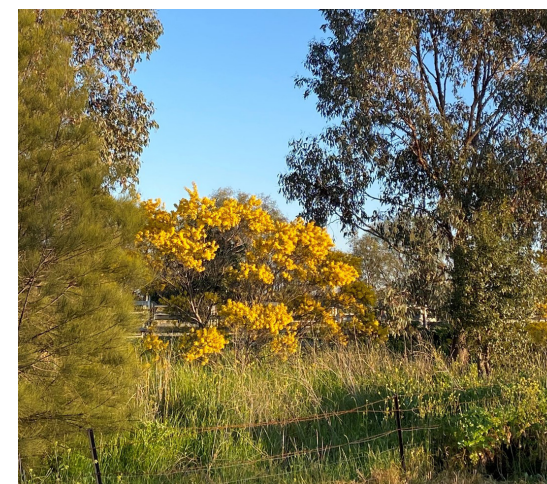
Students analyse their lunch and trace connections to plants, animals and environments, using the attached worksheet.

[LUNCHTIME BIO-DIVERSITY WORKSHEET DOWNLOAD](#)

They identify how many living things contributed to their food and recognise the interdependence of systems.

Students investigate how a variety of plant species contribute different functions within an ecosystem, including improving soil structure, supporting nutrient cycling, providing habitat for insects and animals, and increasing resilience to changing environmental conditions.

Students compare this diversity to the variety of foods in their lunchbox and recognise that biodiversity is a key feature of regenerative ecosystems because greater diversity often supports healthier soils, healthier plants, healthier animals and healthier people.



[MISTLETOE LUNCH SPOT WORKSHEET DOWNLOAD](#)

Extension Activity - 30min

Working in pairs, students use teacher-selected websites, or online resources to research the plants, animals and other organisms commonly found within North West NSW Grassy Box Woodlands. Students select one category from the Local Species List (trees, groundcover plants, mammals, birds, invertebrates or soil organisms) and record examples, interesting facts and habitat requirements. Students share their findings with the class, contributing to a collective understanding of the biodiversity that exists within this ecosystem and creating a reference list for use throughout the unit.

Student Research Question: In pairs, research the local species that may be found within a Grassy Box Woodland in North West NSW. Investigate trees, groundcover plants, mammals, birds, invertebrates and soil organisms. Record at least three examples from your chosen category and identify how these species contribute to the health and biodiversity of the woodland ecosystem.

Aboriginal Perspective: Students discuss how Aboriginal peoples have observed, understood and cared for local plant and animal species over thousands of years and how this knowledge contributes to maintaining healthy and regenerative ecosystems.

Lesson 9

Biodiversity and Regeneration



Worksheet

Echidna Bus Analogy

Assessment

Students explain biodiversity and interdependence.
Students propose realistic actions that contribute to regeneration of ecosystems.

Teaching and Learning

Students define biodiversity as the variety of living things and their interactions.

Using the Echidna Bus analogy worksheet students explore what happens when species are removed from an ecosystem.

Students predict impacts and identify how ecosystems change.

Students then propose actions that actively regenerate the environment, such as protecting habitats, improving soil health and reducing human impact.

Students reflect on their learning throughout the unit and consider their role as caretakers of the environment. Drawing on their investigations of soil health, nutrient cycling, food webs and biodiversity, students participate in a class discussion exploring how people can contribute positively to ecosystem health.

Students identify actions that protect and regenerate natural systems, such as planting native vegetation, reducing disturbance to habitats, leaving leaf litter to support nutrient cycling, improving soil health, reducing waste and supporting local biodiversity.

Students discuss how these actions benefit plants, animals, soil organisms and people. Through guided discussion, students recognise that caring for the environment is a shared responsibility and that even small actions can contribute to healthier, more resilient ecosystems.

Students are encouraged to view themselves as active participants in Caring for Country and helping to leave the environment healthier for future generations.



In the end, we will conserve only what we love, we will love only what we understand, we will understand only what we are taught.

Baba Dioum

Lesson 9

Biodiversity and Regeneration

Aboriginal Perspective

Language: Ngarrangarra-li - Looking after.

Kamilaroi/Gomeroi Perspective

Caring for Country is more than a general instruction to protect the environment. For Kamilaroi people, looking after Country comes from belonging, knowledge and responsibility. It can mean caring for plants, animals, water and important places, using resources thoughtfully, protecting cultural heritage and passing knowledge and responsibilities to the generations that follow. Kamilaroi people continue to care for Country today; it is a living cultural responsibility, not simply something practised in the past.

Early European accounts sometimes described parts of Australia's woodland landscapes as open and park-like. These landscapes were not necessarily unmanaged or untouched. Aboriginal peoples had long cared for Country using detailed knowledge of plants, animals, seasons and fire. Practices including carefully timed, low-intensity or patchy cultural burning could help manage vegetation, encourage regeneration and new plant growth, maintain habitat diversity and reduce the build-up of some fuels. Importantly, cultural burning is a knowledge-based practice connected to particular Country and should not be understood simply as setting a low-intensity fire.

The way resources were gathered also reflected a different relationship with Country. As the supplied extract explains, Aboriginal harvesting should not automatically be described through a European agricultural model. Foods and other resources could be harvested from existing ecosystems while maintaining the plants, soils and ecological relationships that allowed Country to continue providing into the future. Rather than viewing the woodland as unused because it was not farmed in a European way, students can consider how knowledge, harvesting and active care helped maintain healthy, productive Country.

Today, these principles provide an important perspective when thinking about regeneration. Restoring Grassy Box Woodlands is not simply about planting trees. It can involve protecting native grasses and wildflowers, allowing natural regeneration, maintaining habitat, caring for soil and water, managing threats appropriately and recognising the continuing knowledge and role of Aboriginal people in caring for Country.

Consider: What is the difference between caring about a place and having a responsibility to care for it?