

AEC STANDARD OPERATING PROCEDURES

SOP No:	09	
SOP	Invertebrates	
Scientific Name:	Varies	
Category:	2 only	
Approved activities:	Activity	Category
	a. The observation of a particular behaviour of invertebrates	2
	b. The appropriate care of classroom pet invertebrates	2
Approval Level:	c. Animals on loan from the Nature Education Centre	2
Authority:	<p>Where an activity is not listed in this SOP, approval must be sought from the Animal Ethics Committee and confirmed before it can be undertaken.</p> <p>Government Schools – Department for Education and Childhood Development Animal Ethics Committee</p> <p>Independent and Catholic Schools – Non-Government Schools Animal Ethics Committee (NGSAEC)</p>	
Authority Approval Date:	1 August 2010	
Last Update:	21 April 2020	
Disclaimer:	<p><i>This document may be updated at any time. You should check the web site regularly to ensure that you are meeting the most recent recommendations. If you note any concerns with the information provided (inadequate, incorrect) please contact the relevant AEC</i></p>	
Licensing Requirement:	Not applicable	
Compliance Requirement:	The keeping of this species requires approval from the School Principal. It is recommended that this Standard Operating Procedure be followed as a minimum in the provision of appropriate care and housing for this species.	

General Information:

Australia alone has over 220,000 species of invertebrates. Of these 86,000 have been identified in 661 families. There are over 300 million species in the world making up 90% of all living things on the planet. There are many species of invertebrates that may be kept at schools for observation and life cycle studies. Children will be most familiar with those within their home or local environments. The types of invertebrates schools keep is varied and includes earthworms, snails, slugs, ants, silkworms, stick insects, butterflies, moths, spiders, scorpions and single celled animals such as euglenas.

Sites can undertake observations of invertebrates in their natural environment within the school and local community (parks, gardens) or they can be housed in classrooms temporarily for closer observation and study. Such study should only be for the purposes of observing their behaviour, growth and reproduction. Before keeping any invertebrate species schools must research housing, feeding and care requirements for each species they may choose to include in school activities.

Physical Attributes:

- **Size (adult), weight (adult), lifespan, sexual maturity and number of offspring:** Varies according to the species.

Behaviour:

Normal: Species dependant. Some are active during the day and some are nocturnal. Observation of the invertebrates in their natural environment will indicate how they should behave in captivity if they are healthy and well cared for.

Socialisation: Species dependant. Some are solitary (e.g. scorpion) and others prefer to live in colonies (e.g. ants).

Activity levels (hibernation etc.): They will be active at different times of the day and in different seasons. Some will only be evident after rains or when food sources are available.

Environment:

Housing/Space: Use a cage/terrarium best suited for the physical characteristics and behaviours of the species which prevents them from escaping. Enclosures should have secure mesh lids, easy to clean, reflecting the natural environment with adequate ventilation. They should

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provide for observation and hiding and be able to be heated or cooled according to the species needs.

Movement: Considerable variations between species. Caged invertebrates need to be able to move around freely – to stretch to their full height, to flutter, crawl, climb, and spread their wings. Recommend providing more than minimum requirements for improved health and welfare.

Water: Clean water must be available at all times. Some species may require regular misting.

Temperature: Cages should not be placed in direct sunlight, next to windows or glass doors, nor in drafts from heating or cooling systems.

Lighting: Species dependant. Normal indoor lighting or artificial lighting requirements depend upon the species being housed.

Covering: All enclosures must be fully enclosed and able to be secured (locked). Invertebrates must be protected from exposure to aerosols (e.g. fly sprays or air fresheners), which contaminate the tank and be fatal to invertebrates if consumed. Cover the cage if spraying is required and ensure the fumes and spray have settled before uncovering

Shelter: Species dependant. Aim to replicate the habitat they come from with soils, plants, logs, rocks etc. with appropriate shelter provided

Cleaning: Cages must be cleaned regularly. Clean out water and feed containers daily. Avoid using chemicals for cleaning.

Feeding:	<p>Diet and daily requirements: Species dependant. Ensure adequate supplies are available. Some require daily feeding, others intermittent.</p> <p>Supplementary feeding: Some species may need additional feeding to maintain their health and wellbeing (i.e. when breeding or new hatchlings).</p> <p>Equipment: Water bottles, bowls, pots.</p>
Breeding:	<ul style="list-style-type: none">• Gestation period: Most invertebrates lay eggs or birth live young. <p>Mating: Species dependant.</p> <p>Pregnancy: Species dependant. May produce eggs or give birth to live young with large numbers produced.</p>
Handling:	<p>Humans: Invertebrates should be handled as little as possible or not at all depending upon the species (e.g. scorpions). Children should only handle if able to ensure they do not drop, crush or injure it.</p> <p>Equipment: Soft nets can be used to catch invertebrates.</p> <p>Transport: Invertebrates can be transported in small boxes, jars etc. with air holes or small covered cages. Transport quickly and do not leave for long periods in hot or cold conditions.</p>
Hygiene:	<p>Thoroughly wash hands with soap and running water for at least 15 seconds after working or handling any invertebrates. Dry hands with clean paper towel or an air dryer. Turn off the tap with the paper towel if possible.</p>
Signs of illness:	<p>Indicators:</p> <ul style="list-style-type: none">• changes in droppings,• appetite,• behaviour• body posture,• unable to move,• loss of body weight,• growths,• injuries,• moulting issues,• failure to thrive or• loss of limbs or wings.
Treatments:	<p>Schools are encouraged to develop relationships with Veterinarians and</p>

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Animal industry representatives (e.g. Nature Education Centre and pet shop staff) familiar with invertebrates. These contacts can be used for disease diagnoses, treatment options and dietary, husbandry and welfare advice. Veterinarians can also assist with emergencies, particularly where euthanasia is needed. Treatments must be documented in the appropriate records.

Euthanasia:

When an illness or injury is such that recovery is unlikely then the invertebrate must be euthanised. Schools should contact their local Veterinarian to discuss emergency treatment options prior to an event occurring when keeping invertebrates. Any adverse event including death must be reported to the AEC using the ADVERSE EVENTS form. Forms must be returned to the AEC within 7 days of the event occurring.

Disposal/fate planning:

Invertebrates should be kept for short periods and must be rehomed or returned to their exact environment habitat from where they were collected when no longer required. Invertebrates from the Nature Education Centre must be returned to the Centre. Bodies must be disposed of correctly in accordance with local council regulations.

Holiday and weekend care:

Invertebrates can be sent home for weekends or holiday care with students providing consent is received from the school Principal and the parents. Staff should provide carers with animal care and record-keeping instructions, emergency contacts and provide appropriate equipment and food. Invertebrates must be checked daily, records kept and any problems reported to the school immediately whether kept onsite or taken offsite.

Approved activities:

Where an activity is not listed in this SOP, approval must be sought from the Animal Ethics Committee and confirmed before it can be undertaken

Activity:

a. THE OBSERVATION OF A PARTICULAR BEHAVIOUR OF INVERTEBRATES

Category:

Category 2

Objective:

To instruct students on observing a particular invertebrate behaviour

Invertebrates should not be removed from their tanks. Behaviours should only be observed within the tank (e.g. feeding). Schools should house as few animals as is necessary to observe the behaviour while maintaining the animal welfare.

Activity:

b. THE APPROPRIATE CARE OF CLASSROOM PET INVERTEBRATES

Category:

Category 2

Objective:

To instruct students on the appropriate care of invertebrates as pets

Invertebrates should not be removed from their tanks. Behaviours should only be observed within the tank (e.g. feeding). Schools should house as few animals as is necessary to observe normal behaviours while maintaining animal welfare.

c. ANIMALS ON LOAN FROM THE NATURE EDUCATION CENTRE

Category 2

To provide adequate care for invertebrates on loan from the Nature

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Education Centre.

When borrowing invertebrates from this Centre, schools must ensure that they have resources and experienced staff available to provide adequate care and welfare for those they are planning to use in activities. Schools are recommended to contact the Nature Education Centre prior to commencing any activities to discuss the needs to a particular species they are interested in. Teaching kits are also available that may provide an alternative to using live animals in the classroom.

Resources:

Insects as classroom pets

www.insectfarm.com.au/class.php

Nature Education Centre – South Australia

www.nature.sa.edu.au

Invertebrates - West Australian Department of Education

det.wa.edu.au/curriculumsupport/animalethics/detcms/school-support-programs/animal-ethics/species-specific-information/invertebrates.en?cat-id=4220801

Australian insect information

www.australian-insects.com

Aesthetic Insects Australia

www.aainsects.com.au

SPECIES SPECIFIC RECOMMENDATIONS

Type	General	Housing	Behaviour	Diet	Reproduction
Scorpions	Belong to the class Arachnida. They can live up to 6-7 years in captivity and have 8 legs and 2 front pincers.	Enclosed tank. They live underground, under logs and rocks or in holes in the sand in the wild. Their enclosure should include logs and rocks with a sandy substrate base.	Scorpions are solitary and nocturnal with most living in the tropics. They use their tail with a stinger at the end to defend themselves against predators. They moult as they grow	They eat mealworms, spiders, cockroaches, centipedes and grasshoppers	They mate and give birth to live young that live on the mothers back for about 4 weeks. They give birth every 1 - 2 years.
Spiny leaf insects	Females are larger than males	Enclosed tank. Paper or potting soil on the base, temp of 25°, wet sponge in a bowl, daily spraying of foliage for humidity, aquarium heater in a 2 litre water bottle or a low wattage bulb with mesh cover provide a humid	They look like leaves as part of their camouflaging. They appear awkward and slow. Females may spend much of their time hanging under the leaves and twigs.	They are plant eaters and should be fed on sprays of fresh gum leaves.	Females lay eggs and may lay them with or without a male. Raising young from eggs requires specific conditions.

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		tropical environment.			
Wanderer Butterfly	Found on milkweed during October – May They are not native to Australia.	Enclosed tank as caterpillars and butterflies are escape artists. Branches provided	They construct a cocoon attached to branches and should not be disturbed until they emerge.	Caterpillars need a supply of moist leafy milkweed. Butterflies may be fed on Milkweed flowers or leaves dipped in sugar and water solution.	
Silkworms NOTE: If you don't not have access to appropriate food supplies you should not keep silkworms – they have very specific eating habits	They are caterpillars of the silk moth.	They will not escape and can be kept in a shoebox or open container. The moths cannot fly. They need sticks, small boxes or egg cartons in which to spin their cocoons.	Silkworms can be encouraged to move to new leaves. Unwinding the silk can occur before the moth hatches (gently shake the pupa and if it rattles its ready) by immersing the cocoon in warm water for a few minutes to loosen the gum. The thread can be unwound and the pupa immersed in a box of sawdust or cotton wool to hatch from. If the eggs are hatching before mulberry leaves are available try lettuce or place the eggs in a fridge to slow their development down.	They need a fresh supply of mulberry or osage-orange. leaves which should be changed daily.	Moths emerge and mate for several hours. After mating they can lay up to 600 yellow eggs. Larva turn grey remaining in the egg for approx.9 months.
Euglena	Single celled, motile, flagellated, fresh water protozoa. Have both plant and animal characteristics	They live in stagnant, nutrient rich shaded water in the wild.			To reproduce they split lengthways down the middle. New colonies must be bred by subculturing

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<p>Snails</p>	<p>Molluscs that live in a shell (unlike slugs) to help protect it from predators. Many predators crush the shell and eat the snail (birds, lizards).</p>	<p>They need to be kept in an enclosed cage or they will wander off.</p>	<p>They have two eyestalks but poor sight and two feelers for searching out their environment. They rub their tongue along leaves like a grater. They breathe through a hole under the shell.</p>	<p>They can be fed leaves from the garden, lettuce, carrot tops etc.</p>	<p>After mating snails lay eggs in the earth. In about 4 weeks the young snails will hatch.</p>
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See individual SOPs for hermit crabs and yabby care – SOP 15 Hermit crabs and SOP 16 Yabbies