

AEC STANDARD OPERATING PROCEDURES

SOP No:	09
SOP	Invertebrates
Scientific Name:	<i>Varies</i>
Category:	2 or 3
Approval Level:	Category 2: School Principal may delegate Category 3: School Principal may NOT delegate
Authority:	Government Schools – Department for Education and Childhood Development Animal Ethics Committee Independent and Catholic Schools – Non-Government Schools Animal Ethics Committee (NGSAEC)
Authority Approval Date:	1 August 2010
Last Update:	18 December 2018
Disclaimer:	<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>
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:

There are many species on invertebrates that may be kept on sites for observation and life cycle studies. Invertebrates are animals without backbones and may include insects, spiders, crustaceans, worms or annelids and molluscs.

Commonly sites keep yabbies, hermit crabs (see Species Fact Sheet), earthworms, snails, slugs, ants, cockroaches, silkworms, crickets, mealworms, stick insects, butterflies, moths, spiders, scorpions and single celled animals such as euglens.

Invertebrates are very diverse in their body shapes, sizes, lifecycles, behaviours and needs. They are found across a diverse range of habitats. Children will be most familiar with those within their home or local environments.

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. They should not be taken from the wild and kept as long-term pets. Invertebrates should be kept for short periods and returned to their exact environment habitat from where they were collected.

Specific information should be obtained before keeping any species and this fact sheet only highlights some generic information. Such information used must be clear on the housing, feeding and care requirements each species requires.

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. www.australian-insects.com

All invertebrates must be protected from exposure to fly sprays, air fresheners etc or they will die. Cover the cage if spraying is required and ensure the fumes and spray has settled before uncovering.

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Did you know? Australia has more than:

50 species of stick and leaf insects
162 species of mantis
250 species of cicadas
348 species of termites
428 species of cockroaches
550 species of shield bugs
2,827 species of crickets and grasshoppers
4,000 species of ants
7,786 species of flies
20,816 species of butterflies and moths and
28,200 species of beetles!

Source: Wet Tropics Management Authority.
www.australian-insects.com

Scorpions:

Scorpions are solitary animals. They belong to the Arachnida class. They have 8 legs and 2 front pincers. They are nocturnal and most live in the tropics. They live underground, under logs and rock or in holes in the sand. They can live 6-7 years in captivity. They eat mealworms, spiders, cockroaches, centipedes and grasshoppers. They use their tail with a stinger at the end to defend themselves against predators. 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. They moult as they grow. (Source: Nature Education Centre Fact Sheet)

Spiny Leaf Insects:

They look like leaves as part of their camouflaging. They appear awkward and slow. They are plant eaters. Feed on sprays of fresh gum leaves. (They are not the same as Mantids – Preying Mantis that eat other insects). The female is larger than the male and may spend much of her time hanging under the leaves and twigs. They can be handled safely but adults can fly. Females lay eggs and may lay them with or without a male. 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 2litre water bottle or a low wattage bulb with mesh cover provide a humid tropical environment. Raising young from eggs requires specific conditions. (Source: Nature Education Centre Fact Sheet)

Wanderer Butterfly:

Found on milkweed during October to May. They are not native to Australia. Caterpillars need a supply of moist leafy milkweed. Butterflies may be fed on Milkweed flowers or flowers and leaves dipped in sugar and water solution. They need some braches in the cage tucked away to attaché themselves when they make their pupa case. They need to be undisturbed until they emerge. Where they are kept in open containers caterpillars may wander off and butterfly pupas may be found attached to furniture or walls. (Source: Nature Education Centre Fact Sheet)

Silkworms:

They are caterpillars of the silk moth. They will not escape and can be kept in a shoebox or open container. Moths cannot fly. They need a fresh supply of mulberry or osage-orange. They need sticks, small boxes or egg cartons in which to spin their cocoons. Leaves should be changes daily and silkworms can be encouraged to move to the new leaf without being picked up. 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. Moths emerge and mate for several hours after which 600 yellow eggs will be laid turning

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grey and remaining in the egg for about 9 months. If eggs are hatching before Mulberries leaf try lettuce or place eggs in fridge to slow them down. (Source: Nature Education Centre Fact Sheet)

Euglena:

Single celled, motile, flagellated, fresh water protozoa. Found in stagnant, nutrient rich shaded water. Have both plant and animal characteristics. To reproduce they split lengthways down the middle. New colonies must be bred by subculturing. (Source: Nature Education Centre Fact Sheet)

Snails:

Snails are 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). They have a lubricating 'foot' that they slide along on. 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 need to be kept in an enclosed cage or they will wander off. They breathe through a hole under the shell. After mating snails lay eggs in the earth. In about 4 weeks the young snails will hatch. They can be fed leaves from the garden, lettuce, carrot tops etc.

Yabbies:

Semi aquatic found in rivers, lakes and dams. They make tunnels in the mud. They can be kept in aquariums or paddling pools with a layer of sand on the bottom. They need aeration pumps. They need a cool place out of the sun. Provide rocks and cave like containers. They are omnivores and need a variety of meat and plant food. Live earthworms, small pieces of meat, mealworms, dried fish, lucerne pellets, vegetable matter. Equivalent of 1 earthworm 2-3 times a week is sufficient. They can be out of the water for 10 minutes. Water should not get too hot, dirty or lacks air. They moult. Females carry eggs and babies under their tail. Too many yabbies may lead to fights and injuries. Babies should be removed or they may be eaten. (Source: Nature Education Centre Fact Sheet)

Physical Attributes:

- **Size (adult):** Varies according to the species.
- **Weight (adult):** Varies according to the species.
- **Life span:** Varies according to the species.
- **Sexual maturity:** Varies according to the species.
- **Gestation period:** Most invertebrates lay eggs or birth live young.
- **Number of offspring:** Varies with species.

Behaviour:

- **Normal:** This will vary with species. Some will be active during the day, others at night. Observation of the invertebrates in their natural environment will show how they should be behaving in captivity if they are healthy and well cared for.
- **Socialisation:** Some will be very solitary (eg scorpion) and others will be used to living in colonies – sometimes with thousands of others (eg 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:

- **Space:** You will need a cage or terrarium that best provides for the physical characteristics and behaviours of the species – in particular the likelihood that they will wander off!
- **Cages should have;**
 - Secure mesh lids
 - Provide for observation and hiding
 - Be easily cleaned
 - Be set up to reflect the natural environment
 - Provide adequate ventilation
 - Be able to be heated or cooled according to the species needs

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- **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, spread their wings. Consider providing more than the minimum for their health and enjoyment.
- **Water:** Clean water must be available at all times.
- **Temperature:** Cages should not be left standing in direct sunlight or placed next to windows or glass doors. Ensure cages are not left in a draught or near heating and cooling systems.
- **Lighting:** Normal indoor lighting is sufficient for some invertebrates others will need artificial lighting.
- **Covering:** All cages and containers must be fully enclosed and able to be secured (locked).
- **Shelter:** Will vary with species but try to replicate the habitat they come from with soils, plants, logs, rocks etc. Do not have them exposed to weather extremes.
- **Cleaning:** Cages must be cleaned regularly. Clean out water and feed containers daily.

Feeding:

- **Diet:** Will vary with species. Make sure you are aware of the dietary requirements and have a supply available before you obtain or house an invertebrate.
- **Daily requirements:** Will vary from species. Some need to be fed continuously other may be able to go days without food.
- **Supplementary feeding:** Some species may need additional feeding to maintain their health and well-being (ie when breeding or new hatchlings).
- **Equipment:** Water bottles, bowls, pots.

Breeding:

- **Mating:** will vary from species.
- **Pregnancy:** They usually lay eggs or give birth to live young. Often very large numbers of young are produced eg 600 eggs.
- **Fate planning:** Breeding stock must be re homed. If an introduced species to an area they must NEVER be released into the environment. Where they have been taken directly from a habitat they can be returned to this site.

Handling:

- **Human:** Invertebrates should be handled as little as possible.
- **Equipment:** Soft nets can be used to catch invertebrates.
- **Transporting:** 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 heat or cold conditions.
- **Children:** Should not handle some invertebrates (eg scorpions). Children should only handle if able to ensure they do not drop, crush or injure the creatures. Observation only at all other times.

Hygiene:

Thoroughly wash hands with soap and running water for at least 10-15 seconds after working or handling any animals. Dry hands with clean paper, cloth towel or air dryer. Turn off the tap with the paper towel if possible.

Signs of illness:

Indicators: changes in droppings, loss of appetite, changes in behaviour, body posture, unable to move, loss of body weight, growths, injuries, failure to thrive.

Treatments:

Assistance from a veterinarian should be sought for confirmation of conditions and treatment options.

Euthanasia:

When an illness or injury is such that recovery is unlikely then the animal must be euthanised by a veterinarian. Any death must be reported to the Animal Ethics Committee using the appropriate form (see section relating to ADVERSE EVENTS). Forms are available on the relevant websites.

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Disposal/fate planning: When no longer required invertebrates must be re homed or returned to the exact habitat they were taken from. Invertebrates from the Nature Education Centre must be returned to them. Bodies must be disposed of correctly in accordance with local council regulations.

Holiday and weekend care: Invertebrates in cages generally cope with being rostered to responsible carers. They need to be checked daily and fed regularly over weekends and holiday periods if they remain on site. Records should be kept of 'off site' care. Cages and feeding equipment and supplies must be provided to carers, with contact details for emergencies.

Approved activities: Observation

Resources: www.insectfarm.com.au
www.australian-insects.com
www.aainsects.com.au