Local Land Services

Who's living in my school?

Stage 3 Teaching Resource

Learning objectives

- Students will be able to identify common pest and native animals found in school grounds.
- Students will be able to monitor and record the presence of these animals.
- Students will understand the ecological roles of pests and natives.
- Students will develop a call to action plan to encourage native wildlife and manage pests.

Duration

7 lessons (minimum)

Adapt the activities based on the time available and your students' abilities.

Syllabus links

Science

- ST3-1WS-S plans and conducts scientific investigations to answer testable questions and collects and summarises data to communicate conclusions
- ST3-2DP-T plans and uses materials, tools and equipment to develop solutions for a need or opportunity
- ST3-4LW-S examines how the environment affects the growth, survival and adaptation of living things
- ST3-11DI-T explains how digital systems represent data, connect together to form networks and transmit data

HSIE Geography

- 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

Materials

- Fact sheets and worksheets included in this resource
- Pest animal PowerPoint presentation from Local Land Services (by prior arrangement)
- Field journals or data sheets
- Binoculars (optional — Animal detectives activity)
- Camera (optional — Animal detectives activity)

Additional resources

Hunter Local Land Services
lls.nsw.gov.au/regions/hunter/projects-and-programs/schools-engagement-program

FeralScan
feralscan.org.au

Australian Museum — Animal factsheets
australian.museum/learn/animals/

Things to remember

- Adapt the activities based on the time available and your students' abilities.
- Ensure responsible observation and respect for all living things.
- Encourage student ownership and leadership in the project.
- Celebrate the positive impact of their actions when new observations are made as a result of their project — such as new native birds visiting the school grounds.

Additional activities

- Invite the Local Land Services School Engagement officer education officer to speak to the class.
- Invite a wildlife expert to speak to the class.
- Organise a school clean-up day to provide better habitat for animals.
- Use trail-cam footage supplied from Hunter Local Land Services to analyse animal activity at night.
- Create informational leaflets about pest and native animals to distribute in the school community.

Activities

Introduction

Brainstorming

Ask students what animals they think live in the school grounds. Write their ideas on the board.

Introduction to pests and natives

Briefly explain the difference between pests and native animals.

The Local Land Services School Engagement officer can come to your school and provide your class with an in class presentation and activity session. This session will include an introduction to local pest animals, observation techniques to help identify the presence of pests and natives and our Whose poo? activity, where students learn how to identify native and pest animal scats in resin.

Introduce the concept of habitat and how school grounds can provide habitat for different creatures. See the fact sheet: **Pieces of the school yard puzzle**.

Fact sheet exploration

Divide students into groups and distribute the fact sheets on common pest and native animals in your area. Ask them to read and summarise the key points, or interesting facts, about each animal, or group of animals.

- **Pests**: Feral/domestic cats, foxes, Indian mynas, rabbits and wild/domestic dogs (uncontrolled domestic cats and dogs can have the same impact as their wild/feral cousins).
- **Natives**: Birds (parrots, honeyeaters, wrens and wagtails, magpies), mammals (possums, gliders, antechinus, micro-bats), reptiles (blue-tongue lizards, skinks, geckos, snakes) and frogs.

Discussion

Discuss the positive and negative roles of different animals in the school environment.

Fast and the Furriest game

Play this outdoors game, which is based on the concept of Red Rover Cross Over. Students learn about the fight for survival many threatened species experience due to the impacts of pest animals and humans.

What you need to play

- Max 30 students
- 50 x 30 metre open area
- Hoops, or similar
- Umpire's whistle
- 12 (approximate) cones to mark out game area
- Different coloured vests or similar

Click or scan the QR to access the game instructions.

Animal detectives

Choose a location

Select a designated area in the school grounds for observation. Consider different habitats like gardens, trees, playground areas. Inform student that they are going to become animal detectives. Explain why this role is important using the fact sheet: **Unlocking the secrets of your school yard.**

Observation tips

Explain observation techniques like being quiet, looking for signs and clues (scats, tracks and other evidence) and respecting the animals. See the fact sheet: **A quick guide to animal signs.**

Monitoring

Divide students into small groups and assign each group a specific area to observe any signs of animals living or visiting that location. Provide them with field journals or data sheets to record their observations, including animal type, location, time and any interesting behaviours.

Debriefing

Share observations and discuss what types of animals were found. Use pictures or collected materials, such as feathers, to aid identification.

Data analysis and discussion

Data sorting

Organise the observation data (e.g. by animal type, location, frequency). Use charts or graphs to represent the data visually.

Analysis

Discuss patterns and trends in the data. Are there more pests or natives? Are certain areas more attractive to specific animals?

Discussion

Explore the impact of different animals on the school environment and each other. Discuss the concept of balance and how both pests and natives play a role in the ecosystem.

Recording wildlife with motion detection cameras

With the assistance of Local Land Services equipment, your school will take their animal observations to the next level by using motion detection cameras to monitor key locations around the school at night and over the weekend/school holidays when people are not there. Motion detection cameras, once used primarily by scientists and researchers, are now accessible tools for student-led investigations, offering a unique window into the fascinating world around us.

Materials

- Motion detection camera (contact Local Land Services) with batteries, SD card and mounting strap or bracket
- Data sheet (see page 13)
- Computer with video/image viewing software

Instructions

Setting up the camera

Location: Choose a location with suspected animal activity like tree hollows or nests, water sources, or feeding areas. Use observations from the previous activity to identify key locations. Consider where cameras can be mounted and avoid direct sunlight on the lens.

Mounting: Secure the camera, using the camera strap, on a fixed tree trunk or post at an appropriate height for your target animals. Ensure it's stable and won't move with wind or animal interaction.

Angle and view: Tilt the camera slightly downwards to capture animal movement within its field of view. Avoid capturing only sky or ground. Remove any vegetation or objects obstructing the view.

Camouflage (optional): Use natural materials like leaves or branches to disguise the camera and blend it into the environment.

Settings

Refer to the instructions that come with the camera. Conduct test runs on using the camera in the classroom first. Here are some tips to help you out:

- **Date and time:** Set the correct date and time to accurately track animal activity.
- **Trigger sensitivity:** Adjust the sensitivity based on your desired capture rate. Start with a moderate setting and adjust later if needed.
- **Image/video mode:** Choose photo or video capture based on your preference and data storage capacity. Consider using photo bursts for multiple captures per trigger.
- **Night vision:** Set night vision settings if the camera operates at night. Adjust flash intensity to balance clear pictures with minimising disturbance to animals.

Data Collection and Analysis

Deployment: Secure the camera and leave it undisturbed for a set period (such as a week) to collect data.

Data retrieval: Carefully retrieve the camera and download the captured images/videos onto a computer.

Data analysis: Organise the data by date and time. Examine the images/videos to identify the captured animals, their behaviour and activity patterns. Use the data sheets to record your observations and findings.

Discussion: Discuss the collected data as a class. What animals did you capture? What are their activity patterns? How does their presence impact the school environment?

Further exploration: Based on your findings, consider researching the ecological roles of the identified animals and discuss ways to encourage beneficial species and manage potential pest populations responsibly.

Additional tips

- Check school regulations regarding camera placement on school grounds.
- Regularly check the camera's batteries and SD card capacity.
- Be mindful of animal welfare and avoid stressing or disturbing them with the camera.
- Remember to respect privacy and avoid capturing people in the background.

Remember

- This activity should be conducted under adult supervision and guidance.
- Emphasise responsible data collection and respect for the environment and its inhabitants.
- Use the findings to build awareness and encourage positive actions towards a balanced and sustainable school ecosystem.

Call to action

Brainstorming solutions

Ask students to brainstorm ways to encourage native wildlife and manage pest populations. Encourage creative and responsible solutions. Introduce the concept of citizen science programs, like iNaturalist, FeralScan, Atlas of Living Australia—all of these programs allow the general public to log their sightings of pest and native animals. Allow students some time to investigate these websites, or show them what they look like on a SmartBoard. How do these programs affect/change the brainstormed ideas?

Developing a plan

Divide students into groups and have them design a call to action plan. Each plan should include specific actions the school can take, targeted at both encouraging natives and managing pests.

Presentations

Each group presents their plan to the class. Discuss the feasibility and effectiveness of each proposal.

Voting and selection

As a class, vote on the best plan or combine elements from different proposals to create a unified action plan.

Putting the plan into action

Implementation

Choose 2–3 actions from the chosen plan and put them into practice in the school grounds. This could involve creating wildlife shelters, planting native plants, reducing food waste, or installing a compost bin.

Monitoring and evaluation

Continue to monitor the presence of animals and record observations. Evaluate the effectiveness of the implemented actions and make adjustments as needed.

Sharing and advocacy

Have students create posters or presentations to share their learning and action plan with the school community. Encourage advocacy for responsible wildlife management in schools.

Local tree planting

Talk to the Local Land Services School Engagement officer about how you can help restore native habitat by planting trees in your school or locally.

Adventures at Your Place

The Adventures at Your Place activity series encourages kids to get outside and explore their own backyard or local bushland/waterway. Kids may be asked to research, observe, experiment and collect things that help them discover and learn about their piece of the landscape puzzle.

There are a variety of activities here that you can run in the classroom that compliment this resource, such as:

- Backyard birds
- Biodiversity blitz
- Any sign of ferals?
- Raving about reptiles
- The importance of plants.

FACT SHEET

Pieces of the school yard puzzle

Have you ever looked closely at your school yard? It's like a miniature city, teeming with all sorts of creatures! Some, like native animals, are our furry, feathered and scaly friends. They've lived here for ages and play an important role in keeping our school yard healthy. But others, like pests, can sometimes cause trouble. Let's explore this amazing world together and learn how to tell the difference!

Friend or foe

Imagine your school yard as a giant puzzle. Each creature, from tiny ants to playful birds, fits in a special way. Native animals help keep the puzzle balanced. They might munch on pesky insects, pollinate flowers, or spread seeds to grow new plants. But some creatures, like rats or introduced rabbits, don't belong in this puzzle. They can upset the balance by eating too much, digging holes, or even carrying diseases.

By understanding the difference, we can be good stewards of our school yard. We can learn to welcome our native friends and help them thrive, while discouraging pests in a way that's safe for everyone. So, are you ready to become a mini-ecologist and discover the amazing creatures that share our school yard? Let's go!

Pests

These creatures can damage plants, spread diseases, or cause a nuisance. It's important to remember that even domestic animals like cats and dogs can act like pests if they roam freely.

Native animals

These wonderful creatures belong here and play important roles in our environment. Native animals play important roles in maintaining ecosystem health and balance. In our school's area, we are fortunate to have a variety of native birds, mammals, reptiles and frogs.

A few pesky pests

European foxes

Foxes, medium-sized predators introduced to Australia by Europeans in the 1850s for sport hunting, now inhabit nearly 80% of the country's landmass, excluding some islands, fenced refuges and the far tropical north. They pose a significant threat to native bird and mammal populations by preying on eggs, chicks and small mammals. Foxes, in conjunction with cats, have contributed to the extinction of at least 14 mammal species and one bird species. Currently, they endanger at least 95 nationally threatened species and other native animal populations.

Feral (and domestic) cats

Feral and domestic cats, regardless of their status, exert a profound impact on Australia's native wildlife through hunting and predation. They target many of Australia's unique native species, including numerous threatened ones and are linked to the spread of diseases affecting humans and livestock. Since European settlement, feral cats have been major drivers of mammal extinctions in Australia, as well as two native bird extinctions and all three reptile extinctions. Keeping cats indoors not only safeguards them but also protects our native wildlife.

Wild (and domestic) dogs

The term "wild dog" encompasses dingoes, feral domestic dogs and hybrids between the two. Since their introduction, domestic dogs have interbred with "pure" dingoes, resulting in hybrids or crossbreds. These hybrids pose a genetic threat to the distinct identity of the Australian dingo. Wild dogs prey on a variety of animals, with a preference for small and medium-sized mammals such as native mice, dunnarts, bandicoots and wallabies. Uncontrolled domestic dogs can instil fear in people and other animals and may also spread diseases. It's essential always to keep dogs on a leash.

Indian myna

Indian mynas, noisy birds that are native to India and southern Asia, compete with native birds for food and nest sites. In Australia, they are often mistaken for the native noisy miner. Indian mynas form lifelong breeding pairs and aggressively defend their territories, displacing native bird species from nesting sites and even destroying eggs and chicks. Additionally, they can carry diseases that infect native birds.

Rabbits

Rabbits, introduced to Australia by Europeans, have become the country's most widespread and destructive environmental and agricultural vertebrate pest. They threaten biodiversity by consuming native plants and agricultural crops, directly competing with native wildlife for food and shelter. Rabbits pose a significant threat to many ecosystems as they proliferate and consume vast amounts of vegetation.

Go to feralscan.org.au and check out the resources for each animal.

Native friends to encourage

Birds

Our school grounds are home to a variety of native bird species. From the colourful parrots to the sweet-singing honeyeaters, these feathered friends help control insects, disperse seeds and add beauty to our world. For example:

- **Parrots**: Although noisy at time, parrots use their strong beaks help to create nesting hollows over time. There are many species of parrot ranging from the small rainbow lorikeet to the large yellow-tailed black cockatoo.
- **Honeyeaters**: These very fast birds all have long, pointed, sometimes curved, beaks that are designed for sipping nectar from flowers. As they do this, honeyeaters pollinate dozens of flowers every day.
- **Wrens and wagtails**: These tiny dancers 'wag' their tails in a fan-like motion to scare up insects and then jump and grab their meal on the wing.
- **Magpies**: Mostly recognised for swooping people during spring. However, magpies are very clever and remember faces of those who share their territory. Be kind to magpies and you may avoid being swooped.

Eastern spinebill

Swamp antechinus

Mammals

These furry friends come in all shapes and sizes, from the adorable possums to the gliding sugar gliders. They play important roles in seed dispersal, pollination and insect control within our ecosystem. For example:

- **Possums**: Brush-tail and ringtail possums live in and play around our trees. In some areas they are a nuisance because they steal fruit from backyard fruit trees, but this is because they have lost a lot of their natural habitat.
- **Gliders**: Sugar gliders can be seen silently gliding between trees on dusk. They nest in tree hollows and feed on the sap that oozes from trees.
- **Antechinus**: These tiny marsupials, with short lifespans and quick movements, feed on insects around the garden or house. They are often mistaken for rats or mice and get caught in traps or eat poisoned baits.
- **Micro-bats**: Have you ever seen a tiny bat flitting around a streetlight at night? They're eating hundreds of insects, many you can't even see, but importantly they love eating mosquitoes.

Jacky dragon

Reptiles

From the sun-loving blue-tongue lizards to the shy snakes, skinks and geckos, these scaly creatures play an important role in our ecosystem. Lizards will happily much on all sorts of insects in your garden. Whereas snakes love to eat mice and rats, another pest. Most snakes are harmless if let alone — it's only if they are scared or threatened that they defend themselves by attacking. **If you come across a snake on the school grounds, always tell a teacher who can call a snake catcher, who will catch and release the snake back in the bush.**

Whistling tree frog

Frogs

Frogs are a great help in controlling mosquitoes and other insects near water. Frogs are a good sign that the local environment is healthy with a good supply of clean water available and lots of insects for them to eat.

For more information:
backyardbuddies.org.au

FACT SHEET

Unlocking the secrets of your schoolyard

Our school grounds are bustling with life, teeming with hidden inhabitants both fascinating and essential to a healthy ecosystem. But who are these creatures sharing our space? And how can we ensure their well-being alongside our own? Here's where you, the budding wildlife detective, step in!

The importance of monitoring

Just like detectives meticulously gather evidence, wildlife monitoring involves data collection to reveal crucial information. This helps us learn about:

- **Biodiversity:** Understanding the diverse animal species and their interactions paints a picture of the ecological balance within our schoolyard.
- **Potential threats:** Early identification of pest populations helps us reduce their impact on native species and damage to the environment.
- **Native wildlife needs:** By tracking their habits and preferences of wildlife, we learn how to create a supportive environment, such as planting bird attracting trees and shrubs, installing insect hotels or lizard lounges.

Becoming a wildlife detective

Here's how you can embark on your investigation.

Keen observer: Become a master of observation and keep a daily record of animal signs like tracks, droppings, feathers, or vocalisations. Patience and a quiet presence are key to unlocking these clues.

Keeping a record: Notebooks and cameras become your partners. Record your observations with detailed notes, sketches, or photographs for later analysis.

Working together: Share your discoveries! Joining forces with classmates, teachers, or even families builds your data collection and helps develop a collective understanding.

Seeing the patterns: Analyse your data. Are specific animal populations thriving? Are certain areas visited more? This helps discover trends and interactions within the ecosystem.

The power of information

The data you gather becomes a powerful tool for:

- **Habitat enhancement:** Identifying areas where native species require support — like nesting boxes, water sources, or specific vegetation — allows us to create a flourishing environment.
- **Pest management:** Utilising humane and sustainable methods, we can manage pest populations while minimising disturbances to the entire ecosystem.
- **Community awareness:** Sharing your findings fosters a sense of environmental responsibility and encourages collective action to protect our shared space.

Remember, even small actions can create significant positive change. Through active wildlife observation, you contribute to a thriving ecosystem, not just in your schoolyard, but beyond! So, grab your detective hat and start exploring the fascinating world around you. You might be surprised by what you discover!

FACT SHEET

A quick guide to animal signs

The bustling ecosystem of your school grounds or neighbourhood harbours unseen inhabitants leaving behind a fascinating narrative in their wake. Tracks, scats, calls and other cryptic clues become portals into their lives, empowering you to transform into a wildlife detective!

The language of wildlife

Tracks: Analyse size, shape, toe number of the track. Consult field guides for detailed comparisons.

Scats: Consider size, shape, colour, texture and dietary influences for species identification, as such, a rabbit's pellets differ greatly from a fox's scat!

Calls: Learn the distinctive vocalisations of local fauna through smartphone apps and online resources. Hone your listening skills to recognise these unique "signatures."

Other traces: Burrow entrances, gnaw marks, feathers and feeding signs offer additional pieces to the wildlife puzzle.

Deer print in sand (left) and wallaby scat (right).

Accurate identification

Location awareness: Consider the animal's known geographic range and preferred habitat. A Tasmanian devil is highly unlikely to be found in the wild around NSW.

Expert resources: Use field guides, regional wildlife websites and mobile apps for descriptions and comparisons.

Seek confirmation: Engage with wildlife experts or experienced naturalists to help refine your detective skills.

What the data tells us

Activity patterns: Track locations and timings to decipher animal behaviour and preferred areas within your school yard or neighbourhood.

Population trends: Monitor animal presence over time to reveal fluctuations in populations and potential ecological shifts.

Habitat insights: Understanding animal use of different zones guides informed habitat improvement efforts.

Identifying issues: Signs of pest activity or stressed native populations warrant further investigation and responsible management strategies.

Empowering Citizen Science

Citizen science is the collaborative effort between the public and professional scientists to conduct research. It involves non-professionals actively engaging in various stages of the scientific process.

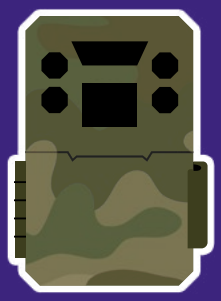
Programs include:

- iNaturalist — inaturalist.org
- FeralScan — feralscan.org.au
- Atlas of Living Australia — ala.org.au

By documenting your observations and contributing to Citizen Science initiatives, you can help expand our understanding of local wildlife, inform conservation efforts and become stewards of your shared habitat.

FACT SHEET

Setting up your motion detection camera



Here's a general guide for setting up a motion detection camera in/around your school.

Setting up the camera

Location: Choose a location with suspected animal activity like tree hollows or nests, water sources, or feeding areas. Use observations from the previous activity to identify key locations. Consider where cameras can be mounted and avoid direct sunlight on the lens.

Mounting: Secure the camera, using the camera strap, on a fixed tree trunk or post at an appropriate height for your target animals. Ensure it's stable and won't move with wind or animal interaction.

Angle and view: Tilt the camera slightly downwards to capture animal movement within its field of view. Avoid capturing only sky or ground. Remove any vegetation or objects obstructing the view.

Camouflage (optional): Use natural materials like leaves or branches to disguise the camera and blend it into the environment.

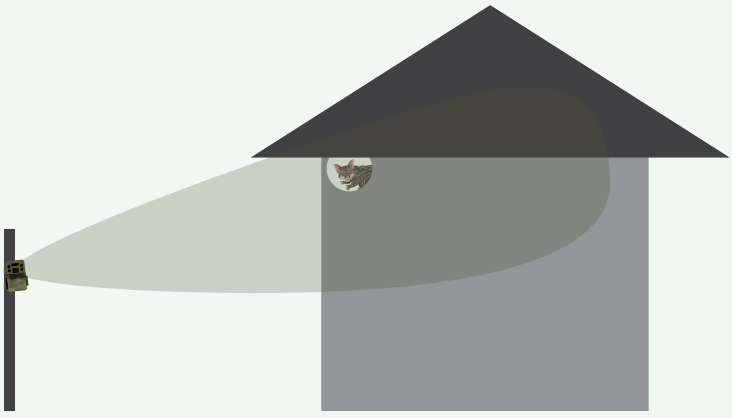
Settings

Refer to the instructions that come with the camera. Conduct test runs on using the camera in the classroom first.

Here are some tips to help you out:

- **Date and time:** Set the correct date and time to accurately track animal activity.
- **Trigger sensitivity:** Adjust the sensitivity based on your desired capture rate. Start with a moderate setting and adjust later if needed.
- **Image/video mode:** Choose photo or video capture based on your preference and data storage capacity. Consider using photo bursts for multiple captures per trigger.
- **Night vision:** Set night vision settings if the camera operates at night. Adjust flash intensity to balance clear pictures with minimising disturbance to animals.

Make sure your camera is aiming towards the location you think animals are moving through or visiting. Cameras should be placed on a tree or post that is high enough off the ground that it doesn't get disturbed by too much grass movement.



If you think there are possums or micro-bats living a building, try placing your camera on a post or pole and angle the camera towards the entry/exit location of the animal. Only anchor the camera to a tree if the line of sight is not disturbed by branches and leaves falling down in front of it.

Camera data sheet

Record your data from your motion detection camera.

School: ..... **Student:** .....

Recording start date: ..... **Recording end date:** .....

Camera (A, B, C)	Date	Location description	Habitat description	Animals captured

Camera images

Take a look at the following motion detection camera images that have been taken in the Hunter region.

What data can be gathered from each photo? Write your answers in the space provided.

Image 1

Capture details

Observations

Image 2

Capture details

Observations

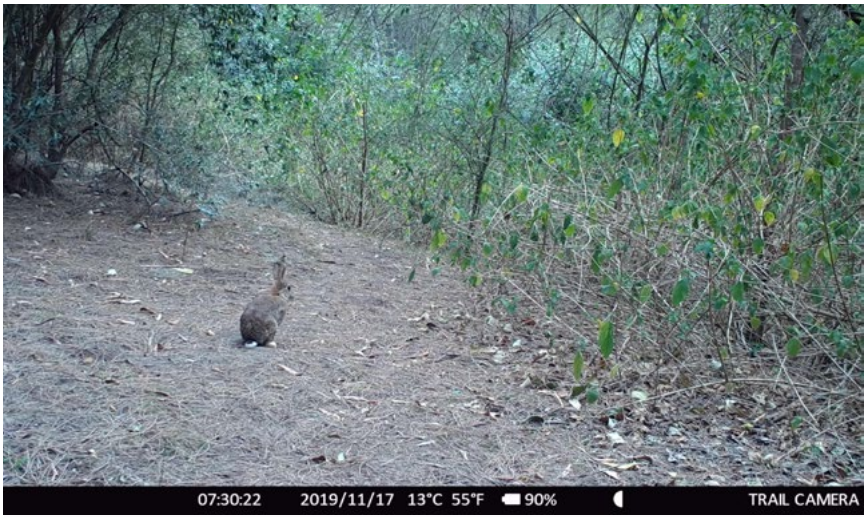


Image 3

Capture details

Observations

Image 4

Capture details

Observations

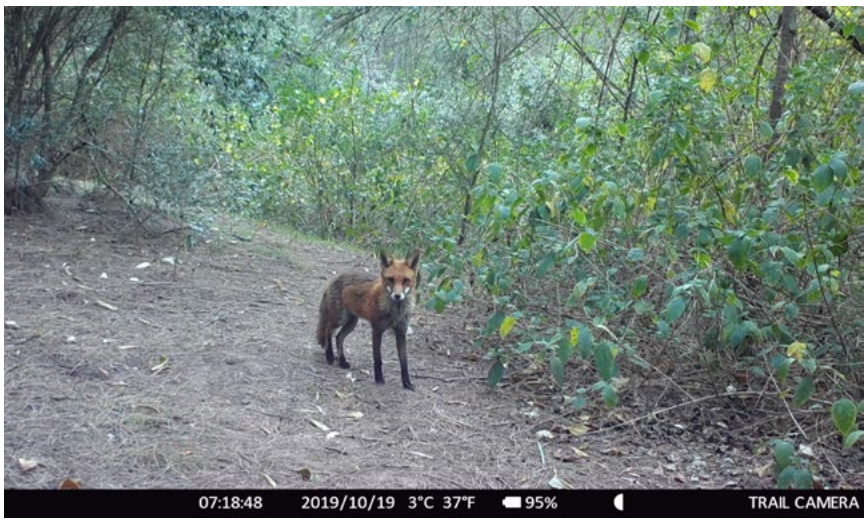


Image 5

Capture details

Observations

Image 6

Capture details

Observations

Image 7

Capture details

Observations

FACT SHEET

Call to Action! How you can help

Imagine your school grounds buzzing with colourful birdsong, butterflies flitting between vibrant flowers and lizards basking in cosy shelters. With a little creativity and eco-friendly action, you can transform your school yard into a haven for native wildlife!

Remember, even small actions can make a big difference.

Planting power

Local love: Research native plants that provide food and shelter for local birds, insects and other creatures. Think berries for honeyeaters, nectar-rich flowers for butterflies and flowering shrubs for shelter. Check with local nurseries or environmental organisations for guidance. bit.ly/aayp-plants

Pollinator paradise: A garden with wildflowers, herbs and native flowering shrubs attracts bees, butterflies and other vital pollinators that keep our ecosystems healthy. bit.ly/aayp-pollinator

Community connection

Spread the word: Share your plans with classmates, teachers and the wider community. Get their excited and involved! Organise planting days, workshops, or competitions to build enthusiasm.

Seek support: Reach out to local gardening clubs, environmental organisations, or wildlife groups. They may offer expertise, resources, or even volunteers to help with your project.

Cozy creations

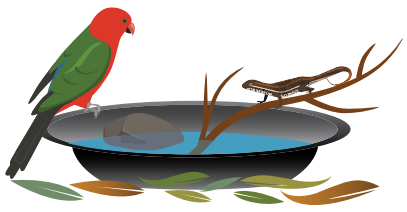
Lizard lounges: Build small piles of rocks or logs in sunny spots where lizards can bask and hide. bit.ly/aayp-reptiles

Froggy fun: Create a shallow pond or bog using a large container or bathtub. Add aquatic plants and rocks for hiding places, attracting frogs and encouraging a mini freshwater ecosystem.

Batty buddies: Build or purchase bat boxes and install them under eaves or in sheltered locations. Micro-bats help control mosquitoes.

Hotel hospitality: Build insect hotels using natural materials like sticks, bark and hollow bamboo. This provides shelter for beneficial insects. bit.ly/aayp-insect and youtu.be/brUfOkQbpjM

Bird baths: Create a bird bath to help your feathered visitors keep cool on hot days. youtu.be/6jlD3uZRzf0



Get creative: Organise fundraising events, school fairs, or art competitions to raise awareness and funds for your wildlife haven project.

Show and tell: Document your progress and share updates with the community through newsletters, school assemblies, or social media. Celebrate your achievements and inspire others to join the wildlife conservation movement!