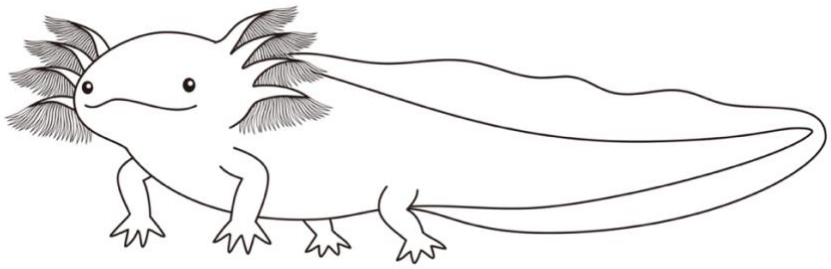
Care of the Axolotl



WHAT IS AN AXOLOTL?

The axolotl (*Ambystoma mexicanum*) is an amphibian species that spends its entire life in water. Unlike many other salamander species, the axolotl will not naturally metamorphosize to a terrestrial animal. This makes the axolotl unique among captive salamanders as it has environmental needs similar to fish and maintains its external gills and paddle-like tail fin into adulthood.

Axolotls in captivity live approximately 10-15 years. Most adults reach about 23-25 cm (9-10 in) in length. Adult males have a noticeable bulge around their vent and black nails while females do not.

Where are axolotls found?

Axolotls are native to Lake Xochimilco in Mexico City. Growth and development of this urban center has led to loss of habitat. This habitat loss, paired with a thriving pet trade and use of the axolotl in local cuisine, means this amphibian is now critically endangered in the wild.

Virtually all axolotls in the pet trade today come from captive-raised stock, which breed well under appropriate conditions.

HOUSING

Juveniles versus adults

While it is recommended to house young axolotls separately due to their cannibalistic nature, adults can often cohabitate with few concerns when provided with a large volume of water and plenty of hiding places. With that said, owners should always be prepared to separate feuding adults to prevent physical harm from occurring.

Other aquatic species

While it can be tempting, it is recommended that axolotls be housed without other aquatic species, including fish. Small fish may easily be consumed by the pet axolotl and larger or more aggressive fish can damage the axolotl's exposed gills.

Habitat

A young axolotl can be housed in a 38 liter (10 gallon) aquarium, however adult axolotls should be kept in a minimum 78 liter (20 gallon) aquarium. Water quality parameters increase in stability as the volume of water increases, so the larger the aquarium the better. A glass top is recommended to prevent the animal from jumping out of the aquarium.

Axolotls can become stressed easily, therefore consider placing the aquarium in a low traffic area of the house to minimize the stress caused by constant flashes of movement.

Water quality

As with fish aquaria, there are certain parameters that must be maintained to keep your pet axolotl healthy.

Chlorine & chloramine	Should always be removed from the water
Temperature	Preferred: 15.6-17.8°C (60-64°F) Axolotls are cool water salamanders and can stress and even develop illnesses in warmer water. Axolotls exposed to water above 24°C (75°F) have a high probability of becoming ill.
pH	7.4-7.6 ideally
Ammonia & nitrite	0 parts per million (ppm) These levels may appear high when first starting the axolotl aquarium and will begin to lower as beneficial bacteria develop.
Nitrate	< 10 ppm The best way to lower nitrates is by performing aquarium water changes. Ideally 30% of the total water volume should be removed and replaced weekly. If nitrate levels continue to rise, more frequent changes or larger volumes may need to be removed. Also, monitor feedings closely. If the aquarium filtration is collecting large volumes of food, consider feeding less.

Filtration

- Filters should be adequately sized for the volume of water in the aquarium.
- There are three types of filtration intended for fish aquaria (mechanical, chemical, and biological) and each type of filtration also serves a purpose in the axolotl aquarium.
- Strong mechanical filtration is recommended to remove waste and uneaten food, but ensure the filter is not producing a strong current. Axolotls prefer stagnant to slow moving water; strong currents can cause stress. A spray bar can help dissipate water flow across the surface of the tank. Large ornaments, rocks, or other aquarium decorations can also be used as a buffer when placed directly in front of the filter's current.

- Filtration is an important aid in maintaining water quality but should never replace regular water changes.
- Aquariums should ideally be cycled for several weeks prior to introducing axolotls to allow good bacteria to colonize the filter.

Lighting

- Axolotls prefer very low light so consider this when selecting an aquarium light
- In fact, in many cases ambient room light that allows for viewing of the animal may be acceptable
- If live aquatic plants are provided, a higher intensity light will be required to maintain the health of the plants. In these cases, provide the axolotl with various hiding areas within the aquarium to allow the animal to retreat from the light.

Aquarium decor and substrate

- Axolotls eat by gulping food. Anything small enough to fit in their mouth is usually swallowed, including aquarium gravel.
- Tank floor substrates may include fine aquarium sand, rocks larger than the axolotl's head, or a bare tank bottom. Each substrate has its pros and cons.
    - Although sand is very small, it can still be consumed.
    - Large rocks, can allow waste and uneaten food to collect, reducing water quality.
    - A bare bottom provides a slick, untextured surface for the animal to rest and move along.
- Hiding places are especially important for planted aquariums as they provide the axolotl with an area out of direct exposure to intense light.
- Large rocks, driftwood, and similar items can be used to improve aquarium aesthetics but should still allow the axolotl to maneuver around the aquarium with ease. Large items should also be positioned safely to prevent movement or falling.

Cycling/quarantine

- Do not add axolotls to a new aquarium until water parameters have stabilized. The time frame required will vary by many factors including size of the aquarium, filter size or selection, beneficial bacteria growth, etc.
- Never immediately add a new axolotl to an aquarium with an established animal. Provide the new animal with a small quarantine aquarium in which it can be monitored for normal behaviors and activities, such as eating, moving, breathing, defecating, etc. It is also recommended to consult with a local amphibian veterinarian during the quarantine period to perform a quarantine exam and any diagnostics to monitor the health of the new animal.

DIET

Axolotls are carnivores that consume a variety of invertebrate prey. Some commonly available food items include bloodworms (frozen), blackworms (fresh or frozen), portions of earthworms (nightcrawlers), brine shrimp (frozen), small feeder fish, and salmon pellets.

- Young animals should be offered food daily.
- Feed adults 2-3 times per week.
- Offer only enough food to each animal that can be consumed in a 2-3 minute period. (Example: approximately 5 salmon pellets per adult).

VETERINARY CARE & QUARANTINE

All new axolotls should be assessed by a local amphibian veterinarian to ensure your new pet is healthy. A fecal test can be undertaken to screen for parasites. Annual health checks are also a good way to ensure your axolotl is healthy, especially if breeding is planned.

HANDLING

Do not handle axolotls unless absolutely necessary and wash your hands before and afterward.

COMMON DISEASES

- Hyperthermia: Water temperatures above 24°C (75°F) can cause loss of appetite and the animal may float uncontrollably. Affected animals may also develop a bacterial infection.
- Gastrointestinal foreign body: Axolotls may swallow inedible objects, like gravel. If the item is not regurgitated, passed, or surgically removed, the animal can die.
- Obesity: Axolotls are at risk of becoming obese when overfed.
- Exophthalmia (bulging eyes) can develop with prolonged exposure to high nitrate levels.
- Bacterial and fungal skin infections commonly develop, usually due to suboptimal water quality.

References

Clare JP. Axolotl Care Sheet. *Reptiles magazine.* Nov 30, 2011. Available at https://www.reptilesmagazine.com/axolotl-care-sheet/. Accessed March 9, 2021.

Clare JP. Axolotls. Available at http://www.axolotl.org/. Caudata.org website. Accessed March 9, 2021.

Farkas JE, Monaghan JR. Housing and maintenance of *Ambystoma mexicanum*, the Mexican axolotl. Methods Mol Biol. 1290:27-46, 2015. doi: 10.1007/978-1-4939-2495-0_3. PMID: 25740475.

Gresens J. An introduction to the Mexican axolotl (*Ambystoma mexicanum*). Lab Anim (NY). 33(9):41-47, 2004.

Loh R. Common disease conditions in axolotls. Proc Annu Conf World Small Animal Veterinary Association World Congress; 2015.