



Amphibians

April 2016

Amphibians



What's so special about amphibians?

- Life Cycle: Double life
- Physical Characteristics
 - Ectothermic
 - Eggs
 - Skin
- Three orders of amphibians
 - Order Gymnophiona: Caecilians
 - Order Anura: Frogs and Toads
 - Order Caudata: Newts and Salamanders
- Amphibians of Washington
- Role in ecosystems
- Indicators of ecosystem health
- What you can do!



Ryan Hawk, WPZ

Red-eyed treefrog
(*Agalychnis callidryas*)



Katie Remine, WPZ

Rough-skinned newt
(*Taricha granulosa*)

Amphibian Life Cycle



“amphi” + “bios”
both + life

Two double lives:

1. aquatic and terrestrial life stages
2. larval and adult body forms



Ryan Hawk, WPZ

Oregon spotted frog larva (tadpole) gills



Katie Remine, WPZ

Pacific treefrog
(*Pseudacris regilla*)



Margaret White WPZ

Rough-skinned newt
(*Taricha granulosa*)



Ryan Hawk, WPZ

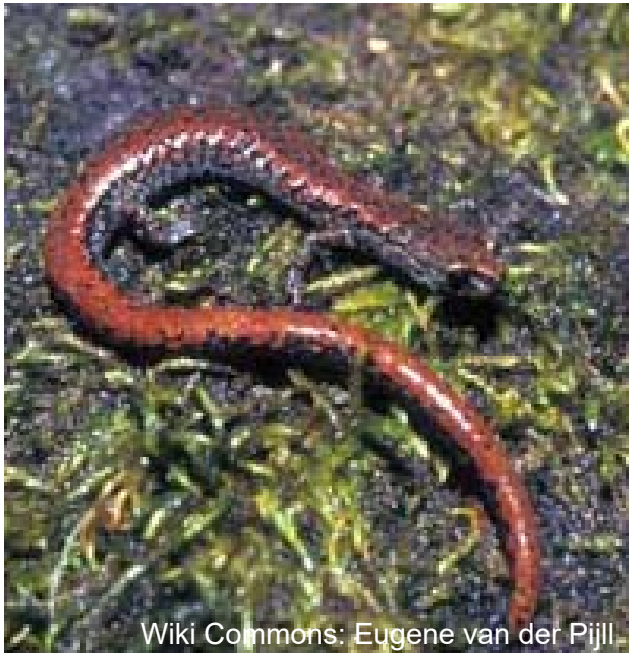
Axolotl salamander
(*Ambystoma mexicanum*)

Amphibians



“Alternative lifestyles”

Fully terrestrial lifestyle



Wiki Commons: Eugene van der Pijll

Oregon slender salamander
(*Batrachoseps wrighti*)

Fully aquatic lifestyle



Wiki Commons: Greg Schechter

Pacific giant salamander
(*Dicamptodon ensatus*)

Ectothermic

- often called “cold-blooded”
- body temperature determined by external (“ecto”) environment
- can regulate body temperature by:
 - movement (into sun or shade, body in relation to sun)
 - evaporative cooling (if plenty of water is available)
 - skin color changes



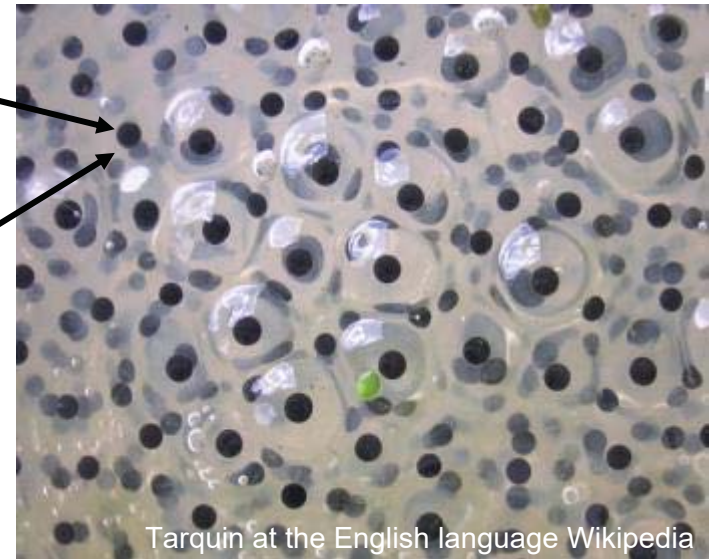
Long-toed salamander
(*Ambystoma macrodactylum*)

Amphibian Eggs

- Similar in structure to fish eggs
- No hard shell or membrane
- Gelatinous covering, permeable to gases and liquids
- Usually laid in water or moist places (prone to drying out)
- External or internal fertilization

egg (ovum)

jelly layers



Blue poison dart frogs
(*Dendrobates azureus*)

Amphibian Skin

- Only class of vertebrates with no protective skin covering (scales, feathers, hair/fur)
- Permeable skin (liquids and gases can pass across)
- Shed skin (but often consume sheds)
- Many skin glands (some exude toxic compounds)



Rough-skinned newt
(*Taricha granulosa*)



Tomato frog
(*Dyscophus guineti*)

Order Gymnophiona: Caecilians

- Legless, with rings around body (resembling earthworm segments)
- 5 inches - 4.5 feet
- Live underground, some species are aquatic
- Do not rely on eyesight
- Tentacles on either side of head used as smell and touch receptors
- Live in tropical regions
- Carnivorous



Mexican burrowing caecilian
(*Dermophis mexicanus*)

Amphibians



Order Anura: Frogs & Toads



Green and black poison dart frog
(*Dendrobates auratus*)



Great Basin spadefoot toad
(*Scaphiopus intermontanus*)

Amphibians



Frog and Toad Characteristics

- Larvae (tadpoles) are legless but have tails; adults have four legs but are tailless
- Larvae are herbivorous; adults are carnivorous
- Hind legs adapted for hopping (toads) or leaping (frogs)
- Generally, frogs have smooth skin and live in or near water; toads have rough, warty skin and live in drier areas



Ryan Hawk, WPZ

Waxy monkey treefrog
(*Phyllomedusa sauvagii*)



Wiki Commons: Walter Sigmund

Western toad
(*Bufo boreas*)

Order Caudata: Newts and Salamanders

- Tail in all life stages
- Carnivorous as larvae and adults
- Two pairs of limbs of approximately equal size (exception: the sirenidae family, which lack hind limbs)



Rough-skinned newt
(*Taricha granulosa*)



Oregon ensatina
(*Ensatina eschscholtzii oregonensis*)

Amphibians of Florida



Barking Green Treefrog
(*Hyla gratiosa*)



American Green Treefrog
(*Hyla cinerea*)

Amphibians of Florida



Southern Leopard Frog
(*Lithobates sphenoccephalus*)



Oak Toad
(*Anaxyrus quercicus*)

Amphibians of Florida



Eastern Newt
(*Notophthalmus Viridescens*)



Eastern Tiger Salamander
(*Ambystoma Tigrinum*)



Marbled Salamander
(*Ambystoma Opacum*)



Dwarf Salamander
(*Eurycea Quadridigitata*)

Amphibians as indicators of ecosystem health



- aquatic and terrestrial life stages
- permeable skin and eggs
- susceptible to cold and desiccation (drying out)
- food habits (tadpoles feed on algae and plants, other amphibians are carnivorous)
 - chemicals can accumulate at the surface and on the bottom of wetlands
 - toxins can “biomagnify” as they are passed up the food chain in the fat tissue of animals

Amphibian Population Decline



- Habitat destruction (of wetlands and forests) has been a major factor in the decline of many species. However, worldwide declines have also been documented in populations inhabiting areas not directly affected by human activity.
- Not one factor has been singled out as “the” cause of recent declines in amphibian populations. However, a disease caused by a chytrid fungus has been implicated in numerous declines across the globe.

Contributing factors include:

- introduced species
- global climate change (including increased UV-B radiation)
- diseases and pathogens (esp. chytrid fungus)
- environmental toxins, such as pesticides

Some of these factors also result in malformations of amphibians.

What you can do!



Opportunities for ensuring the survival of amphibians:

- Participate in wetlands habitat restoration
- Make schoolyards or backyards “frog friendly”
- Participate in an amphibian citizen science program
- Be a responsible pet owner
- Minimize pollution
- Raise amphibian awareness
- Raise funds for amphibian conservation projects



Florida Cricket Frog
(*Acris Gryllus*)



Bronze frog
(*Rana Clamitans*)



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