Feeding

Announcements

- Field notebooks due today, right after class
- Results: due today at 5pm for weekend feedback, otherwise due at Monday at 9am
    - Email (as usual):
        - Subject: Field Herpetology Results
        - File name: LastName_Results.docx
    - Results sections are straight forward: report whatever data you said you collected in the methods section
        - At least one paragraph per experiment and/or analysis. Your data should have figures (could include maps, graphs, plots, etc.)
        - Highlight the data that agrees with and disagrees with your hypothesis, but do not interpret the data! I.e. don't explain why you think it does or does not match your hypothesis
- Final exam guide: will be out latest by Monday evening

Fun Quiz Time™

- You're an intern at a conservation organization charged with developing an approach to survey for the presence of five lined skinks at a new Connecticut State Park

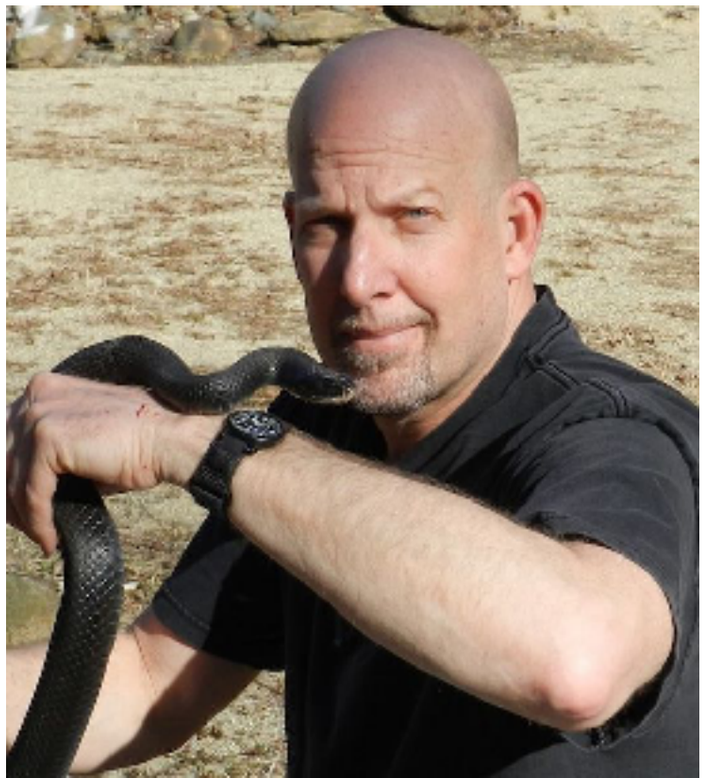
- Give the animal's scientific name

- Propose the most efficient way to survey for this rare Connecticut species

- Once you've surveyed for the animals (and found them), tell me how to differentiate males from females, and juveniles from adults

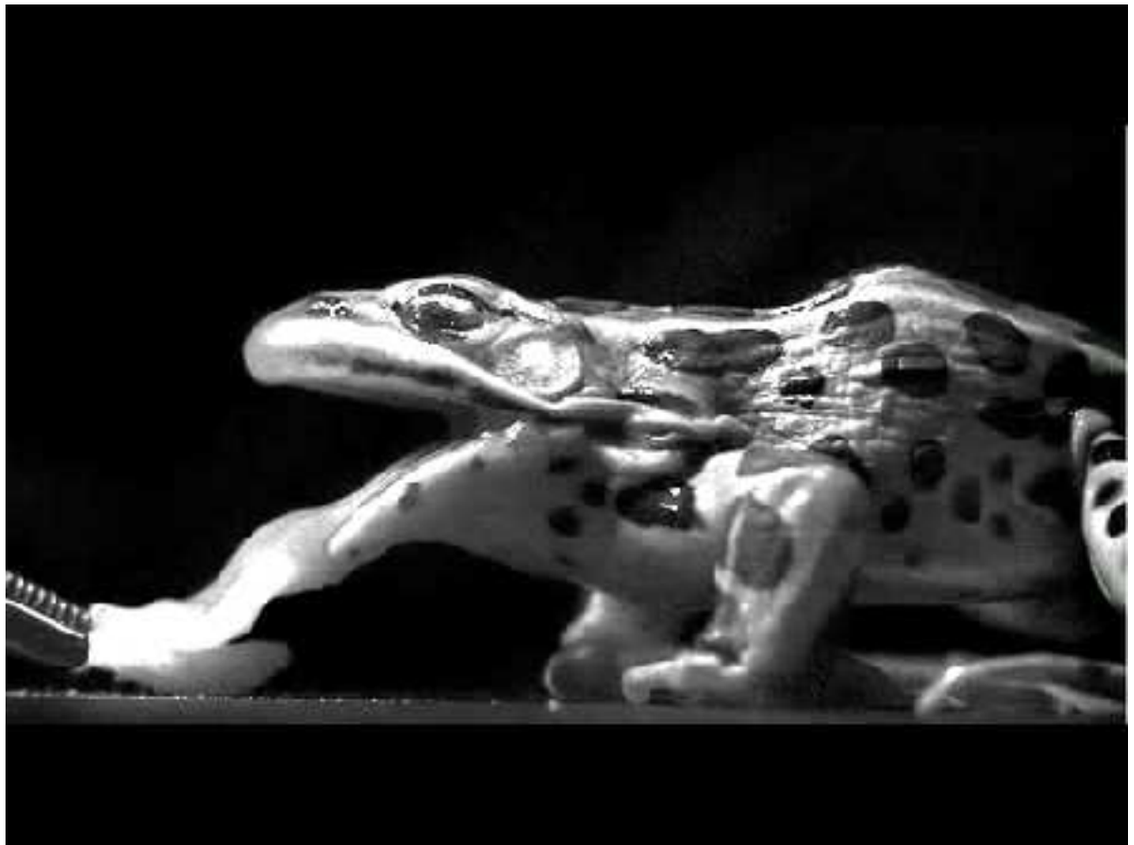
Feeding

- Prey capture in amphibians and reptiles has long been of interest to researchers
  - Differences in how you catch your food can have impacts on almost every aspect of your biology



Feeding Types

- Two main types of feeding
  - **Jaw Prehension**
  - **Lingual Prehension**



Jaw Prehension

- Food is captured using the jaws to grab
  - Crocodiles
  - Turtles
  - Some lizards
  - Snakes

- **Suction feeding** is a type of jaw prehension
  - Aquatic salamanders

Jaw Prehension: Movement

[Video]

[Video]

- Jaw grabs can be accompanied by rapid body movement for prey capture (crocodiles, turtles, snakes)
- Example: Snapping turtles are ambush predators
  - They use rapid jaw movements to surprise prey items

Jaw Prehension: Snakes

- All snakes use jaw prehension, the tongue is only used for chemoreception

- Unlike crocs or turtles, biting alone cannot dispatch the prey in snakes

- Prey items are swallowed whole, but may be **constricted** or **envenomated** prior to consumption

Jaw Prehension: Constricting Snakes

- Constriction works by increasing the internal pressure until the heart stops

- Much quicker than asphyxiation

- Some snakes can detect the prey's heartbeat, so they know when to stop

Jaw Prehension: Envenomating Snakes

- Copperhead venom is **hemolytic**
    - Destroys the red blood cells and releases the hemoglobin
- Timber rattlesnake venom can either by hemolytic or **neurotoxic**, depending on the population
    - Neurotoxins destroy nervous tissue, rendering prey immobile
    - CT ones are neurotoxic, congratulations!

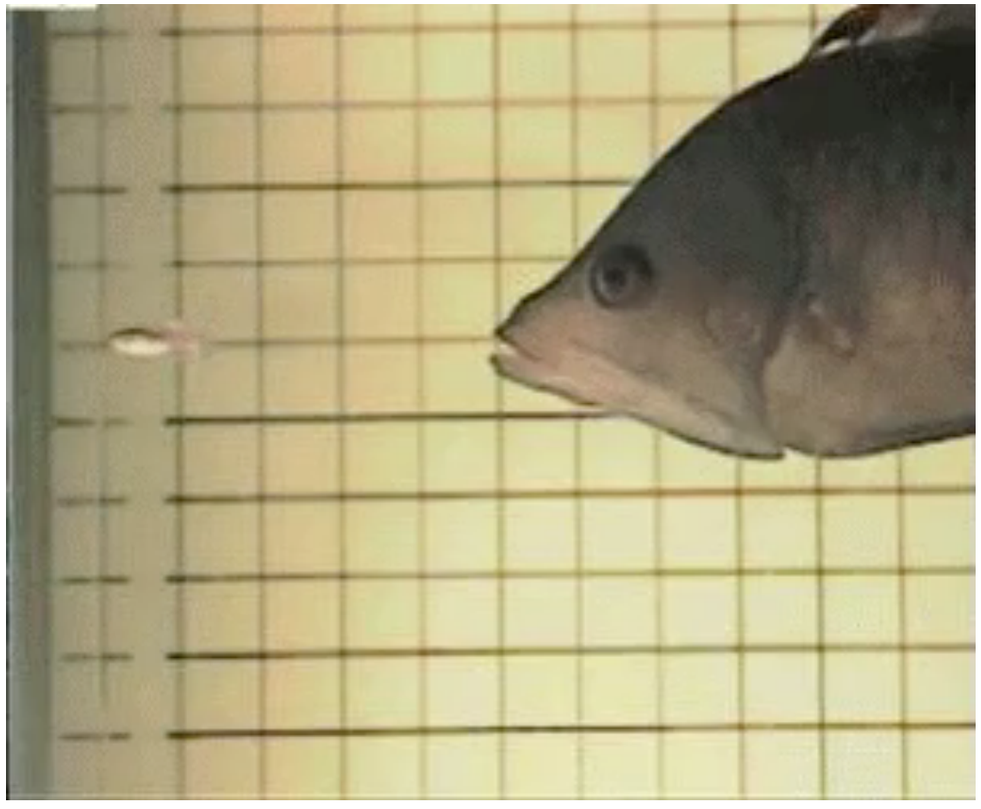
Jaw Prehension: Suction Feeding

- Used by aquatic salamanders in CT.
  - Many larval salamanders use suction feeding before metamorphosing into adults

Video

Jaw Prehension: Suction Feeding

- Rapid jaw opening and hyoid depression
- Negative pressure generated pulls water and food into the mouth
- Common in fish

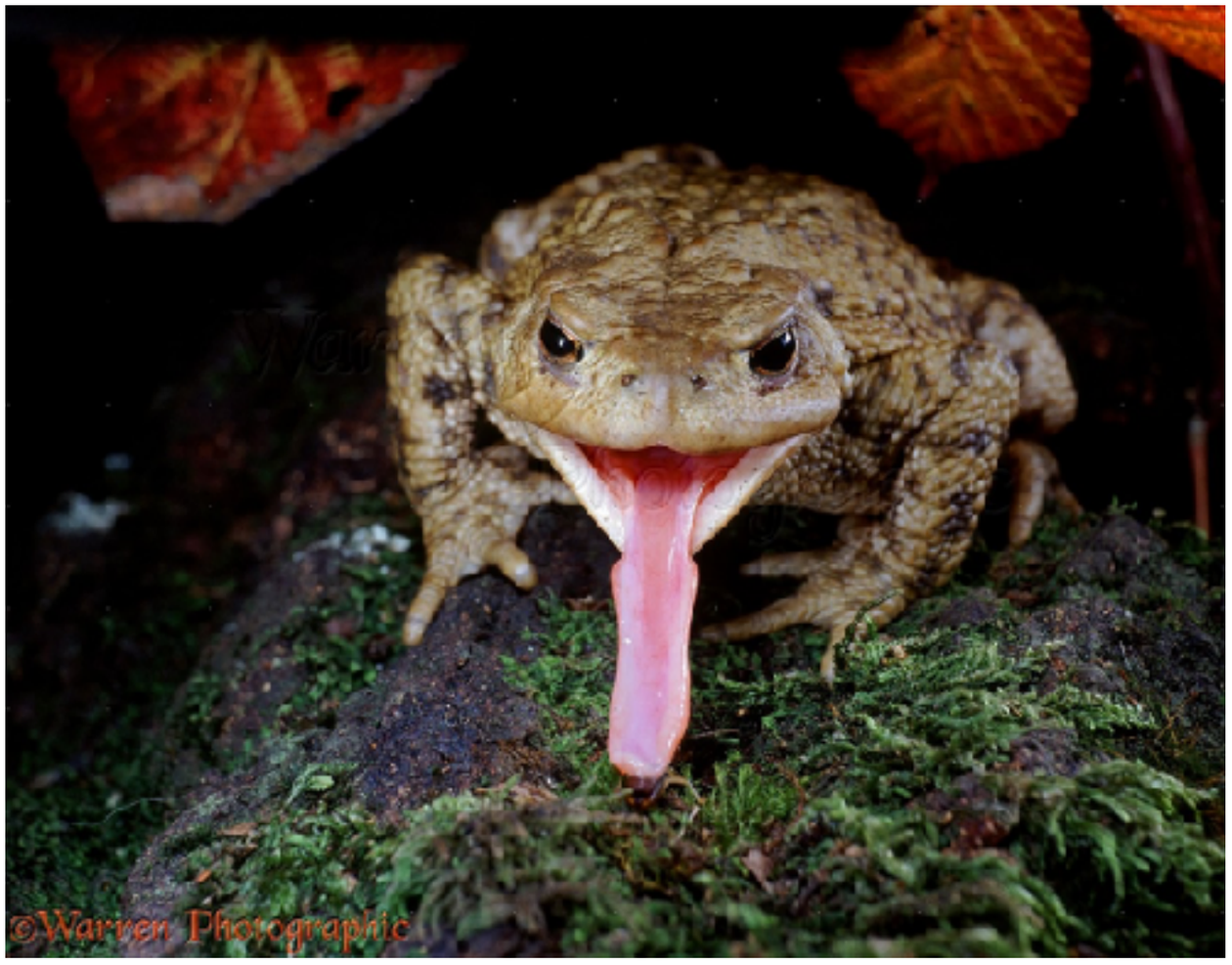


Lingual Feeding

- Lingual feeding is using the tongue to capture prey items
- Frogs & toads
- Salamanders
- Some lizards

Lingual Feeding: Frogs and toads

- Not as spectacular as some of the salamanders and lizards, but still extremely fast.



Lingual Feeding: Chameleons

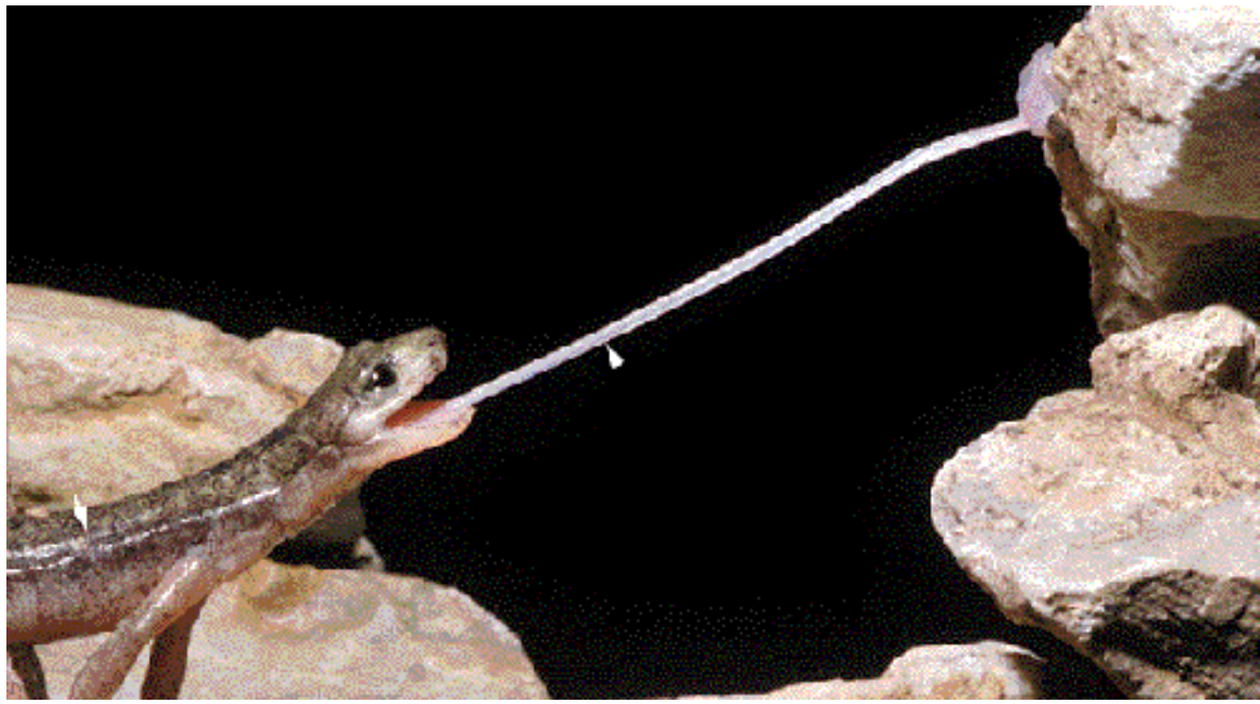
- Launch the tongue at extremely high speeds
- You can see the effects of temperature in the tongue retraction

Tongue Launch

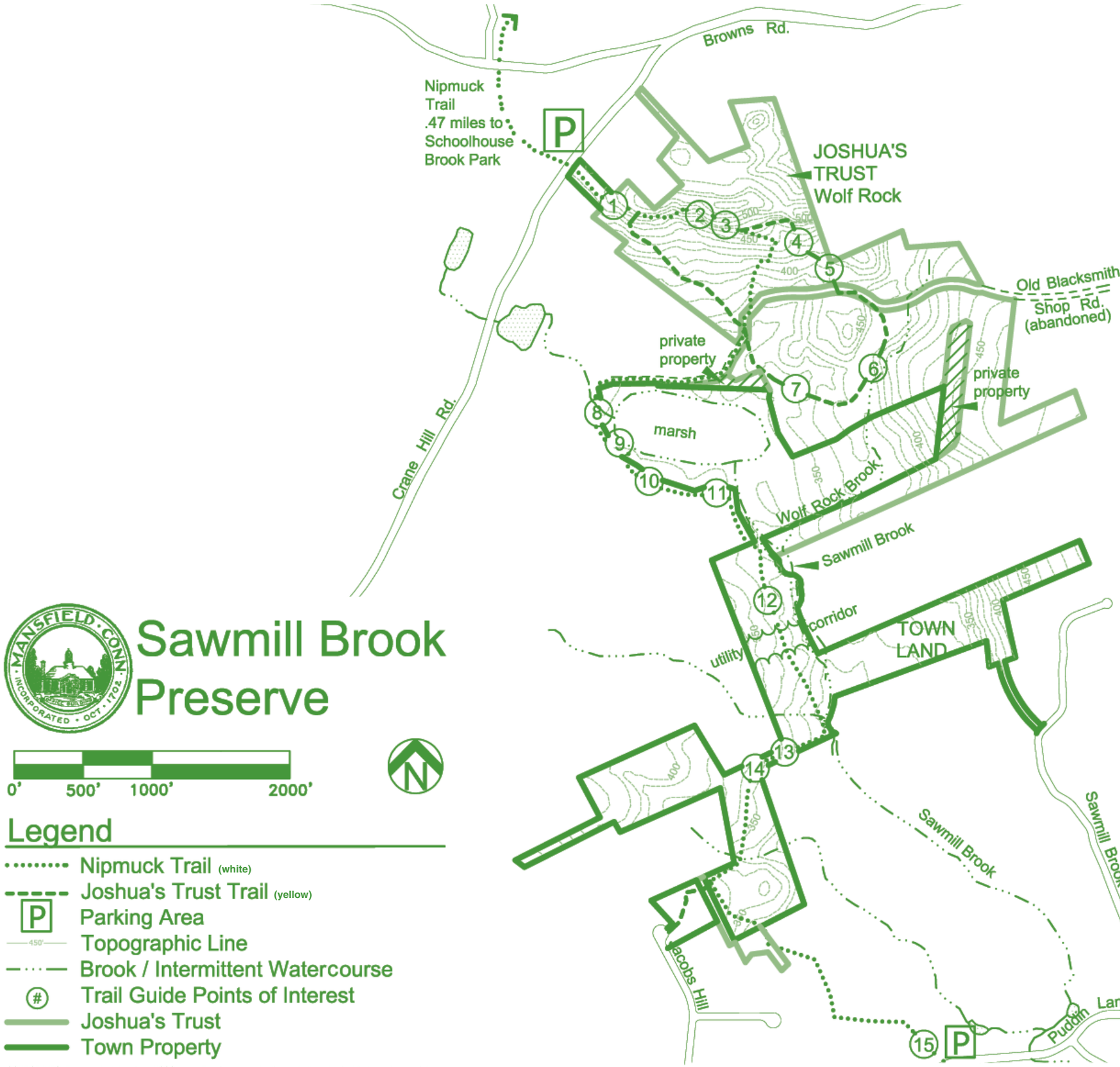
Cold Tongue Retraction

Lingual Feeding: Salamanders

- Plethodontid salamanders
  - Extreme lingual feeding adaptations
  - No lungs = more space for coiled tongues
  - Tongue launch is like a bow and arrow… only retraction is affected by temperature
  - Examples:
    - *Eurycea*
    - *Hydromantes*
- Other terrestrial salamanders with lungs: much shorter tongue
  - *Ambystoma*



Sawmill Brook Preserve



0' 500' 1000' 2000'

Legend

- Nipmuck Trail (white)
- Joshua's Trust Trail (yellow)
- P Parking Area
- 450' Topographic Line
- Brook / Intermittent Watercourse
- # Trail Guide Points of Interest
- Joshua's Trust
- Town Property

SOURCE INFO: Typography taken from USGS maps. Treelines, waterbodies and other physical features from aerial photographs. This map and GPS Trail date by UCONN Program of Landscape Architecture. All measurements are approximate.

Revised: March 2006