

## **Unit 2: Reptiles & Amphibians - Pre-Reading**

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# **Introduction: The Reptiles & Amphibians of Maryland**

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# Herpetology



- **Greek *herpeton* = crawling thing**
- **Greek *logos* = reason or knowledge**
- **Amphibians & Reptiles – traditionally studied together (but reptiles & birds more closely related)**
- **Historically difference between not noted**
- **Convenience – methods of collecting & preserving similar**
- **Amphibians & Reptiles = “Herps”**



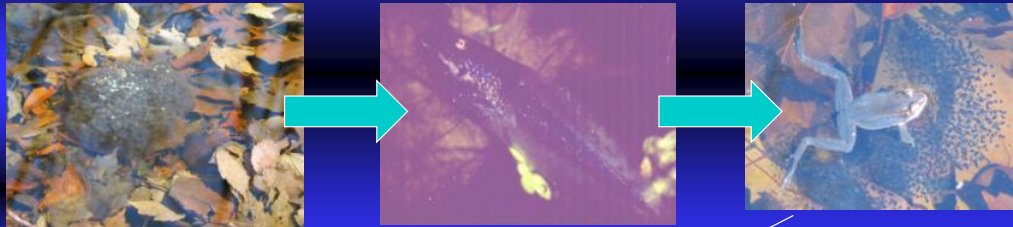
Herpetology, the study of reptiles and amphibians

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### Amphibian

- Greek “amphi” = double or both
- Greek “bios” = life.
- Amphibians have a “double” life – born of water living primarily on land; undergo “metamorphosis”.



Amphibian “double life”: egg mass to tadpole, then metamorphoses into adult body form.

Amphibians are “ectothermic” – body temp dependent on external environment.  
Ancestral amphibians derived from fishes – 1<sup>st</sup> vertebrates to move onto land – gave rise to all other terrestrial vertebrates (>250 mya)

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# Amphibians



- **Scale-less skin with many glands (usually moist/slimy)**
- **Toes do not have claws**
- **Young pass through larval stage that is usually aquatic (tadpoles) before “metamorphose” into adult form**
- **Usually jelly-like eggs laid in water**
- **Maryland amphibians = frogs, toads & salamanders**

Worldwide there are 3000+ amphibian species.

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### Reptiles



- **Descendants of early amphibians (also ectothermic)**
- **Skin has scales**
- **Toes have claws (in reptiles with toes)**
- **Young are small replicas of adults (no larval stage or metamorphosis)**
- **Shelled egg laid on land**
- **Maryland reptiles = turtles, lizards & snakes**

Yolk sac has 3 extra-embryonic membranes: the amnion, chorion & allantois. These are not present in fish or amphibians, but are present in birds & mammals.

Worldwide there are 6000+ reptile species.

Turtles are oldest living reptiles: >200 mya

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	<u>MD</u>	<u>Piedmont</u>	<u>US</u>	<u>World</u>
<b>Turtles</b>	<b>19</b>	<b>12</b>	<b>58</b>	<b>~ 320</b>
<b>Lizards</b>	<b>6</b>	<b>3</b>	<b>127</b>	<b>3000+</b>
<b>Snakes</b>	<b><u>27</u></b>	<b><u>20</u></b>	<b><u>131</u></b>	<b><u>2700+</u></b>
	<b>52</b>	<b>35 (67%)</b>	<b>316</b>	<b>6020+</b>
<b>Salamanders</b>	<b>22</b>	<b>13</b>	<b>186</b>	<b>~ 310</b>
<b>Frogs &amp; Toads</b>	<b><u>20</u></b>	<b><u>14</u></b>	<b><u>103</u></b>	<b><u>2500+</u></b>
	<b>42</b>	<b>27 (64%)</b>	<b>289</b>	<b>2810+</b>
<b>Total</b>	<b>94</b>	<b>62 (66%)</b>	<b>605</b>	<b>8830+</b>

The numbers for US & World are different depending on author, date of publication and which taxonomy being used.

Also note that there are other amphibian groups than those listed here. The US is one of world centers of diversity for turtles, and is THE world center of diversity for salamanders (SE US – Appalachians refugia during Ice Ages – species evolve on individual mountains).

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### Aquatic Habitats

- **Seasonal Wetlands**
- **Permanent Wetlands**
- **Wet Meadows, Bogs & Fens**
- **Small Streams, Springs & Seeps**
- **Rivers**
- **Estuarine & Coastal (marsh, beach, water)**



Hydroperiod, pH, adjacent forest cover, and lack of fish predators are important to many amphibians.



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# Terrestrial Habitats

- **Hardwood Forests**
- **Spruce & Fir Forests**
- **Xeric Uplands & Pine Forests**
- **Grasslands & Old Fields**
- **Rock Outcrops & Talus**
- **Caves & Karst**
- **Agricultural Lands**
- **Urban & Residential Systems**



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### Looking for Herps



Herps are usually found by looking down, the opposite of birding. Dipnets, seines, snake hooks, snake tongs, mussel buckets, even binoculars; all are useful to help find herps. They are often under or in “cover” objects.

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There are many herp trapping techniques – all require a DNR permit.

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### Ethical Handling Guidelines

- Use care and discretion
- Do not disturb nests +/- or hibernacula
- Roll/lift cover objects towards you
  - ◆ Return without injuring
- Keep handling (& stress to the animal) to a minimum
  - ◆ Use nets, snake hooks, etc.
- Photograph *in situ*, when possible
- Return cover objects as found



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### Proper Handling and Restraint

#### Amphibians (in general)

- ◆ **Handle with wet hands**
- ◆ **No lotions, bug spray, chemicals, etc.**
- ◆ **Inside wet, clear plastic bag or container**
- ◆ **Use Net (rather than hands when possible)**
- ◆ **Remember: Amphibian skin is fragile!**

#### Reptiles (in general)

- ◆ **Support weight**
- ◆ **Prevent bone breaks & fractures**
- ◆ **Beware of the bite!**



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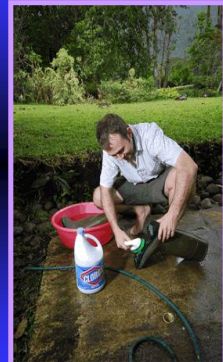
### Disinfection Procedures

#### ■ Why?

- ◆ Chytridiomycosis, ranavirus, URTD and other diseases
- ◆ **Spread easily – individual to individual, in water, damp surfaces, etc.**
- ◆ Disinfect boots, gear, and any items that come in contact w/ aquatic habitats and moist leaf litter

#### ■ How to:

- ◆ 10% bleach solution (9 parts water, 1 part bleach)
- ◆ **At least one minute (preferably 20 min soak)**
- ◆ Scrub brush – remove dirt/fungus, etc
- ◆ **Rinse with freshwater**
- ◆ Clean skin w/ alcohol-based hand sanitizer
- ◆ **Do not disinfect or rinse in freshwater habitats**



URTD=Upper Respiratory Tract Disease – found in turtles.

Chytrid fungus (aka, BD) is impacting amphibians globally.

Ranavirus, a type of iridovirus, is effecting both frogs and turtles.