

Minibeasts



Activities for Prep – Year 2 Classrooms

Children gain more from web-based research or a museum visit if they are thoroughly prepared for the experience. Familiarize students with what they will see online or in the exhibition and discuss what they would like to find out. We recommend that a selection of 'Bug' appropriate activities are completed prior to their visit.

The following activities provide students with an understanding of some of the themes developed in the *Bugs Alive!* exhibition and the Museum Victoria website.

BugCatcher

This interactive online activity encourages children to explore the variety of bugs in the museum collection drawers, sort or label specimens and catch bugs to fill the gaps. Just for fun, catch and label a fantasy Frankenbug!

Build a bug

Research, design and build a model of a giant insect or spider.

Compost – a home for bugs

Become an active composter. Composting provides ready access to a myriad of small invertebrate decomposers for you to study.

Playground safari

This classification activity encourages students to find, observe, collect, record, sketch and identify a variety of invertebrates.

Bug sense

Compare our own body functions and senses with those of insects.

Metamorphosis game

This activity introduces the concept of metamorphosis through the life cycle of a butterfly.

A bug's story

Students create an environment around the life cycles of the dragonfly or diving beetle.

Animals in the classroom

Keeping live animals in the classroom encourages children to observe, discuss and record changes that occur as animals grow.



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Build a bug

The aim of this activity is to encourage students to observe the structure of invertebrates and use their understandings to construct a model.

You will need

Construction materials such as cardboard, wire, polystyrene and fabrics.
Illustrations or photographs of a variety of invertebrates.

What to do

Research, design and build a model of a giant insect or spider, using cardboard, wire, polystyrene and other materials you think appropriate. During the research phase, use a variety of photographs and observe live specimens. Include the following in discussion of the structure of bugs.

- insects have three body segments with three pairs of legs attached to the thorax
- arachnids (spiders and scorpions) have two body segments with four pairs of legs
- legs are made up of a number of segments
- most winged insects have two pairs of wings
- flies and mosquitoes have only one pair of wings
 - the fore-wings of beetles have evolved into hard wing covers
- there are a variety of antennae types
- many species have a tail, cerci or abdominal sting.

Alternatively, build and name a totally imaginary giant bug.
Each student or group should provide a name for their own 'bug'.

Bugs could all be displayed in an environment with giant grass and leaves.





Compost – a home for bugs

This activity is to encourage students to be involved in recycling and to become aware of the importance of rotting material in the life cycles of many invertebrates.

What to do

Become an active composter – at school and at home. Composting your school and household waste will provide an endless supply of nutrient rich soil for the garden, while giving you ready access to a myriad of small invertebrate decomposers for you to study. Ensure the compost heap remains moist as you continue to add grass clippings, leaves and suitable food scraps.

→ Advice on composting is easily obtained – for example:

The Good Compost Guide, EcoRecycle Victoria, 1998

CERES Environment Park, 8 Lee Street, Brunswick East, tel 9387 2609

→ The *Compost Creatures* poster, published by the Gould League, provides a guide to the animals that thrive in this environment.



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Playground safari

This classification activity encourages students to – find look collect record sketch and identify

What to do:

Organise a ‘bugs’ field trip in the school ground. Encourage students to continue their exploration over several weeks and then report their findings. Instruct students to cause minimal disruption to the areas they are exploring.

→ Where to look

in soil, under bark, in grass, in trees and bushes, in a garden bed, under rocks and logs, on plants, in water, in the air.

→ Record class observations

Use Museum resource material to assist students to identify bugs and discover food preferences.

| Name of bug | Number of legs | Number of wings | Food type | Habitat |
|-------------|----------------|-----------------|-----------|---------|
| | | | | |
| | | | | |
| | | | | |

→ Classify the bugs

Collect photographs or draw pictures of each animal found. This collection can be used in a variety of classification activities. Bugs can be classified in a variety of ways:

Body structure.

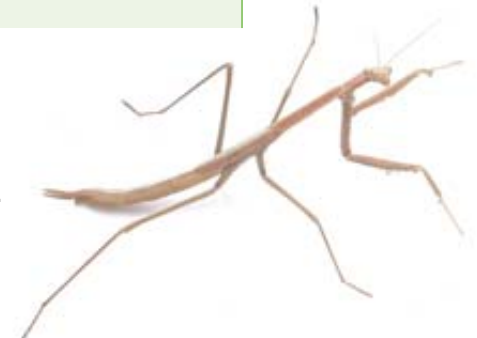
Slugs, snails and worms have no legs. Insects have six legs. Arachnids have eight legs. Yabbies and slaters (Crustaceans and Isopods) have up to twenty legs. Centipedes and millipedes (Chilopods) have more than twenty legs

Food preference

Herbivores. Carnivores. Decomposers

Habitat

Trees and bushes. Soil Grass Rocks and lo
Under bark Water Buildings Garden plants



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Bug sense

The bodies of insects and the ways they sense their surroundings are very different from the bodies and sensory organs of humans. Compare our own senses with those of insects.

What to do

→ **Discuss our own senses and body functions.**

Touch: The skin covering our body is sensitive to touch, however we mainly use our hands to feel objects.

Taste: Our tongue is able to distinguish sweet, bitter, sour, and salty.

Hearing: Our ears are used to detect sounds in our environment.

Smell: Our nose is able to detect a variety of odours drifting in the air.

Sight: If there is sufficient light our eyes are able to see objects around us in colour.

Breathing: Air is taken into our lungs through our nose and mouth.

Eating: Teeth, tongue, jaws and hands combine to help us eat.



→ **Discuss how some animals function and sense their surroundings. Some examples**

Touch: The bodies of invertebrates are sensitive to touch. Antennae (feelers) are used to detect odours rather than used in touch.

Taste: Flies taste with their feet.

Hearing: Bugs do not have ears but some insects are able to detect sounds. Mosquitoes detect sounds through their antennae, crickets through their fore-legs, cicadas use their thorax and grasshoppers have a sound receptor on their abdomen.

Smell: Many insects have a strong sense of smell. They use their antennae to detect odours in the air to locate food sources (eg flies) or other individuals of their own species (eg moths).

Sight: Some invertebrates can only detect shadows. Others are able to see colours, including ultra-violet light that is invisible to humans. Many insects have eyes that are composed of hundreds of lenses (compound eyes).

Breathing: Insects take in air through holes along the side of their bodies (spiracles)

Eating: Insects have a variety of structures to help them eat. Ants have strong jaws, butterflies have a long coiled tube, mosquitoes are able to pierce our skin to suck blood, and a praying mantis uses large front legs to catch and manipulate food.

→ **Have students research a particular animal. Bug facts located on this website is a good place to begin.**

→ **Add the results of student research to a class grid similar to the one below. Write down the body part used for each sense or function.**

| Touch | Taste | Hearing | Smell | Sight | Breathing | Eating | |
|-----------|-------|---------|-------|-------|-----------|--------|--|
| Human | | | | | | | |
| butterfly | | | | | | | |
| katydid | | | | | | | |
| fly | | | | | | | |



Metamorphosis game

The purpose of this activity is to introduce the concept of metamorphosis using the life cycle of a butterfly as an example.

Information for teachers

Caterpillars of some insects spin a cocoon of silken threads in which to pupate. Moths are an example. Butterflies do not spin a cocoon. A butterfly chrysalis is formed from the body of the caterpillar when pupation takes place.

Pupation refers to the non-feeding stage of insects that go through metamorphosis – the change from a larva (caterpillar) to a very different adult form.

You will need

A copy of '*The Metamorphosis Game*' for each child (see following page).

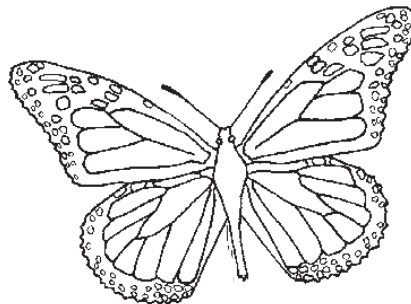
A picture storybook about the life cycle of a butterfly, such as '*The Very Ordinary Caterpillar*' by Gary Fleming

Coloured pencils and dice for each group of students.

What to do:

→ Read '*The Very Ordinary Caterpillar*', '*The Very Hungry Caterpillar*' or similar book.

→ Discuss the life cycle of a butterfly, introducing the terms 'metamorphosis' and 'chrysalis'.



→ Play the Metamorphosis Game

Divide your class into groups of 4 - 5 students.

The *Metamorphosis Game* is on the following page. Provide each child with a copy of the game and each group with a dice. In this game children take turns to roll the dice. When each child rolls a number, they can colour the appropriate stage of the butterfly life cycle.

Children continue to take turns to roll the dice and colour each butterfly life cycle stage, in sequence, until their sheet is complete.

Children can finish colouring their game board when the game is finished.

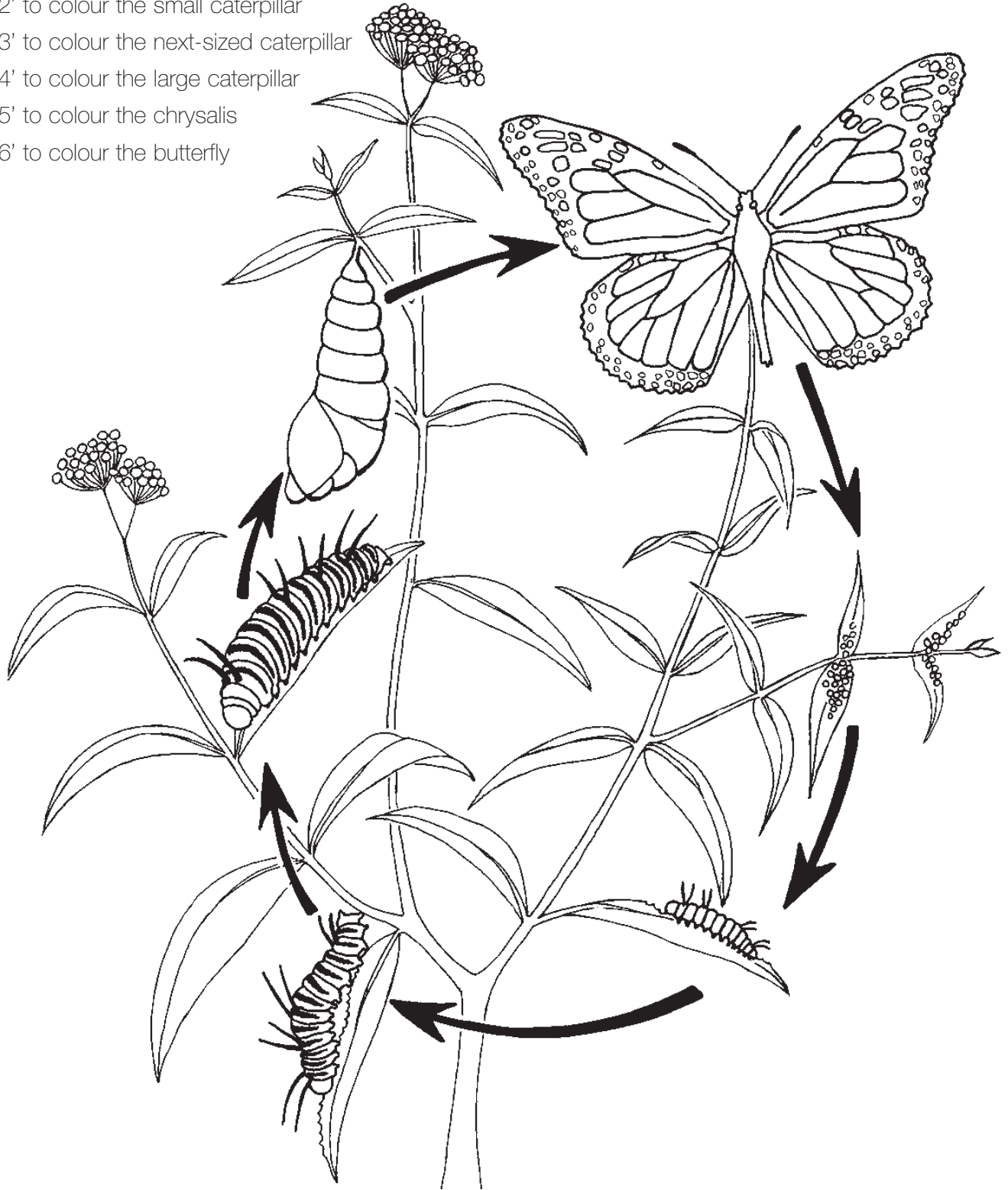
→ Student discussion: How are plants important in the life cycle of the butterfly?





The Metamorphosis Game

- Roll a '1' to colour the eggs
- Roll a '2' to colour the small caterpillar
- Roll a '3' to colour the next-sized caterpillar
- Roll a '4' to colour the large caterpillar
- Roll a '5' to colour the chrysalis
- Roll a '6' to colour the butterfly



How are plants important in the life cycle of the butterfly?
Colour the plant when you have finished the game.



A bug's story

In this activity students discover the life stages of some insects and create the environment in which these life cycles are completed.

Information for teachers

Insects undergo complete or incomplete metamorphosis. The lifecycles of butterflies and beetles are examples of complete metamorphosis, involving larval, pupal and adult stages. During incomplete metamorphosis the young (nymphs) are similar to the adult and grow to adulthood through a series of moults. The lifecycles of leafhoppers and stick insects are examples of incomplete metamorphosis.

You will need

A copy of the diving beetle or dragonfly lifecycle for each student. (Copies of *A Diving Beetle's Story* and *A Dragonfly's World* are provided on the following pages.)

What to do

Review the lifecycle of a common insect such as a butterfly.

Discuss the concept of metamorphosis (changing shape). The *Metamorphosis Game* will help to consolidate this process.

Introduce students to illustrations of the dragonfly and diving beetle lifecycles.

Discuss aspects of the environment in which these creatures live, including plants, shelter, food sources and predators. Be sure to include the impact of human activity.

Provide each student with a copy of the dragonfly or diving beetle lifecycle. Have them add the additional things that are important to this animal's environment. Information about predators and food can be found in the information section of this website.

Following on with drama and story writing

Act out the process of metamorphosis of a butterfly. Write a script, appoint a narrator, make costumes, and add some excitement by including predators, such as spiders, wasps, lizards and birds.

After rehearsals, videotape your performance.

Write a class story of the life-cycle of a favourite insect. Good examples of the style of these stories can be found in picture storybooks from the library.

Three examples are:

The Very Ordinary Caterpillar by Gary Fleming. This Australian publication tells an interesting story about the butterfly life cycle.

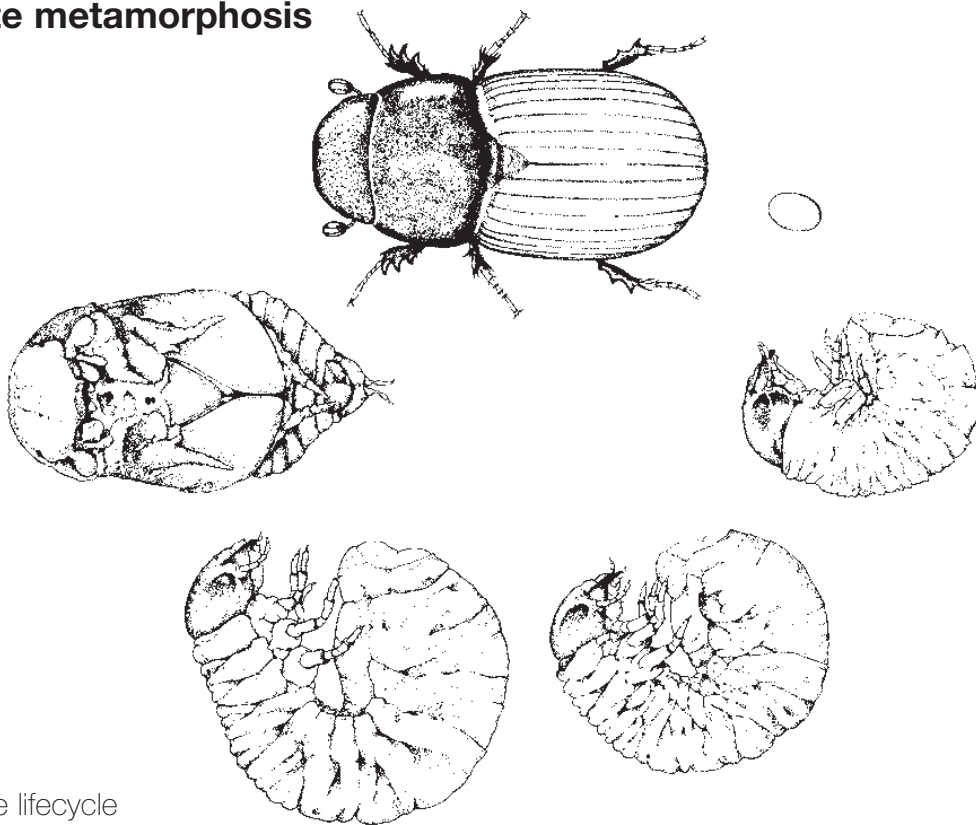
The Very Hungry Caterpillar by Eric Carle. An old favourite that tells the story of a caterpillar eating its way to become a butterfly.

Butterfly Kiss by Vicki Churchill and Charles Fuge. A story telling of a butterfly's search for 'butterfly food'.

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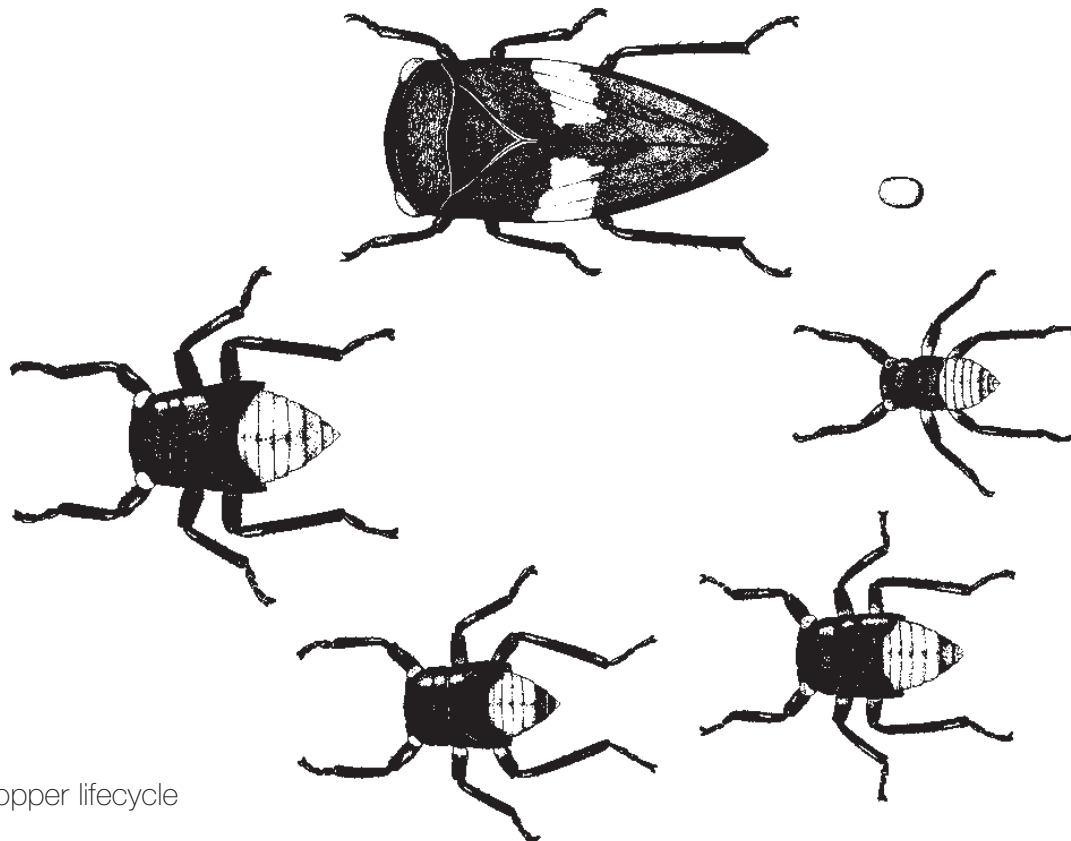


Complete metamorphosis



Dung Beetle lifecycle

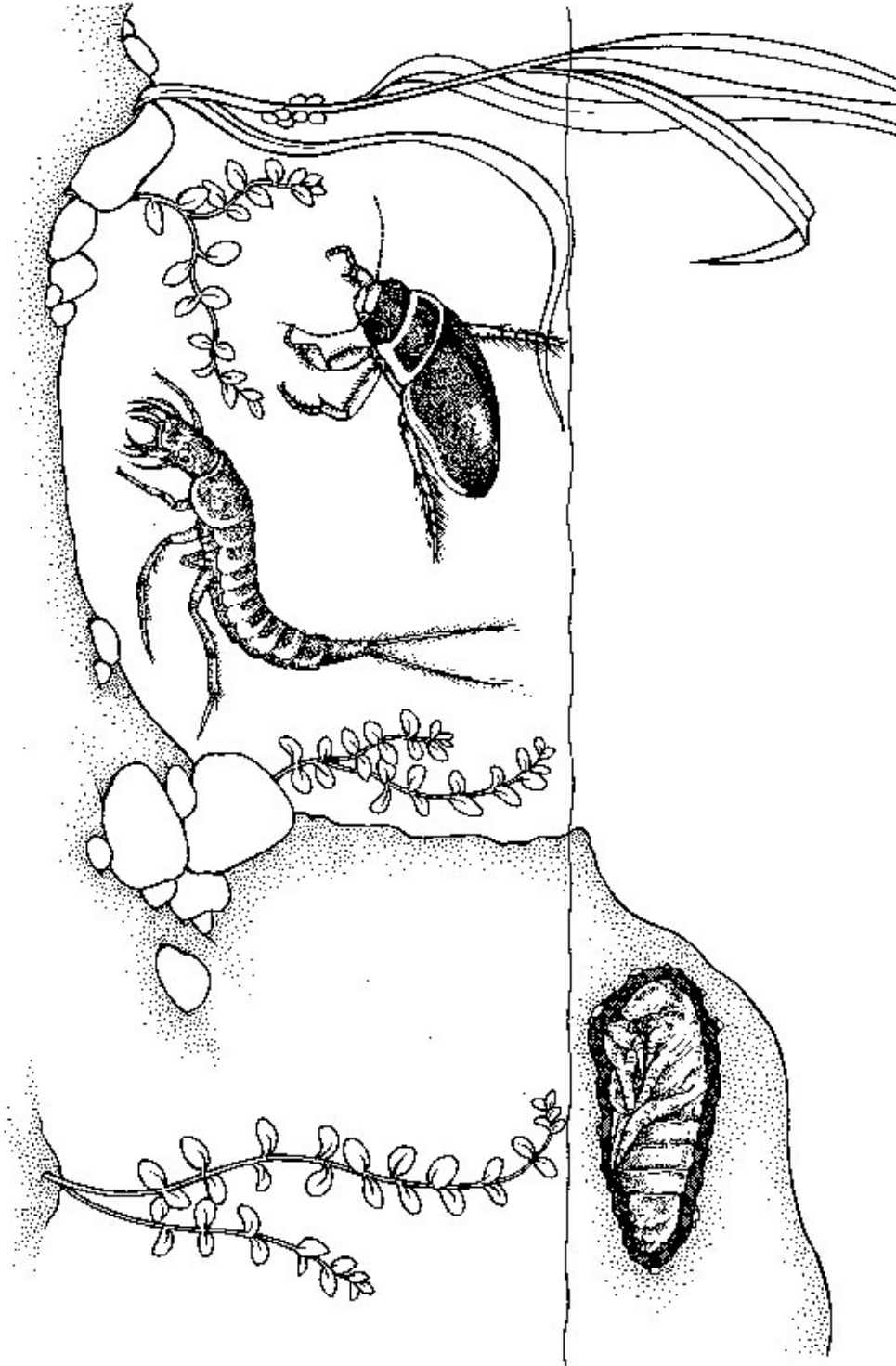
Incomplete metamorphosis



Leafhopper lifecycle



A Diving Beetle's story







Animals in the classroom

Keeping live animals in the classroom encourages children to observe, discuss and record changes that occur as animals grow.

What to do

Select a 'bug' project on which to keep an animal growth diary. Record children's observations of the changes in size, shape, colour and movement.



Hatching moths and butterflies

A small number of caterpillars can be collected from the school ground and raised if you have access to a continuous supply of their host plant. Caterpillars require specific food sources, so note which plant species they are feeding on when found. They also have huge appetites.

Butterfly eggs, and information about their care, can be purchased from the Zoo Education Service (ph. 9285 9355). Butterfly eggs and kits must be ordered prior to the start of terms 1 and 4. A source of citrus leaves is needed to raise the Orchard Swallowtail caterpillars that are supplied.

If you have access to a supply of Mulberry leaves, the silkworm is a wonderful species to maintain and observe in the classroom. Eggs hatch to coincide with new season's growth of Mulberry leaves. Eggs can be obtained from Monnie Fenner billmonniefenner@bigpond.com, subject to availability.

Plant a butterfly garden. Butterflies take nectar from a variety of flowers but lay their eggs on specific host plants that provide food for their caterpillars. Planting the host species of plant will encourage butterflies to lay eggs in your area.

Information about host plants can be found at <http://museumvictoria.com.au/bioinformatics/butter/>

Keeping Phasmids (stick and leaf insects)

These creatures are fascinating animals to study – a supply of fresh gum leaves and suitable housing is all that is required. Detailed information about obtaining and caring for phasmids and other insects is available from The Australian Insect Farm. Full details at www.insectfarm.com.au

Lifecycle in a jar

A simple lifecycle to observe is the mosquito. Collect some mosquito larvae (wigglers) from a pool. These will quickly become tumblers (pupal form) before turning into adult mosquitoes. Refer to activities, *A Bugs Story* (prep-2) and *The Cycle of Life* (years 3 – 8) for an outline of the mosquito lifecycle.

