

AEC STANDARD OPERATING PROCEDURES

SOP No:	10
SOP	Axolotls
Scientific Name:	<i>Ambystoma mexicanum</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:

An axolotl is the ‘tadpole’ (larval) stage of a salamander (a land dwelling amphibian) found in two lakes near Mexico City. It is named after the Aztec God, XOLOTL and is part of the staple diet of natives of Mexico, being sold in markets like chickens are here—alive or roasted! It rarely changes into a terrestrial adult. It makes a fascinating pet, which readily lives in captivity for up to 10 years.

They are available in a range of colours including nearly black, albino, golden or pied. They are an aquatic amphibian.

Physical Attributes:

- **Size (adult):** 20-30cm in length
- **Weight (adult):** 300gms
- **Life span:** 12-15 years
- **Sexual maturity:** At one year
- **Gestation period:** Axolotls lay their eggs onto plant material one day after indirect fertilisation. The male releases spermatophore into the water, which the females take into their body indirectly. The eggs hatch after 2-3 weeks and will remain attached to the plant material for another 2-3 weeks.
- **Number of offspring:** 300-1,000 eggs

Behaviour:

- **Normal:** Axolotls should NOT be placed with other species in aquariums. They are nocturnal and therefore more active during the night.
- **Socialisation:** They can be cannibalistic when different sizes are grouped together or if they are underfed.
- **Activity levels (hibernation etc):** They will be slow and sluggish during the day and tend to rest away from the light. Sudden movements and noises near a tank may startle the axolotl and cause it to panic and injure itself.

Environment:

- **Space:** You will need a large aquarium (30 litres of water for 1 axolotl adding 10 litres for each additional axolotl). Set up your aquarium as you would for fish with aerator, filters, pond weed etc, smooth pebbles and a rock for hiding beneath. An aquarium 60cm x 30cm x 30cm will house two adult axolotls. Keep the depth to about 20-25cm. Be careful not to have very small gravel as axolotl may eat it.

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- **Movement:** Axolotls have long tails and four legs. They have feathery gills on either side of their head. They can regenerate body parts including their gills, limbs and tails. They need to be able to move freely and turn around freely in the aquarium. They appear clumsy and uproot plants readily but can move with surprising speed.
- **Water:** Do not use soft or distilled water. Remove chlorines, chloramines or ammonia. Use commercial preparations for this purpose to keep the pH level between 6.5 and 8.0. They must remain moist so that they can breathe.
- **Temperature:** Axolotls thrive in cool temperatures – between 15-18°C. Water temperature should not exceed 25°C. Aquariums should not be exposed to direct sunlight. Where heat waves occur and cooling is difficult to maintain drape a wet towels over the tank with the end of the towels in water pots and a fan blowing on the wet towel.
- **Filtration:** Essential for providing the axolotls with oxygen. The rate of circulation should be slow.
- **Lighting:** Axolotls thrive in dim light. Normal indoor lighting is sufficient and no tank lights are required. Where pond plants need a light a darker area of the tank must be provided. Their eyes have no eyelids and they are sensitive to light.
- **Covering:** Where the axolotls are at risk from younger children or where the water is closer than 10cm to the top of the aquarium a mesh covering over the aquarium should be provided. DO NOT spray chemicals near tanks.
- **Shelter:** The aquarium should provide an area for refuge from lights, action and other axolotls. This can be created with plants and rocky overhangs.
- **Cleaning:** it is recommended that conditioned water of the same temperature be used to replace approx 25% of the water each week. Regular removal of solid waste is required. To clean the whole tank use a scour pad dipped in a 2:1 mixture of baking powder and salt. Rinse the tank carefully and fill again with conditioned water. Bacterial scum growing on the tank must be removed regularly as it causes skin problems and toe loss.
- **Diet:** Axolotls are carnivorous and normally eat insects, crustaceans, earth-worms, tadpoles, small fish etc., but they can be taught to eat 20mm x 5mm strips of uncooked beef, fish, chicken or lamb heart so long as they are waved about in front of them to entice them. They readily learn to come to the top of the tank and take the meat when feeding is regular. The diet must be varied NOT just heart or liver. Juveniles will eat brine shrimp, tubifex worms, water fleas and small insects.
- **Daily requirements:** The ideal temperatures are 14-18oC and at these temperatures axolotls need to be fed 2-3 times a week (daily when near breeding time). Continue feeding each animal until it loses interest (up to an hour). They normally feed late in the evening. Juveniles need feeding more often. Feed using blunt nosed tweezers or straws.
- **Supplementary feeding:** A varied diet is best. Pellets for carnivorous fish (soft) are also acceptable. A diet consisting only of meat will be deficient in vitamins and minerals and cause health problems.
- **Equipment:** Remove wastes from the tank each day after feeding and at the same time about 5% of the water. Blunt nosed tweezers.

Feeding:

Breeding:

- **Mating:** The male releases spermatophore into the water, which the females take into their body indirectly.
- **Pregnancy:** Axolotls lay their eggs onto plant material one day after indirect fertilisation.
- **Fate planning:** Breeding stock must be re homed. As an introduced species they must NEVER be released into the environment or waterways.

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Handling:	<ul style="list-style-type: none">• Human: Axolotls should not be handled or kept out of the water. This damages their skin and exposes them to increased risk of bacterial or fungal infections.• Equipment: An aquarium net should be used for capture or moving axolotls.• Transporting: Axolotls should be transported in watertight clear plastic bags, half water and half air. Transport quickly and do not leave unattended or allow the axolotl to heat.• Children: Should not handle axolotls. Observation only. Ensure children do not knock on the tanks.
Hygiene:	<p>The wastewater from tank cleaning must not be discarded into the storm water drains or septic tank systems. It may be placed on gardens or it must be treated with 1:5 ratio of bleach to water and be poured into the toilet.</p> <p>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.</p>
Signs of illness:	Indicators: loss of appetite, deterioration of the gills, skin lesions, jaundice, poor swimming balance, loss of toes, injuries, failure to thrive.
Treatments:	Assistance from a veterinarian should be sought for confirmation of conditions and treatment options. Many aquarium treatments are not suitable for axolotls and may cause further distress or death.
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.
Disposal/fate planning:	When no longer required axolotls must be re homed. As an introduced species they must NEVER be released into the environment or waterways. Bodies must be disposed of correctly in accordance with local council regulations.
Holiday and weekend care:	As they require specific conditions they would not cope well with being rostered to family carers. They need to be checked daily and fed regularly over weekends and holiday periods.
Approved activities:	Observation
Resources:	www.axolotl.org