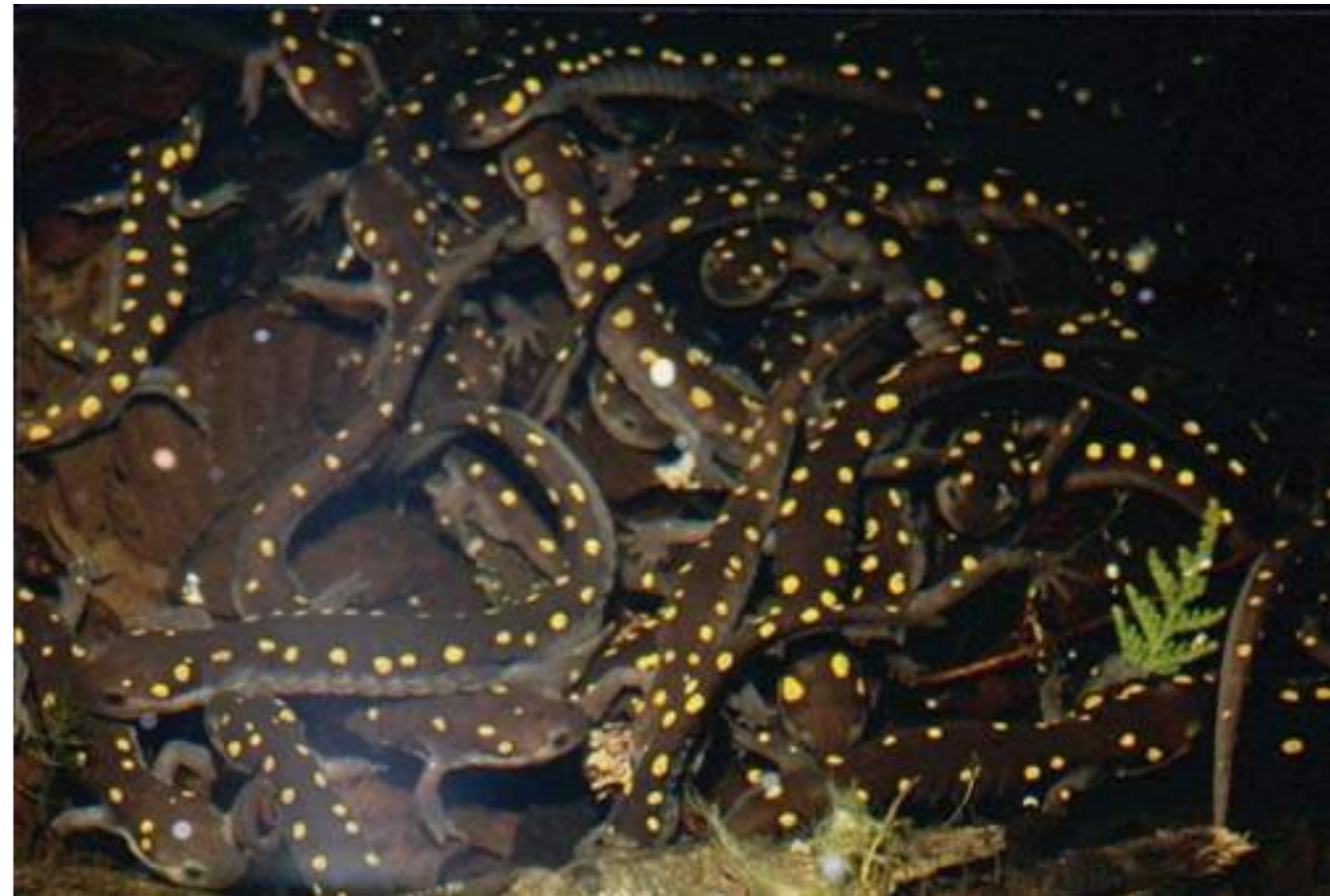


# Social Behavior and Reproduction (Amphibians)



# Announcements

- Thursday
  - Optional trip! Use this time to finish your papers / presentations, or come find *Desmognathus fuscus* and explore a new site for next year (Sawmill Brook Preserve / Wolf Rock)
- Friday
  - Field notebooks are due! Hand in the entire notebook. Make sure you are **up to date and have proper format**. I'll return them to you from my office in PBB 322 once they are graded.
  - Papers and presentations are due! Your paper and your presentation must be in my email inbox by 9am.
    - Plan on bringing your own laptop to present.

# Paper Guidelines

- Entire paper will be 5-7 double spaced pages (12 pt font, Times New Roman, 1 inch margins) **without** figures (but I still want you to include them, they just don't count towards page count)
- Include a title
- Introduction and methods will follow the same guidelines as for the draft
  - Methods and all sections following will be in the **past tense** (because when you hand in your paper, you already did your collecting and analysis!)
- Results
  - One subsection per experiment and/or analysis. It really helps to reference figures in this section (graphs, maps, etc.)
  - For complex data sets, highlight the data that agrees with and disagrees with your hypothesis
- Discussion
  - It helps to have a subsection per experiment and/or analysis, not but required
  - Here you **must** discuss the implications of your results on your hypothesis, and put forth new ideas as to what may explain your results
- Literature cited section at the bottom should be in APA format for the final paper

# Presentation Guidelines

- 12 minute PowerPoint, leaving 3 minutes to answer questions
- Between 8-15 slides, but there is no slide requirement
- Presentations will be graded by....
  - Content
    - Follow the format: introduction, methods, results, discussion
    - Did you ensure to include all the important results from your research paper?
  - Quality
    - Did you clearly spend time formatting your presentation in a compelling way?
      - No “walls of text”
      - Abundance of visual aides
      - Effective use of pictures
  - Clarity
    - Did you present your project in a way that was easy to follow and compelling?
    - Did you (and your partner) speak clearly and communicate effectively?

# Social Behavior

- We don't think of amphibians and reptiles as being "social"
  - Ants, bees, meerkats
  - Even lions
- For most reptiles and amphibians, social behavior revolves around reproduction



# Amphibian Social Behavior

- We are familiar with frog calls, but the purpose of the call varies with each species
- Advertising self or territory?



# Spring Peepers

- *P. crucifer* males call to attract females
- The calls serve to advertise males.
- With so many males calling, the loudest is the fittest.



# Bullfrogs



- Male bullfrogs compete with each other for territory
- Larger frogs can acquire larger and better suited territories



# Bullfrogs

- Satellite males sit on the edge of territories
  - Smaller territories
  - Try to catch females as they come to the larger male territories



# American Toads

- Redefines “free-for-all”
- Males call, then physically fight for females



# Mating in Frogs

- Fertilization is external
- Males clasp the female behind her armpits
- Amplexus



# Mating in Frogs

- As the female lays her eggs, the male releases the sperm.
- The eggs are laid in masses or strings.
- Species can be identified by how the eggs are laid, and where they are laid.

# Mating in Frogs





# Mating in Frogs

- Eggs hatch into tadpoles, completely aquatic larva.
- Tadpoles develop, grow, then metamorphose into frogs





*P. crucifer*



*R. clamitans*



*R. sylvatica*

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*R. catesbeiana*

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# Salamanders

- Early spring is marked by the migration of many species of salamander
  - *Ambystoma maculatum*
  - *Hemidactylium scutatum*

# *Ambystoma*

- Both *A. opacum* and *A. maculatum* migrate to pools to breed
- Males will deposit a spermatophore, then lead the females to pick them up.



# *Plethodon*

- Many of the plethodontids have elaborate courtship rituals



# *Plethodontidae*

- Eggs may be laid in the stream (*Eurycea*), under moss (*Hemidactylium*), or within rotting logs (*Plethodon*)







# *Plethodon*

- Young may be aquatic larva or direct developers
  - Switches often throughout the family

