

Biodiversity unit - Butterfly fun

Level 3 and 4

May 2022

About this unit

In this unit, students will learn how to create a habitat haven for butterflies, using native plant species. With games and trivia, they will explore the features of butterflies, their life cycle, and the plants they depend on. New understandings about butterflies, caterpillars, and habitat needs will lead to thoughtful garden design, and the unit includes guidance for planting a butterfly oasis.

This unit focuses on butterfly species.

Students will learn

- How to make observations, describe features and identify animal and plant interactions
- The lifecycle of a butterfly
- What butterflies need to survive
- How to identify native plant species
- To consider a range of factors when planning and designing a garden

Suggested sequence of activities

1. Butterfly buddies
2. Lifecycle of a butterfly
3. Call to action
4. What is a butterfly oasis?
5. Planning a butterfly oasis
6. Creating a butterfly oasis

Developed by:

Gould League for Cardinia Shire Council



Victorian Curriculum links

Domain	Content description
Geography / Geographical Knowledge / Diversity and significance of places and environments	Types of natural vegetation and the significance of vegetation to the environment, the importance of environments to animals and people, and different views on how they can be protected; the use and management of natural resources and waste, and different views on how to do this sustainably (VCGGK082) Similarities and differences in individuals' and groups' feelings and perceptions about places, and how they influence views about the protection of these places (VCGGK083)
Science / Science Understanding / Science as a human endeavour	Science knowledge helps people to understand the effects of their actions (VCSSU056)
Science / Science Understanding / Biological sciences	Living things can be grouped on the basis of observable features and can be distinguished from non-living things (VCSSU057) Different living things have different life cycles and depend on each other and the environment to survive (VCSSU058)
English / Literacy / Interacting with others	Interpret ideas and information in spoken texts and listen for key points in order to carry out tasks and use information to share and extend ideas and use interaction skills (VCELY307)
Design and Technologies / Creating Designed Solutions / Producing	Select and use materials, components, tools and equipment using safe work practices to produce designed solutions (VCDSCD030)
Design and Technologies / Technologies and Society	Recognise the role of people in design and technologies occupations and explore factors, including sustainability, that impact on the design of solutions to meet community needs (VCDSTS023)
Design and Technologies / Technologies Contexts / Food and fibre production	Investigate food and fibre production used in modern or traditional societies (VCDSTC025)
Health and Physical Education / Personal, Social and Community Health / Contributing to healthy and active communities	Participate in outdoor games and activities to examine how participation promotes a connection between the community, natural and built environments, and health and wellbeing (VCHPEP096)

Activity 1: Butterfly buddies

Learning outcomes

Students will observe butterflies and learn about their unique features and interactions with plants.

Teachers note

Preliminary reading: Sustainable Gardening Australia 'Butterflies'
www.sgaonline.org.au/butterflies/

Resources

- Butcher's paper for brainstorming

Instructions

1. Take the students for a walk around the school grounds to search for butterflies, to have a better chance of seeing butterflies choose an area with flowering plants. Alternatively, if there is bad weather or no suitable place, watch free flying butterflies at Melbourne Zoos butterfly house on www.youtube.com/watch?v=fNw_6spqx74&t=172s.

Encourage the students to observe the following:

- Butterfly species
- Butterfly behaviours
- Butterfly interactions with plants
- What kind of plants are being used by the butterflies
- Is it sunny or cloudy? Is it windy?

2. Back in the classroom, divide the students into small groups for a brainstorming activity using butcher's paper. What do students know and love about butterflies?

Discussion prompts

- What do butterflies do?
- In what weather do we most often see them?
- Describe or draw features (antennae, three body parts, and sets of wings, mean butterflies are classed as an insect).



Activity 2: Lifecycle of a butterfly

Learning outcomes

Students will learn about the butterfly life cycle, and discover butterflies need nectar, shelter, and the opportunity to lay eggs on good leaves for caterpillar food.

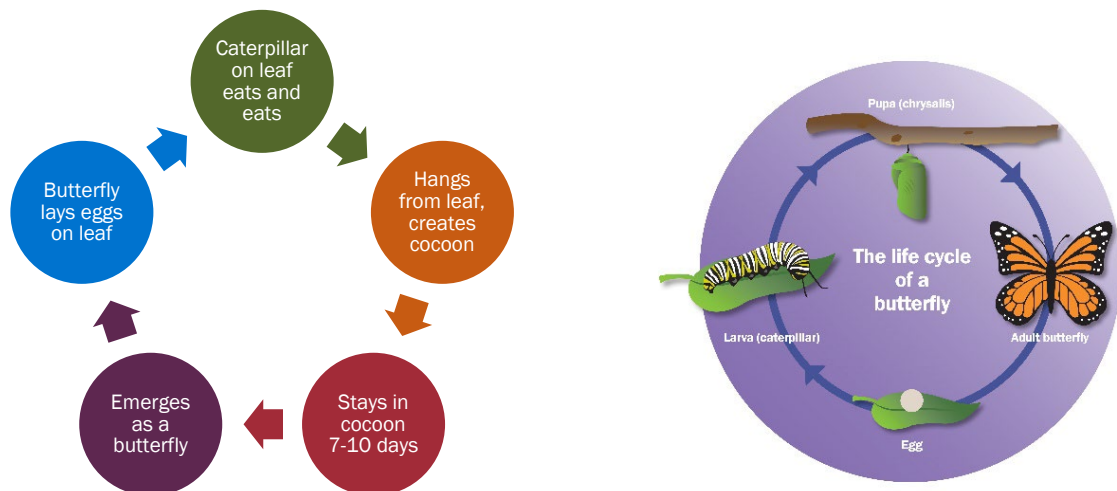
Teachers note

Living things grow, change and have offspring that look similar to themselves. But in the case of a butterfly the young look VERY different to the adults. Just like the story of the very hungry caterpillar, baby caterpillars hatch from a tiny egg, and are very, very hungry! They eat through the leaf they were born on. They hang down and wriggle a cocoon made of thread over themselves. They stay in the cocoon for around 7 days. When they emerge, they stretch their wings out to dry, and fly off as a butterfly. They feed on flowers, mate, lay eggs on a leaf, and the cycle continues. This dramatic and noticeable change that happens from caterpillar to butterfly is called 'metamorphosis'.

Instructions

1. Watch the video 'All in a Flutter' by Gardening Australia. The first 5 minutes shows the life cycle, some Australian butterflies, and the importance of native plants.
2. Have students spend a few minutes drawing the life cycle, or a part of it, such as eggs on a leaf.

Figure 1. Life cycle of a butterfly



Using the questions below (based on the butterfly fact sheet as an answer sheet) run a trivia game. Students can keep the fact sheet in their folder after the quiz.

Butterfly Fun Facts (correct answers are green)

1. Butterflies are born looking like their adult form T/F
2. Like other insects, how many wings do butterflies have? 4
3. Butterflies can flap their wings how many times a second? 1 or 5 or 20 or 100
4. An adult caterpillar lays butterfly eggs T/F
5. Caterpillars eat all the time for first 5 days T/F
6. Butterflies have a long tongue called plebiscite probe or a **proboscis**?
7. A butterfly drinks nectar from flowers T/F
8. A butterfly can taste with its feet T/F

Extension activity

Have students research more caterpillar, butterfly and insect facts to create their own five question trivia and test each other.

Activity 3: Call to action

Learning outcomes

Students learn to become more observant about native plants, practicing their local plant species knowledge with bingo.

Resources

- 20 x butterfly plant bingo cards
- 1 x teacher plant bingo list
- 50-80 buttons or counters to mark bingo card with
- 2 prizes (optional)
- Call to action - Appendix 3

Instructions

Participate in a class discussion, what colours and flowers do our native butterflies love? Could you identify any if you saw one out on a walk?

This game will help us learn butterfly habitat plants. The quicker you know your plants, the better your chance of winning Bingo! (Appendix 1)

1. Cut out cards so that each student/pair has a card with four plants. Give each player or pair four counters
2. Everybody gets a game of Bingo with native plant pictures in different orders.
3. Each time the teacher calls out a plant, the student searches for the right square on their bingo sheet and marks it with a counter.
4. The first student to have four plants highlighted in a row and yell 'Bingo', wins.
5. The games can be played on multiple occasions, to practice plant recognition.

Students can write their own reflection. You can use Appendix 3 for this task.

- We have been learning about butterflies. I found out that...(something they have learned)
- We can help make the environment better for butterflies by planting... (one way they can help provide butterfly habitat)



Extension activity

Highlight to students plant features such as edible leaves, spiny textures, and depth of flowers.

Ask students to list which features:

- Provides shelter from predators
- Provides food for caterpillars
- Provides nectar for butterflies

Using the native plant pictures in Bingo, can students guess which plants provide food and shelter for BOTH butterflies and caterpillars?



Additional resources for activity 3

Gardens for Wildlife Factsheet: Nectar Plants

www.cardinia.vic.gov.au/downloads/download/606/gardens_for_wildlife_fact_sheets_-_cardinia_shire_council

No Legs or Many – Spineless and Wild booklet www.cardinia.vic.gov.au/insectsandbugs

Online resources for Australian Lepidoptera (Moths and Butterflies)

<https://australian.museum/learn/animals/insects/online-resources-for-lepidoptera-moths-and-butterflies/>

New butterfly app launched in bid to record every species in Australia

www.abc.net.au/news/2019-10-24/butterfly-app-aims-to-track-every-species-in-australia/11631466

Common Insects of Australia Poster by Gould League

www.gould.org.au/product/common-insects-of-australia/

Australian Guide to Garden Wildlife by Gould League

www.gould.org.au/product/australian-guide-to-garden-wildlife/

All in a Flutter video <https://www.abc.net.au/gardening/factsheets/all-a-flutter/10883102>

Activity 4: What is a butterfly oasis?

Learning outcomes

Students practice their emerging understanding that butterflies need certain things to survive, including native plants that provide nectar, shelter, and caterpillar food.

Resources

- Butterfly House Live Cam at Melbourne Zoo www.youtube.com/watch?v=fNw_6spqx74

Instructions

Discussion topics:

1. Why we would like to attract butterflies to the school garden:
Allow students to come up with some reasons. The following may be raised:
 - Butterfly importance: creating a haven for butterflies brings colour and life. They help our garden. They pollinate our flowers and veggie gardens, and they provide food sources for wildlife such as birds and lizards.
 - Conservation: since European settlement, butterfly populations have declined, and dozens of butterfly species are threatened. Butterflies need more habitat for their homes, so planting a garden oasis for butterflies will protect them.
2. How will we attract butterflies?
 - What makes a good home for anyone? See if students come up with ideas such as food and shelter.
3. A Butterfly Oasis in action
 - Explain that an oasis is an ideal environment that is safe and perfect for all the butterflies' needs.
 - Show students live cam of Melbourne Zoo's butterfly house.
 - Ask students to observe and list features butterflies like, such as sun, warmth, colours, plants and flowers.
 - Begin a list on the whiteboard - If we are going to design an area in the schoolground that butterflies might like to live in, what do we need to provide for them?
 - Make a list of all the important elements that would need to be available in a habitat suitable for butterflies.
 - Note the 5 aspects of habitat are water, air, shelter, food and friends/mates. ask the students for suggestions about the position of the garden. The final list should include:
 - Position: sunny, sheltered from wind
 - A range of colourful flowers, especially native flowers
 - Flat rocks to sun themselves on
 - Water sources, such as shallow puddles
 - Food and shelter for them at every life cycle stage



Activity 5: Planning a butterfly oasis

Learning outcomes

Students are given the opportunity to carefully consider what is required in a butterfly friendly habitat, and to help map a potential site in the schoolground.

Resources

- Butterfly oasis species table – Several student copies
- Native plant bingo or other plant pictures suitable for butterfly garden
- Plan of the schoolground. Indicate on the map which spots receive the most sun
- Paper and markers for students to use to design their own butterfly habitat.

Instructions

Ask students to think about which plants they would choose when creating a butterfly oasis.

1. Students in groups receive copies of the butterfly oasis species table, and illustrations such as the native plant bingo pictures.
Note: Remind students that some special plants give food to caterpillars AND butterflies through both leaves and flowers, meeting all life cycle needs.
2. Students are to choose which four plants they would grow in their own imaginary butterfly garden. They can list these (drawing a picture is optional) and provide reasoning.
3. Give students a map of the garden area, showing areas of full and partial sun.
Note: Remind students that butterflies like shelter from the wind and sunny rocks, as well as sunny positions.
4. Give students time to sketch out unique ideas for the design of the garden, including plant types. They may want to use both words and pictures to describe their ideas for butterfly habitats.

Students are invited to share their designs, and to explain the choices of plants and shelters they have made in their design. Compare and discuss their ideas.



5. Make a display of the student's designs in the classroom.

Presenting the final plan

If you can go ahead with creating some butterfly-friendly habitat in the school garden, discuss the formal school plan with students, such as:

- the plant types bought for the garden,
- their sunlight and watering needs, and
- their ideal location.

This gives students the opportunity to consider the needs of different plant species when planting a garden.

Teachers note

Choosing a suitable location for the butterfly oasis may need some prior planning, this can be done by the teacher or students. To determine which areas are sunny and sheltered from the wind, observe and record sunny and shady spots throughout the day and try to observe the area on a windy day.

Activity 6: Creating a butterfly oasis

Learning outcomes

Students will learn what people need to create a successful garden and how to promote biodiversity in the school grounds.

Resources

Required for constructing the habitat

- Seedlings according to butterfly oasis species table – if possible, 1 plant for every student pair.
- Trowels and watering cans – 1 can between 2 or 3 students
- Mulch if possible, such as sugar cane mulch
- Flat rocks (these may be placed by adults)
- Butterfly attracting plants wildlife fact sheet www.cardinia.vic.gov.au/gardensforwildlife

Teachers note

Planning the garden

- In choosing a potential site, consider the amount of sun and wind, and shelter from existing plants
- Refer to the butterfly oasis species table, along with Southern Dandenong's Community Nursery Indigenous Gardening to Create Butterfly Habitat list for soil requirements, such as moist, dry, deep, clay etc. <https://sdcn.org.au/wp-content/uploads/2017/09/butterflies.pdf>
- Grevilleas and bottlebrush are considered fast growers. Consider asking for fast growing flowers, shrubs and grasses from the local indigenous nursery. www.abc.net.au/everyday/native-australian-plants-for-your-garden/11589742
- Designate areas for plant species, planting according to needs for sun and shade.
- Cardinia Shire has indigenous plant nurseries that can help your school with plants and advice for a butterfly friendly garden www.cardinia.vic.gov.au/downloads/download/359/local_indigenous_plant_nurseries_-_cardinia_shire_council

Organising planting day

- Choose a dry day for planting, but water the plants the day before.
- Plan for extra supervision on planting day by inviting members of your local Landcare or 'Friends of ..' groups. Some may even be able to lend gloves or trowels. Otherwise, parent helpers may like to guide students in planting
- Think of an appropriate role for each student, giving extra supervision to planters where helpful
- Take 'before' and 'after' photos of the butterfly garden – use in school newsletter, etc



Running the activity

Assign roles to small groups of students:

- Diggers, planters, waterers - students can plant in groups of two or more, so that one person can dig, one can plant, and the other can water it in.
- Give supervision and instructions on digging a slightly bigger hole than the plant, and gently teasing roots first.
- If mulch is available, some students can place mulch after plants have been watered in.
- Other students can give ideas for placement of rocks, mulch the new plants, or be given a job on the weekly watering roster.

Follow up

Visit the planting site. Check the plants are watered regularly according to their needs, but not overwatered.



Students can track the progress of plants, caterpillars and butterflies, as well as observations of bird and bee species.

Discuss 'biodiversity', and how providing different plants helped invite and protect different butterfly species, including native bees.



In warmer months, you can check water is available for butterflies in the water puddles.

Find out if there is a local Landcare Group or a "Friends of" a local park or wetland area nearby. These groups often have great expertise and enthusiastic volunteers who might be an ongoing source of advice for maintenance and problem-solving needs that might arise.

Citizen science

Your students might be inspired to get involved with the <https://inaturalist.ala.org.au/>. There is a downloadable app and an opportunity to be involved as citizen scientists by contributing to data about butterflies and moths in your local area.



This could be done as a class, with an excursion to a local park, or students can even do it from their own back yards with their family members.

Additional resources

Southern Dandenong's Community Nursery Indigenous Gardening to Create Butterfly Habitat
<http://sdcn.org.au/wp-content/uploads/2017/09/butterflies.pdf>

Australian Butterflies and their Caterpillars (with pictures)
<http://lepidoptera.butterflyhouse.com.au/butter.html>

Indigenous wildflowers of Casey and Cardinia, and local indigenous nurseries -
www.casey.vic.gov.au/sites/default/files/user-files/Indigenous%20Plant%20Guide%20Casey%20and%20Cardinia.pdf

List of local indigenous plant nurseries
www.cardinia.vic.gov.au/downloads/download/359/local_indigenous_plant_nurseries_-_cardinia_shire_council

Clump of Dense Shrubs, Indigenous trees in Cardinia Shire – Gardens for Wildlife Factsheets
www.cardinia.vic.gov.au/downloads/download/606/gardens_for_wildlife_fact_sheets_-_cardinia_shire_council

Appendix 1: Butterfly plant bingo cards

Instructions:

1. Cut along line to give each student (or pair of students) one row of four pictures (20 in set). Give four counters each, or students mark with pencil.

The teacher keeps the plant species list (below) and reads out a random selection of four plants until someone calls 'Bingo'. Repeat for a few games.

Teacher plant bingo list





- Bottle brush
- Caterpillar on hakea
- Hakea seed pod
- Prickly tea tree
- Purple brachyscome
- Sweet bursaria
- White brachyscome
- Yellow box gumnuts
- Yellow buttons





Photo credits:

- CC Images, "*Hakea tephrosperma* 130606-8705" by Tony Rodd
- "Caterpillar on hakea- 1" by Boobook48
- "Yellow Box *Eucalyptus meliodora*" by Elizabeth Donoghue
- 'Asteraceae - *Brachyscome bellidioides*' by jeans_Photos
- "*Brachyschome multifida*" by Chris (a.k.a. MoiVous)
- Yellow Buttons "*Chrysocephalum apiculatum*" by NSW Grassy Ecosystems.




			
Yellow box gumnuts	Bottle brush	Sweet bursaria	Prickly tea tree





			
Hakea seed pod	Prickly tea tree	Bottle brush	Sweet bursaria

			
Hakea seed pod	Purple brachyscome	Caterpillar on hakea	White brachyscome





			
White brachyscome	Yellow box gumnuts	Caterpillar on hakea	Purple brachyscome





			
Yellow box gumnuts	Bottle brush	White brachyscome	Purple brachyscome

			
Yellow buttons	Caterpillar on hakea	Prickly tea tree	Bottle brush





			
Sweet bursaria	Hakea seed pod	Purple brachyscome	White brachyscome





			
Bottle brush	Prickly tea tree	Hakea seed pod	Yellow buttons





			
Yellow buttons	Sweet bursaria	White brachyscome	Yellow box gumnuts




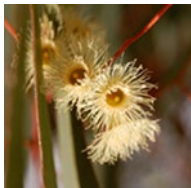
			
Sweet bursaria	Prickly tea tree	Caterpillar on hakea	Purple brachyscome





			
Yellow buttons	Bottle brush	White brachyscome	Hakea seed pod





			
Prickly tea tree	Purple brachyscome	White brachyscome	Caterpillar on hakea





			
Yellow buttons	Bottle brush	Purple brachyscome	Caterpillar on hakea





			
White brachyscome	Hakea seed pod	Yellow box gumnuts	Purple brachyscome


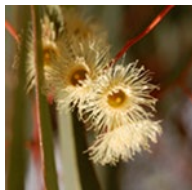


			
Bottle brush	White brachyscome	Yellow buttons	Yellow box gumnuts

			
Yellow box gumnuts	Caterpillar on hakea	Purple brachysocome	White brachysocome

			
Bottle brush	Purple brachysocome	Hakea seed pod	Yellow buttons

			
Yellow buttons	Yellow box gumnuts	White brachysocome	Bottle brush

			
Sweet bursaria	Prickly tea tree	Caterpillar on hakea	Bottle brush

			
Yellow buttons	Yellow box gumnuts	Hakea seed pod	Bottle brush

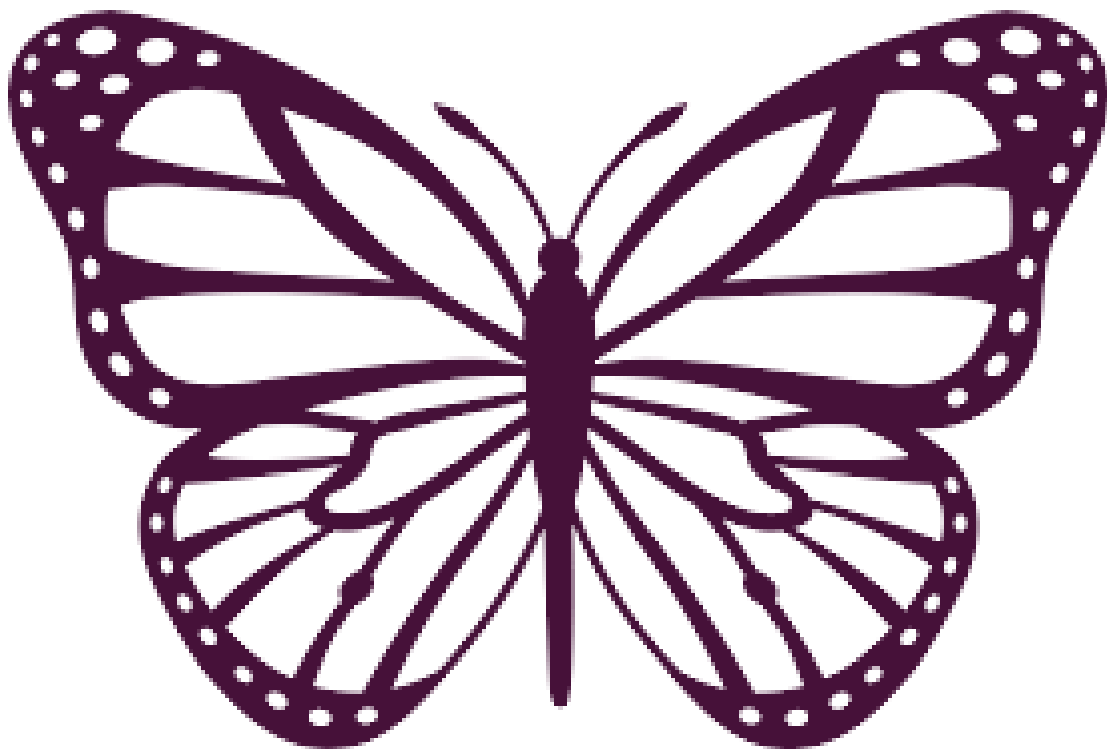
Appendix 2: Suggested planting list

Table 1. Nectar plants for butterflies

Common name	Species name
Silver Banksia	<i>Banksia marginata</i>
Hairpin Banksia	<i>Banksia spinulosa</i>
Swamp Daisy	<i>Brachyscome cardiocarpa</i>
Cut-leaf Daisy	<i>Brachyscome multifida</i> var. <i>multifida</i>
Blue Pin-cushion	<i>Brunonia australis</i>
Sweet Bursaria	<i>Bursaria spinosa</i> subsp. <i>spinosa</i>
Yellow Buttons	<i>Chrysocephalum apiculatum</i>
Common Billy Buttons	<i>Craspedia variabilis</i>
Common Heath	<i>Epacris impressa</i>
Yellow Box	<i>Eucalyptus melliodora</i>
Furze Hakea	<i>Hakea sericea</i>
Bushy Needlewood	<i>Hakea ulicina</i>
Satin Everlasting	<i>Helichrysum leucopsideum</i>
Button Everlasting	<i>Helichrysum scorpioides</i>
Burgan	<i>Kunzea ericoides</i>
Prickly tea-tree	<i>Leptospermum continentale</i>
Woolly Tea tree	<i>Leptospermum lanigerum</i>
Silky Tea tree	<i>Leptospermum lanigerum</i>
Swamp Paperbark	<i>Melaleuca ericifolia</i>
Scented Paperbark	<i>Melaleuca squarrosa</i>
Long Purple Flag	<i>Patersonia occidentalis</i>
Bootlace Bush	<i>Pimelea axiflora</i> subsp. <i>axiflora</i>
Curved Rice-flower	<i>Pimelea curvifolia</i> var. <i>sericea</i>
Small Rice Flower	<i>Pimelea humilis</i>
Tall Rice-flower	<i>Pimelea ligustrina</i>
Creamy Candles	<i>Stackhousia monogyna</i>
Small Grasstree	<i>Xanthorrhoea minor</i> subsp. <i>lutea</i>

Appendix 3: Call to action

We have been learning about butterflies.
I found out....



I will help make the environment safe for
butterflies by...

Appendix 4: Butterfly lifecycle

