Photo by Wayne Fidler

Photo by Tom Diez

Amphibians and Reptiles in Your Woods

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PENNSTATE

About Me

BS Biochemistry,
Texas A&M

MS Animal Science
PhD Neurobiology & Behavior
Cornell University

Postdoc Conservation Biology
Colorado State University

Webinar Goals

After this presentation you will know:

1. Some basic biology of amphibians and reptiles and how many are native to Pennsylvania;
2. which amphibians and reptiles are most likely to be found in forest habitats and common sampling methods; and
3. how forest management may affect amphibian and reptile populations.

Photo by Jeff Tome

What Is an Amphibian?

- A vertebrate animal

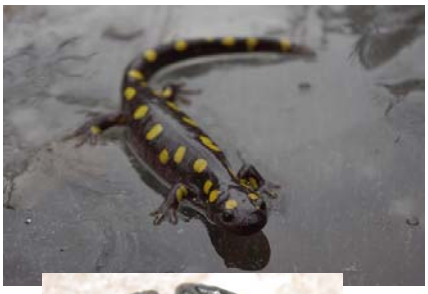
salamanders

frogs

caecilians

What Is an Amphibian?

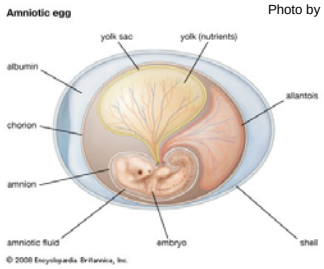
- A tetrapod ectotherm



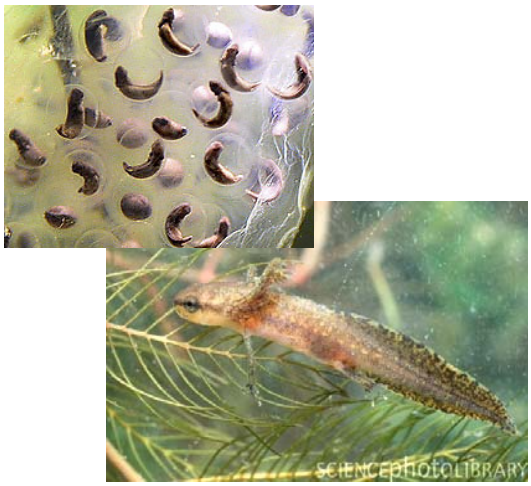
What Is an Amphibian?

- An animal with few protective membranes around the embryo
- Increases reliance on environmental moisture

Photo by Michael Redmer



What is an Amphibian?



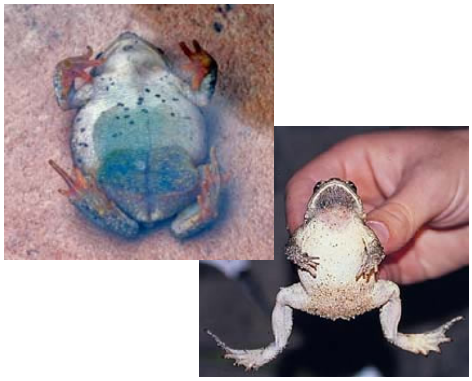
What Is an Amphibian?

- An animal with permeable skin
  - Sometimes feels moist
  - Sometimes feels dry

Amphibian Skin

- Cutaneous breathing

- Cutaneous water absorption
  - Pelvic patch



Relative Numbers in PA

Amphibians: 36 species

- Salamanders
  - 22 species
- Frogs (& toads)
  - 14 species

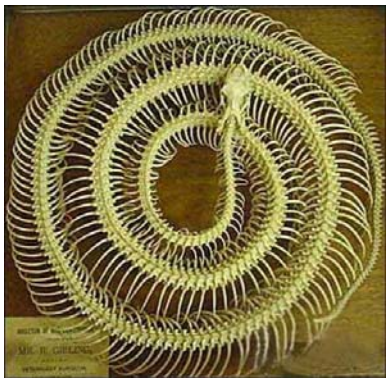
Photo by Carl Brune

Photo by Jeff Hankey

http://www.paherps.com/

What Is a Reptile?

- A vertebrate animal



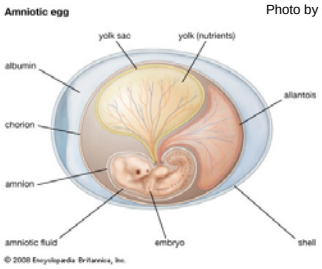
What Is a Reptile?

- A tetrapod ectotherm

What Is a Reptile?

- An animal with several protective membranes around the embryo
- Decreased reliance on environmental moisture

Photo by Gay Bumgarner



Relative Numbers in PA

Reptiles: 39 species

- Snakes
  - 21 species
- Turtles
  - 14 species
- Lizards
  - 4 species

Photo by Billy Brown

Photo by Bob Hamilton

Photo by Tom Diez

http://www.paherps.com/

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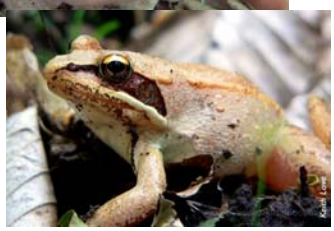
Photo by Jeff Tome

Forest Amphibians: Frogs

Wood frog

- *Lithobates sylvaticus*
  - Vernal pools
  - Permanent pond edges
  - Forested pools & near forest



Forest Amphibians: Frogs

Pickerel frog

- *Lithobates palustris*
  - Vernal pools
  - Permanent pond edges
  - Forested pools & near forest

Forest Amphibians: Frogs

Gray treefrog

- *Hyla versicolor*
  - Vernal pools
  - Permanent pond edges
  - Forest clearings & near forest

Forest Amphibians: Frogs

Spring peeper

- *Pseudacris crucifer*
  - Vernal pools
  - Permanent pond edges
  - Forested & near forest

Forest Amphibians: Frogs

Mountain chorus frog

- *Pseudacris brachyphona*
  - Vernal pools
  - Permanent pond edges
  - Forested pools & near forest

Forest Amphibians: Frogs

Striped chorus frog

- *Pseudacris triseriata*
  - Vernal pools
  - Permanent pond edges
  - Forested pools & near forest

Photo by Don Becker

Forest Amphibians: Salamanders

Jefferson's salamander

- *Ambystoma jeffersonianum*
  - Vernal pools
  - Permanent pond edges
  - Forested pools & near forest

Forest Amphibians: Salamanders

Spotted salamander

- *Ambystoma maculatum*
  - Vernal pools
  - Permanent pond edges
  - Forested pools & near forest

Forest Amphibians: Salamanders

Marbled salamander

- *Ambystoma opacum*
  - Vernal pools
  - Permanent pond edges
  - Forested pools

Forest Amphibians: Salamanders

Eastern red spotted newt

- *Notophthalmus viridescens*
  - Vernal pools
  - Permanent ponds
  - Forested pools & near forest

Forest Amphibians: Salamanders

Redbacked salamander

- *Plethodon cinereus*
- Rely on natural cover objects
- lungless

Forest Amphibians: Salamanders

Northern slimy salamander

- *Plethodon glutinosus*

- lungless

- Rely on natural cover objects

Forest Amphibians: Salamanders

Northern dusky & mountain dusky salamanders

- *Desmognathus fuscus & D. ochrophaeus*

- lungless

- Rely on natural cover objects

Forest Reptiles: Lizards

Broadhead skink

- *Eumeces laticeps*

- Forest clearings

Forest Reptiles: Lizards

Eastern fence lizard

- *Sceloporus undulatus*

- Open habitats within forests

Forest Reptiles: Turtles

Wood turtle

- *Clemmys insculpta*

- Wet forests
- Tree climbers

Forest Reptiles: Turtles

Eastern box turtle

- *Terrapene carolina*

- Deciduous forest

Forest Reptiles: Snakes

Eastern garter snake

- *Thamnophis sirtalis*

- Ubiquitous, but commonly encountered in forests

Forest Reptiles: Snakes

Northern redbelly snake

- *Storeria occipitomaculata*

- Edge habitat
- Upland forest
- Open canopy forest
- Wet areas
- Natural cover
- slugs

Forest Reptiles: Snakes

Northern ringneck snake

- *Diadophis punctatus*

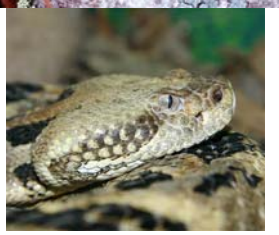
- Damp hardwood forests
- Natural cover
  - Downed wood, rocks
  - Salamanders & worms

Forest Reptiles: Snakes

Timber rattlesnake

- *Crotalus horridus*

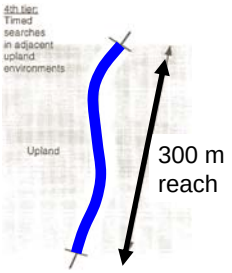
- Forests with south facing slopes, rocky outcrops



Sampling

Time-Constrained Area Search

- Defined area
- Searched for defined time period
  - 4 person-hours is typical
  - 4 person-hours = 4 people each searching for 1 hour



Sampling

Pitfall-drift fence arrays

- Buckets, cans, plastic tubes, cups

Placement

- DIAMETER & DEPTH
  - Consistent
  - Effects catch

Sampling

- Artificial cover objects (ACO)
  - Wood or metal
  - Stand behind ACO
  - Use snake hook
  - Gloves recommended

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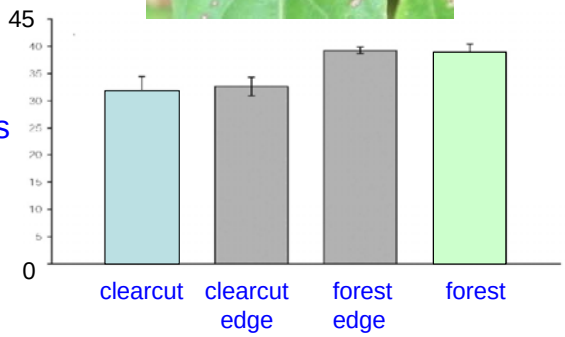
Photo by Jeff Tome

Clearcuts Effects: Gray Treefrogs

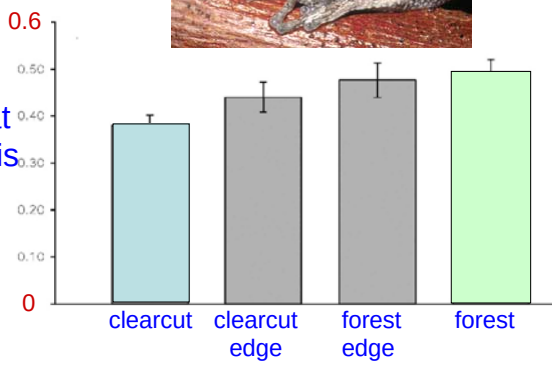
- Tadpoles metamorphose more quickly in clearcut ponds than in forest pond



D. J. Hocking and R. D. Semlitsch, 2008

Clearcuts Effects: Gray Treefrogs

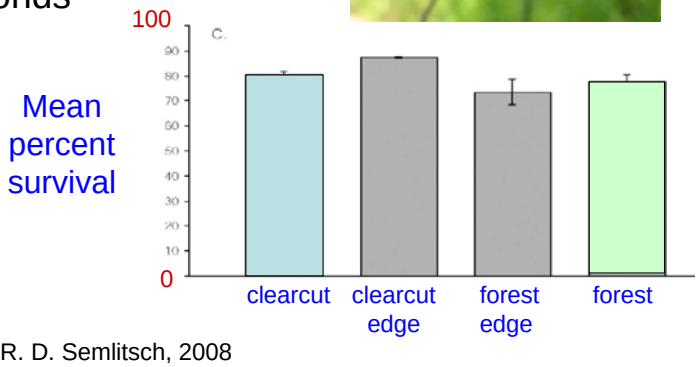
- Tadpoles weigh less at metamorphosis in clearcut ponds than in forest ponds



D. J. Hocking and R. D. Semlitsch, 2008

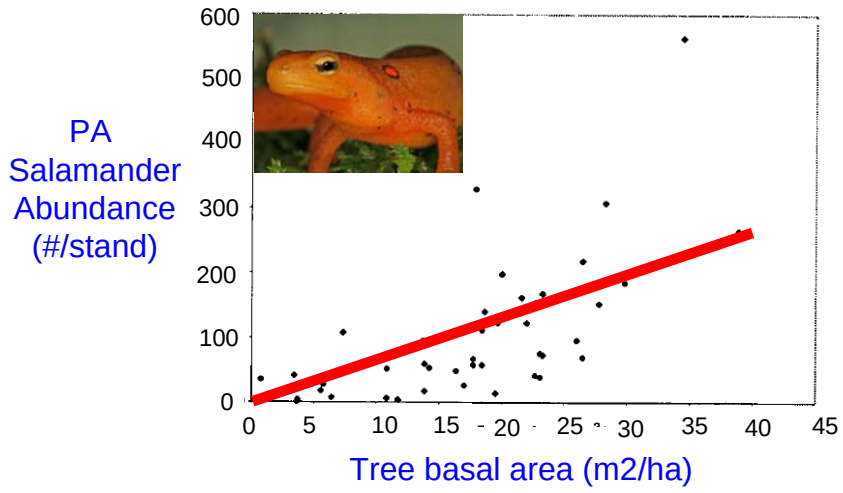
Clearcuts Effects: Gray Treefrogs

- More tadpoles survive to metamorphosis clearcut ponds than in forest ponds



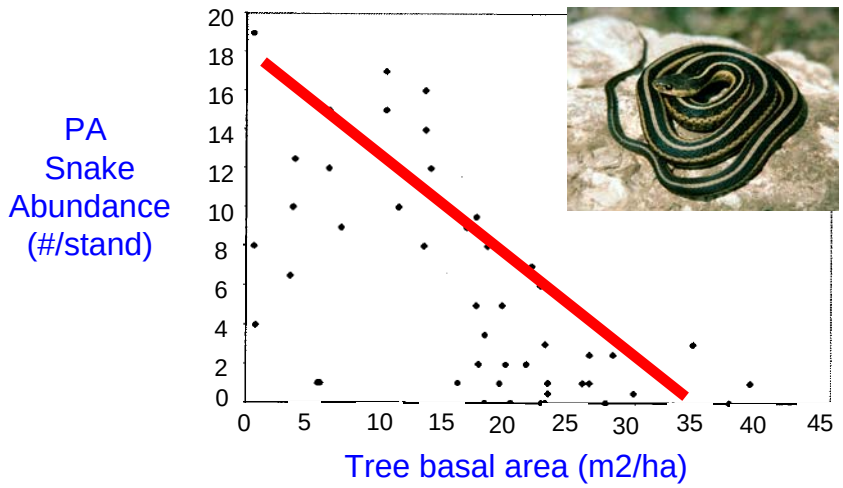
D. J. Hocking and R. D. Semlitsch, 2008

Basal Area: Salamander Effect



Ross et al. 2000

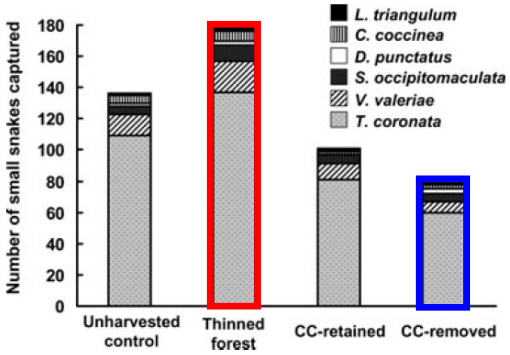
Basal Area: Snake Effect



Ross et al. 2000

Forest Harvesting: Snake Effects

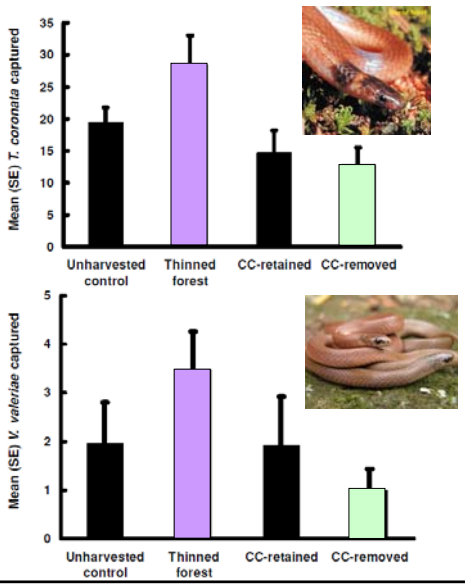
- Snake diversity is higher in thinned forests than in clearcuts
- Retention of coarse woody debris has an ameliorative effect



Todd and Andrews, 2008

Forest Harvesting: Snake Effects

- Individual species abundance is higher in thinned forests than in clearcuts
- Retention of coarse woody debris has an ameliorative effect



Todd and Andrews, 2008

Webinar Summary

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