

Field Herpetology Midterm Topics

- All questions are SHORT ANSWER
- Questions with more complexity will be worth more points
- Incorrect spelling is OK as long as the name is recognizable (*by the instructor's discretion*)
- **Common names will not be accepted**

Lecture 1: Introduction and Handling Animals

- Field notebooks
 - Type we're using
 - How it's setup
 - Importance of keeping a field notebook
- Animal handling
 - How to hold...
 - Frogs (small and large)
 - Salamanders (small and large)
 - Turtles (small and large)
 - Snakes
 - How to pick up a snake safely
 - Signs of stress in amphibians and reptiles
 - Reactions to expect
 - Reactions not unexpected, and subsequent actions you should take
 - Why is it important to wash your hands?
 - Habitat restoration
 - How to return habitat to its natural state
 - Importance of returning animals to their original location

Lecture 2: Connecticut Amphibians

- Three major groups of amphibians
 - What unites them into a single group?
 - Scientific name of the major groups
- Be able to identify amphibians with their **scientific name** after reading physical descriptions
 - For amphibians with new genera names, I'll accept either the old genus or new genus name
- Be able to compare similarities and differences between similar species
- When breeding timing details are given, be able to predict what amphibians you would find in a given time of year
- When sexing information is given, be able to differentiate between males and females of that species
- Which frogs are mostly aquatic? Which are mostly terrestrial?
- Which salamanders are mostly aquatic? Which are mostly terrestrial?
- Why is there a debate about whether the mudpuppy is a true CT species?
- When egg laying information is given, be able to predict which species laid them based on their location.
- What is the most endangered amphibian in CT?

Lecture 3: Connecticut Reptiles

- Four major groups of reptiles
 - What unites them into a single group?
 - Scientific name of the major groups of reptiles
- Be able to identify reptiles with their **scientific name** after reading physical descriptions
 - For reptiles with new genera names, I'll accept either the old genus or new genus name
- Be able to compare similarities and differences between similar species
- When juvenile morphology is given, be able to predict if an individual is a juvenile or an adult.
- When sexing information is given, be able to differentiate between males and females of that species
- Be able to name the different parts of a turtle shell.
- Which turtles are mostly aquatic? Which are mostly terrestrial?
- Which snakes are mostly aquatic? Which are mostly terrestrial?
- What kind of habitat does CT's only lizard prefer?
- Know the snake diet specialists (e.g. hognose specializing on frogs and toads, etc.)
- Know the hognose and ringneck snake defensive behaviors
- Know the differences between the two CT venomous snakes
- What is CT's most endangered reptile?

Lecture 4: Habitats and Field Techniques

- Four key factors to understanding which species occupy a habitat
- Aquatic habitats
 - Know how fast water flows in that habitat
 - Know depth of water in that habitat
 - Know oxygen content of water in that habitat
 - Know seasonal variability of the habitat
 - Frozen solid or only surface freezing?
 - Does it dry up in the summer?
 - Know fish predation risk in that habitat for certain species
- Terrestrial habitats
 - Know how well the habitat retains moisture
 - Know availability of cover objects
 - Know degree of tree canopy cover
- What is an edge habitat? What can cause edge habitats?
- Know which herpetological catching technique is appropriate for...
 - Estimating the biodiversity of an area
 - Finding rare species
 - Catching fast lizards
 - Handling large/venomous snakes
 - Finding turtles
 - Catching small aquatic animals
- Be able to describe how to execute each herpetological catching technique
- Know the appropriate size measurement technique for each species
- Be able to write a plan to collect and process a given species for particular data (e.g. write a plan to collect many turtles, measure their size, and collect DNA)
- Understand which tissue collection method is appropriate for which species

Lecture 5: Herpetology Systematics

- What is systematics?
- What is a clade?
- What makes two clades sister to one another?
- Why aren't amphibians and reptiles a true clade?
- Generally, know relatively relationships
 - Examples...
 - Are Ambystoma salamanders more closely related to newts or red-backed salamanders?
 - Are turtles more closely related to lizards and snakes or to crocodiles?
 - Are ring-necked snakes more closely related to garter snakes or to black racers?
- Which CT salamanders are members of the lungless clade Plethodontidae?
- Which CT frogs are members of Ranidae (the "true frogs")?
- Which CT frogs are members of Bufonidae (the "true toads")?
- Which CT frog is a member of a very early branch of frogs?
- Which CT species are members of Natricinae (the "true water snakes")?
- What is the name of the group of snakes that copperheads and timber rattle snakes belong to?
- What group of turtles do most CT turtles belong to?
 - Which species are not part of this group?

Lecture 6: Amphibian Physiology

- What is physiology?
- What is an ectotherm?
- How do changes in temperature affect animal function in amphibians?
- Know where to expect an amphibian given an outside temperature
- Know the different amphibian overwintering strategies
- What are the advantages and disadvantages of amphibian skin in relation to water retention and loss?
- How do amphibians drink?
- Compare and contrast water regulation strategies of a toad and a frog (e.g. *B. americanus* and *R. clamitans*)
- What are the four amphibian ontogenies seen in CT?
 - How do they differ in terms of the number of steps each takes?
 - Know what species employ each ontogeny
- Compare and contrast regeneration abilities in salamanders and frogs

Lecture 7: Reptilian Physiology

- How do changes in temperature affect animal function in reptiles?
- Know where to expect a reptile given an outside temperature
- How do reptiles regulate their body temperature?
- What physiological processes would require a snake to bask for long periods of time?
- Know the different reptilian overwintering strategies
- What are the reptilian water regulation strategies most important for CT reptiles?
- What are the advantages and disadvantages of reptilian skin in relation to water retention and loss?
- How do reptiles drink?
- Compare and contrast different methods of excreting nitrogenous waste used by reptiles
- Be able to draw the relationship between temperature and sex for turtles
- Know the three snake birthing strategies, which snakes use which strategies, and possible adaptive significance of different strategies

Lecture 8: Locomotion in Herpetofauna

- What is ethology?
- Describe the position of the limbs in salamanders, crocodiles, and lizards
- What is gait?
- Be able to identify the type of gait used by particular species
- How are walking / short hopping frogs morphologically different from their jumping relatives?
- How is turtle walking different from typical herp walking?
- What adaptations do frogs possess that allow them to jump long distances?
- Be able to describe the four type of snake locomotion
- Compare and contrast swimming in tadpoles and salamander larvae
- Describe how “frog-kicking” and “turtle paddling” are similar to terrestrial locomotion for these species

Lecture 9: Feeding in Herpetofauna

- Know the two main types of feeding, and the species that use these types
- What kind of feeding is suction feeding classified as?
- What species uses suction feeding?
- How does suction feeding work?
- Know the strategies snakes use to eat their prey
- How does copperhead venom work?
- How does timber rattlesnake venom work?
- Why is the Plethodontid salamander feeding strategy still very effective in cold temperatures?