

# AuSSI Biodiversity Audit – Upper Primary

Note: For the most up-to-date digital version of this resource [click here](#).

## Activity Introduction

**Quick summary:** In this practical and hands-on activity students complete a biodiversity assessment of their school. They begin by creating definitions for habitat terms, and then calculate the habitat percentage cover of different cover types (tree cover, roof cover, soft surfaces/grass, and hard surfaces) using a map of the school grounds. Through authentic learning experiences students assess the schools natural resources and where there is opportunities for further actions. Students create a biodiversity improvement development plan.



This lesson can be used when working on the Biodiversity Module of [ResourceSmart AuSSI Vic Certification](#).

By completing this lesson you will have completed the following actions:

### Biodiversity Checklist Compulsory Actions:

- A1 – Have you completed biodiversity assessments for your school’s grounds, including the identification and recording of:
  - Indigenous/native plants and animal habitat quality e.g. trees, understorey, ground cover weeds and soil management?
  - Linkages of school vegetation and habitats with surrounding areas?
- A1 – Has your Habitat Quality Assessment score been entered as your baseline data?

### Checklist data goals:

- To estimate a ‘habitat quality score’ as well as the percentage of different elements in the school ground e.g. percentage of school grounds covered by buildings, asphalt, oval/lawn etc.

## Australian Curriculum Links:

<b>Cross curriculum priorities</b>	<a href="#">Sustainability</a> OI.1 - The biosphere is a dynamic system providing conditions that sustain life on Earth. O1.2 -All life forms, including human life, are connected through ecosystems on which they depend for their wellbeing and survival.
<b>General capabilities</b>	Critical and creative thinking
<b>Explicit content description</b>	<p><b>Science Year 5</b></p> <ul style="list-style-type: none"> <li>Living things have structural features and adaptations that help them to survive in their environment (<a href="#">ACSSU043</a>)</li> </ul>
	<p><b>Geography Year 5</b></p> <ul style="list-style-type: none"> <li>Collect and record relevant geographical data and information, using ethical protocols, from primary and secondary sources, for example, people, maps, plans, photographs, satellite images, statistical sources and reports (<a href="#">ACHGS034</a>)</li> <li>Represent the location and features of places and different types of geographical information by constructing large-scale and small-scale maps that conform to cartographic conventions, including border, source, scale, legend, title and north point, using spatial technologies as appropriate (<a href="#">ACHGS036</a>)</li> <li>Present findings and ideas in a range of communication forms, for example, written, oral, graphic, tabular, visual and maps; using geographical terminology and digital technologies as appropriate (<a href="#">ACHGS038</a>)</li> </ul>
	<p><b>Science Year 6</b></p> <ul style="list-style-type: none"> <li>The growth and survival of living things are affected by the physical conditions of their environment (<a href="#">ACSSU094</a>)</li> </ul>
	<p><b>Geography Year 6</b></p> <ul style="list-style-type: none"> <li>Collect and record relevant geographical data and information, using ethical protocols, from primary and secondary sources, for example, people, maps, plans, photographs, satellite images, statistical sources and reports (<a href="#">ACHGS041</a>)</li> <li>Represent the location and features of places and different types of geographical information by constructing large-scale and small-scale maps that conform to cartographic conventions including border, source, scale, legend, title and north point, using spatial technologies as appropriate (<a href="#">ACHGS043</a>)</li> <li>Present findings and ideas in a range of communication forms, for example, written, oral, graphic, tabular, visual and maps, using</li> </ul>

	geographical terminology and digital technologies as appropriate ( <a href="#">ACHGS045</a> )
--	--

**Connecting lessons:** [Native animal identification](#) – must be completed as a compulsory action.

**Resources required:** Internet access, student worksheet, maps of school grounds (from [Flash Earth](#) or [Google Maps](#)), ruler, pencil, materials for making maps.

**Digital technology opportunities:** Digital sharing capabilities.

**There's an app for that:**



[Google Maps](#): Explore new places, discover local favourites, and navigate your world with Google Maps.



[Field Guide to Victorian Fauna](#): Detailed descriptions of animals, maps of distribution, and endangered species status combine with stunning imagery and sounds to provide a valuable reference that can be used in urban, bush and coastal environments.



[The Michael Morcombe and David Stewart eGuide to the Birds of Australia](#): The foremost field guide to Australian birds with a comprehensive collection of bird calls.



[Sea Life Victoria](#): An informative guide to over 200 of the marine animals that live in Australia's southern habitats. The southern Australian coastline is known for its extraordinarily high number of unique species that are found nowhere else in the world.



[Bunurong Marine National Park Field Guide](#): This app presents images and information on over 300 species of marine and coastal animals and plants that can commonly be seen in Bunurong Marine National Park and nearby waters.



[Project Noah](#): Project Noah is the best way to share your wildlife encounters and help document our planet's biodiversity.



[Field Guide to Pest Animals of Australia](#): This app contains pest information, distribution maps, photos, animal calls, control information and resource links for 53 pest species.

**Weed links:**

- [Weed Identification Tool – Victoria](#)
- [Weed Identification Tool – Australian Government](#)
- [Manningham Council – Weeds Booklet](#)



- [City of Yarra – Removing Weeds and Planting Indigenous Alternatives](#)

**Keywords:** Habitat, biodiversity, map, hectare, cover, percentages.

**Need some more support? Click on these leading organisations**

[CERES](#)



[Greening Australia](#)



## Teacher worksheet

### Teacher preparation:

#### Overarching learning goals:

- Students understand that there are a range of habitats at their school.
- Students understand how to use maps to calculate the percentage of cover types at their school.
- Students recognise how their biodiversity at their school can be improved.
- Students create action plans to address natural resource management issues and increase local biodiversity.

#### Teacher content information:

For information about biodiversity - what it is, where it is, how it helps us and what we are doing to protect it - [read this short article](#).

Watch Cool Australia – Biodiversity on Vimeo - <http://vimeo.com/77933476>



**Hot tips:**

1. Print out maps of your school using [Flash Earth](#) or [Google Maps](#). Print one map for each group (or several to share amongst the class if working as a class), trying to keep the maps as large as possible. If the map provided by Google Maps is really out of date, ask your council if they have an up to date map.



2. Students will need the figure for the number of hectares for your school to calculate the habitat scores for your school. The Principal or resource manager should have access to this figure. Alternatively you can calculate the area of your school using [Daft Logic](#), using the [Google Maps Area Calculator Tool](#).

## Student and classroom organisation:

**Step 1.** Begin this activity by working with students to research and create definitions for the following terms. In addition, create symbols for these terms that can be used when assessing the habitat levels at your school.

- Biodiversity
- Tree
- Shrub
- Native plant
- Introduced/exotic plant
- Weed
- Indigenous plant
- Indigenous wildlife
- Productive gardens (veggie beds, herb gardens, bush tucker gardens, orchards, livestock)

**Step 2.** Break the class into groups and distribute one map to each group. Ask groups to divide their maps into a grid using a pencil and ruler. The map grid should contain at least 100 squares (or a number of squares easily divisible by 100 e.g 300 squares). Ask students to calculate what percentage of their map one of their squares represents. How many squares is equivalent to 1% of the school grounds?

Total number of squares/100 = \_\_\_\_/100 = \_\_\_\_ squares.

\_\_\_\_ squares = 1%

For example:

400 squares/100 = 4 squares

4 squares = 1%

You can then use this information to calculate things like habitat cover or roof cover at your school. For example:

If 4 squares is equivalent to 1% (4 sq = 1%), and there are 44 squares of habitat cover, then

Tree cover  $44/4 = 11\%$

Ask students to calculate the percentage cover for the 4 types of surfaces based on how the water cycle works at your school. For example, water filtering into the ground (tree cover), water being captured in water tanks (roof), infiltrating (soft surfaces/grass) and



flowing into drains and creeks (hard surface). Ask students to record this information on Table 1 of the student worksheet. Ask students to make sure they all add up to 100%!

**Step 3.** Once complete, students need to walk around the school to complete Table 2 on the student worksheet. In this activity, students will need to break down category of tree cover into a range of categories, listing the quantity for each and calculating the percentages for the following:

- Productive gardens (veggie beds, herb gardens, bush tucker gardens, orchards, livestock)
- Garden & Veggie Beds
- Mulch Cover
- Bare Ground
- Native Understorey (shrubs, creepers, grasses, orchids etc)
- Number of trees over 6m - indigenous/native
- Number of trees over 6m - exotic/introduced
- Number of trees planted in the last 12 months - indigenous/native
- Number of trees planted in the last 12 months - exotic/introduced
- Number of trees under 6m - indigenous/native
- Number of trees under 6m - exotic/introduced
- Number of rocks and logs
- Number of Habitat extras (nest boxes, lizard lounges, frog bogs, wetlands)
- Soil quality and management actions

**Step 4. Weeds** - It can be very difficult to identify weeds; they change in appearance in different seasons, when in flower, and as juvenile or mature forms. Without the assistance of an environment officer from your council (you could consider arranging this if possible) identifying weeds can be a major challenge that may be too much for you and your students to manage.

We have several suggestions for including weeds in your audit:

- Contact your local council. Councils often have lists or booklets of weeds and native and indigenous plants that are common in the area. If there are any plants that you are unable to identify, photograph them for identification at a later date.
- In addition, your council may have a vegetation or environment officer who can visit your school and help with weed identification. They may also be able to put you in touch with a Landcare groups or a friends-of group or just a local person who knows their plants who can come and be an 'expert'.
- You could also consider photographing the weed at different times of the year to show flowering or seeding etc.
- Contact the Principal or grounds person and ask them what weed management strategies are in place at your school. List these actions on the student worksheet.
- The following links may also be useful:



- [Weed Identification Tool - Victoria](#)
- [Weed Identification Tool - Australian Government](#)
- [Manningham Council – Weeds Booklet](#)
- [City of Yarra – Removing Weeds and Planting Indigenous Alternatives](#)

**Step 5.** The next task is for students to calculate the **habitat score** for your school, using the tables on the student worksheet.

Students will need the figure for the number of hectares for your school to calculate these scores. The Principal should have access to this figure.

Once complete, ask students to share their habitat scores with the class. Discuss the following:

- Are the scores similar or are there major discrepancies? Why do you think this is?
- How do you think the habitat at your school could be improved?

### **Step 6. Connecting with the outside world**

How does the vegetation and the habitats at your school link with surrounding areas?

Ask students to use [Google Maps](#) or [Flash Earth](#) to see where your local bushland, parks and waterways and drainage reserves are located in relation to your school and to identify whether your school gardens are part of an important corridor or a stepping stone between two larger areas.

**Step 7:** After the audit it's time to start planning some action projects. Get your students thinking creatively by completing a See/Think/Wonder routine.



## Take Action

1. Ask students to create a new map of the school grounds, showing areas where habitat cover could be improved and how these areas could be improved. Use the symbols created earlier by the class to identify what could be improved where. The maps should also use basic mapping conventions and include supporting images. Ask students to share these maps with the class.
2. Get your students to create a 3 year biodiversity improvement development plan. Select some of the ideas from the list below or get your students to come up with their own ideas.
3. Choose an indigenous animal you have at your school and research its habitat needs. Ask students to explore your local neighbourhood (either by desktop mapping or walking/cycling) to map the other native habitat your species would use. For example a Fairy Wren needs shrub cover every 10m and your mapping exercise can identify where habitat maybe needed to help the Fairy Wren. Create a map available habitats for your indigenous animal.
4. In addition, students should compare this year's habitat quality score to their SETS data. Was there a difference? If so, why?

### Ideas to increase biodiversity

Project	Description	Resources
Nesting Boxes	Many birds and mammal species rely on hollows in trees for shelter and breeding. Natural hollows in trees take years to develop and nesting boxes can be a great alternative.	<a href="#">How to build a nesting box</a> <a href="#">Nesting box construction guide.</a>
Frog bog	Help increase the biodiversity at your by building habitats for frogs	<a href="#">CERES hub</a>
Wildlife corridors	Contact your local council about connecting your school to wildlife corridors in your area.	<a href="#">Locals Creating Wildlife Passages</a> or your local Council.
Planet Arks School Tree Day	Take part in the largest nature-care event in Australian schools, Planet Ark's Schools Tree Day. You'll be joining thousands of amazing teachers in making a difference, fostering a child's love of nature and creating positive environmental change.	<a href="#">Schools Tree Day</a> <a href="#">Tree Day Learning resources</a>
Indigenous Garden	Increase biodiversity at your school by planting a habitat garden.	<a href="#">How to plant a native garden</a>

Butterfly garden	Design and plant a butterfly garden for your school.	<a href="#">ActWild - Get Grubby</a>
Biodiversity walk	Create a guided walk of the biodiversity at your school (this is an excellent opportunity to incorporate IT engagement into learning by using QR codes).	<a href="#">CERES Sustainability Hub</a>
Weed removal	Contact your local council about identifying weeds at your school and create an action plan for their removal.	Your local Council
The day of...	Get involved with a National or International Day of...	e.g. <a href="#">Enviroweek</a> , <a href="#">SeaWeek</a> , <a href="#">International Day for Biological Diversity</a> , <a href="#">World Turtle Day</a> , <a href="#">National Biodiversity Month</a> , <a href="#">National Bilby Day</a> , <a href="#">World Habitat Day</a> .

Check out the [Cool Australia Biodiversity Toolbox](#) for more resources.

### Inspiration

East Bentleigh Primary School has developed a range of gardens to improve biodiversity and provide experiences for its students and community.

Watch East Bentleigh Primary School Biodiversity on Vimeo - <http://vimeo.com/47151990>



Have you recorded your annual baseline data?



For this audit you will need to:

- Estimate a 'habitat quality score' as well as the percentage of different elements in the school ground e.g. percentage of school grounds covered by buildings, asphalt, oval/lawn etc.



## Student worksheet

### Thought starter: What percentage of your school is native habitat cover?

#### Step 1. Looking at the types of habitat cover at your school.

Begin by calculating the percentage cover for the 4 types of surfaces based on how the water cycle works at your school. For example, water filtering into the ground (tree cover), water being captured in water tanks (roof), infiltrating (soft surfaces/ grass) and flowing into drains and creeks (hard surface). Record this information on the table below. Make sure it all adds up to 100%!

**Table 1. Calculating the percentage of cover types at your school**

Cover type	Tally of squares	Total number of squares	Percentage
Tree cover			
Roof cover			
Playground/Hard surface			
Grass cover			

Now it's time to look at the habitat features of your school. Head outside to count and calculate these features, adding them to the table below.

**Table 2. Calculating and identifying the number of habitat features at your school**

\*TIP - How to measure tree height: Calculate the height of one of the main buildings at your school (if it's very high, pick a smaller building or ask your school office if they have plans of the school buildings). Visually measure trees against this building to give an approximate tree height e.g. if the building is 9 metres high and the tree is about two thirds the height of the building, then the tree is about 6 metres high.

Habitat features	Tally of squares	Tally of number	Total number of squares or items	Percentage	Number per hectare
Productive gardens*					
Mulch Cover					
Bare Ground (e.g. dirt)					
Grass/turf					
Native grass					
Astroturf					
Native Understorey (shrubs, creepers, grasses, orchids etc)					
Weeds					
Number of trees over 6m - indigenous/native					
Number of trees over 6m - exotic/introduced					
Number of trees planted in the last 12 months - indigenous/native					
Number of trees planted in the last 12 months - exotic/introduced					
Number of trees under 6m - indigenous/native					
Number of trees under 6m - exotic/introduced					
Number of rocks and logs					
Number of Habitat extras**					

\***Productive gardens could include:** veggie beds, herb gardens, bush tucker gardens, orchards, livestock.

\*\***Habitat extras could include:** composting area, Indigenous plant propagation, nest boxes, lizard lounges, frog bogs, wetlands, bird bath.

## Understanding the soil at your school

Take a walk around your school and look at the soil. Consider the following questions:

1. Erosion is the wearing away and movement of soil by things like rain and wind. Is there any erosion present in the school ground? Yes or no
2. Compaction is when the soil is packed together, making it hard for plants to grow. Is there any compaction present in the school ground? Yes or no
3. Are the garden beds in the school ground mulched (look for things like tanbark or straw)? Yes or no
4. Is your school doing anything to help protect soil (such as fencing off areas, putting in paths or putting in plants)? Yes or no

## Step 2. Calculating the habitat score for your school

To calculate the habitat score for your school you will need the size of your school in hectares (1 hectare = 10,000m<sup>2</sup>).

Ask your teacher for this figure and write it here: \_\_\_\_\_

For each habitat feature you will need to calculate the number of the features per hectare

Result/Number of hectares = \_\_\_\_ per/ha

Place an asterisk (\*) next to the number in the bottom right corner that is the most correct.

### Large native trees (trees over 6 metres)

No large trees	< 5 large trees/ha	5 - 10 large trees/ha	> 10 large trees/ha	> 10 large <b>native*</b> trees/ha
0	2	5	7	10

### Small native trees (trees less than 6 metres)

< 10 trees/ha	10 - 20 trees/ha	> 20 trees/ha
0	5	10

### Native shrubs/understorey

< 5% understorey cover in school grounds	5 - 15% understorey cover in school grounds	15 - 25% understorey cover in school grounds	> 25% understorey cover in school grounds	> 25% <b>native*</b> understorey cover in school grounds
0	5	10	15	20

### Weeds

No action undertaken to identify or remove weeds	Weeds present – some action taken to manage weeds	No weeds present
0	8	15

### Organic litter/mulch

< 25% cover of organic litter in gardens	25 - 49% cover of organic litter in gardens	50 - 74% cover of organic litter in gardens	75 - 99% cover of organic litter in gardens	100% cover of organic litter in gardens
0	2	5	7	10

### Rocks and logs

No logs or rocks	3 - 5 logs or rocks/ha	> 5 logs or rocks/ha
0	3	5

### Productive gardens

0 - 2% cover in school grounds	3 - 5% cover in school grounds	6 - 10% cover in school grounds	10 - 15% cover in school grounds	>15% cover in school grounds
0	2	5	7	10

### Habitat extras

No habitat extras	1-3 habitat extras	3-6 habitat extras	7-10 habitat extras	> 10 habitat extras
0	3	7	11	15

### Soil Management

We circled 'Yes' 1 time. School needs to do more to manage soil.	We circled 'Yes' 2 or 3 times. School is doing some things to manage soil.	We circled 'Yes' 4 times. School is doing a great job at managing soil.
0	3	5

Add up all your scores to reveal your **HABITAT HECTARE SCORE**: \_\_\_\_\_

\* Native and Indigenous species are awarded more points than introduced species.

### Weeds

What actions are being taken at your school to minimise the spread of weeds? List these actions below:

## Connecting with the outside world

How does the vegetation and the habitats at your school link with surrounding areas?

Use [Google Maps](#) to see where your local bushland, parks and drainage reserves are located in relation to your school and to help identify whether your school gardens are part of an important corridor or a stepping stone between two larger areas.



## Finished your audit? Let's get creative!

See | Think | Wonder

Take a look at this picture of a school in 2050.



What do you see?	What do you think?	What does it make you wonder?



**Let's plan a biodiversity action project.**

**Think outside the box**

Think of the **biggest craziest** school biodiversity project that you can imagine! Describe it below or draw a picture of it.

**Think inside the box**

Now scale it down a little bit and think of a biodiversity project that you could implement this year with limited budget. Describe it below.

**Planning your project**

Answer the "What, Who, Where, When, Why" of your project.

