

NEOTENIC URODELE AMPHIBIANS

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The term “neotenic” refers to adult animals that retain larval characteristics. In the case of urodele amphibians (commonly known as salamanders and newts), the larval characteristics that are normally lost in the transition from larval form to adults are the tailfin and the gills. Neotenic forms become sexually mature as adults even though they look like a large larval form with extended gills with which they obtain oxygen from the water.

The most common neotenic salamanders are the **Axolotl**, native to Central Mexico, the **Mudpuppy** of Eastern North America and the European **Olm**. All three of these have been pictured on the stamps of at least one country. All three remain totally aquatic throughout their lives.

Axolotl

The axolotl (*Ambystoma mexicanum*) is pictured on several stamps, including those issued by Mali, Dominica, Congo Democratic Republic, and its native Mexico.

Mexico issued this stamp (part of a set of two) on 29 February 1988, honoring the axolotl in its native country.

It is found in many color variations from pure white to black, and is totally aquatic throughout life. The axolotl does not develop functional lungs, breathing mostly from oxygen taken from the water with its gills, but also to a small degree through the thin and very vascular skin.



Ambystoma mexicanum
Mexico, 1988, Sc#1533



Ambystoma mexicanum
Dominica, 2000, Sc#2259

Photograph of a wild axolotl on a stamp from a set of four featuring fauna, issued by Dominica on 18 December 2000.

This beautiful amphibian is critically endangered because its only known home is in lakes near Mexico City, and its habitat is quickly being polluted and lost.

A souvenir sheet from Mali shows the white coloration. Without body pigment the red blood can be seen in the gills.

The axolotl is the lower specimen on this stamp from the Congo Democratic Republic—an example of the black color.



Ambystoma mexicanum
Congo D.R. (Zaire), 2004, not listed



Ambystoma mexicanum
Mali, ca.2012, not listed

Mudpuppy

The common mudpuppies of North America (*Necturus maculosus*), are sometimes called “water dogs.” They are usually colored dark brown or grey in contrast to the gills that extend from the side of the head that appear quite feathery and are bright red in color.

The individual that appears as a drawing on a 1996 Somalia stamp gives an accurate idea of what this amphibian looks like as an adult.



Necturus maculosus
Somalia, 1996, Mi#582

Olm

Nature tends to be conservative when it comes to expending energy on adaptations to an environment, so structures or processes that are not needed tend to be eliminated during development.

Nowhere is this rule seen better than in dark underground lakes and streams where cave fish and amphibians make their home. The European blind cave salamander known as the Olm (*Proteus anguinus*) is a special example of this principle.

Like other cave vertebrates that live in total darkness, the rudiments of eyes that are present in the embryo are not developed in the adult, and pigmentation of the skin—so important in species that live above the ground for camouflage, mating, and territorial warnings—is never developed.

Hence, these pale-skinned, blind cave salamanders, living their entire lives submerged in darkness, depend on the senses of smell and auditory stimulation through inner ear and body lateral line structures very sensitive to aquatic vibration frequencies.

Like the other forms mentioned previously, the Olm is totally aquatic throughout its life and respiration is accomplished through prominent red gills that are retained in the adult.

Captive animals have been known to live for five or six decades, becoming sexually mature only in the second decade of life.



Proteus anguinus
Bosnia (Serb), 2000, Sc#125



Proteus anguinus
Croatia, 2013, Sc#865



Proteus anguinus
Yugoslavia, 1954, Sc#408



Proteus anguinus
Slovenia, 1993, Sc#178