Habitats and Field Methods

Friday May 12th 2017

Announcements

- Project consultations available today after class
  - Project Proposal due today at 5pm
  - Follow guidelines posted for lecture 4
- Field notebooks due today after class as well
- Preserved specimens available starting next Monday
- Quiz time!

What kind of herp is this?

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Understanding New England Herpetofauna Habitat

Abiotic factors:

- Shelter
- Sunlight
- Water

Biotic factor:

- Food / Prey abundance
- Predator abundance

Many Herps, in general, are distributed in a very patchy manner because of these specific requirements

New England Habitats of Interest

- Rivers/Streams
- Lakes/Ponds
- Bogs/Marshes

Freshwater Aquatic

- Forests
- Meadows
- Sandy

Terrestrial

- Edge Habitat

Goal: Effectively predict what herpetofaunal diversity you should expect when you walk into one of these typical New England habitats

New England Habitats of Interest: **Rivers / Streams**

- Complex flowing water habitat
- Prone to variation (flooding and drying)
- Depth and velocity of water will impact diversity
    - Slow and deep
    - Fast and shallow
- Faster water = higher oxygen
- Canopy cover effects sunlight, which also affects diversity
- **Who do we expect to live here? (Can we even generalize across all Rivers / Streams?)**

New England Habitats of Interest: **Lakes / Ponds**

- Still or slow moving water
- Mostly permanent
- Deep water
- Retains ambient temperature longer
  - Winter - deep warm water serves as refuges
  - Summer - deep water becomes cooler, animals transition between shore and deep water
- Stable resources
- Typically lacking cover
- **Who do we expect to live here?**

New England Habitats of Interest: **Swamps / Marshes**

- Still or slow moving water
- Mostly permanent
  - But susceptible to drought
- Shallower than ponds / lakes
- Low oxygen
- Susceptible to complete freeze overs
- Canopy
  - Wooded vegetation - swamp
  - Herbaceous vegetation - marsh
- Much fewer fish predators
- **Who do we expect to live here?**

New England Habitats of Interest: **Vernal Pools**

- A subtype of swamp/marsh
- Completely still water
- Ephemeral, appearing in spring after winter snows, and evaporating throughout the summer
- Shallower than ponds / lakes
- Stable resources devoid of fish
- Typically within forest habitat
- **Who do we expect to live here?**

New England Habitats of Interest: **Forest Floor**

- Typically dry, but cover objects can retain moisture
  - Fallen logs, leaf litter, rocks
- Lots of cover
- Huge variety of food sources, but lots of potential predators
- Most common habitat in Connecticut
  - But most forest in Connecticut is **new growth** due to farming practices
- **Who do we expect to live here?**

New England Habitats of Interest: **Meadow**

- Dry more rapidly than forest
- Open, little or no canopy
- Cover, but of a different variety
  - Mostly in the form of hiding within grasses
- Fewer resources than forest
- Vulnerable to visual predators here
- Potential human influence
  - Tend to be old farmland, old farm buildings
- **Who do we expect to live here?**

New England Habitats of Interest: **Sandy**

- Habitat mostly associated with river flood plains & river banks
- Dry, moisture poor soil
- Open, little canopy when present
- Less cover
- Rare in CT, making species that live here comparatively rarer!
- **Who do we expect to live here?**

New England Habitats of Interest: **Edge Habitat**

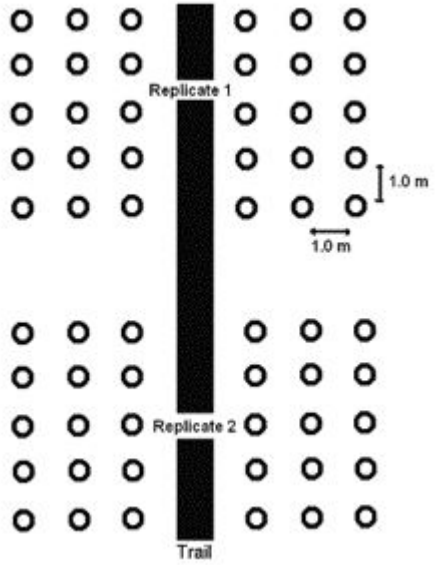
- Edge habitats are where two different habitat types come together.
  - Natural ecotones
  - Disturbed habitat
    - Agricultural fields
    - Housing developments
- Can be an area of high biodiversity, but potentially high risk
  - Bears in CT River valley towns
- Potential to be best of both worlds

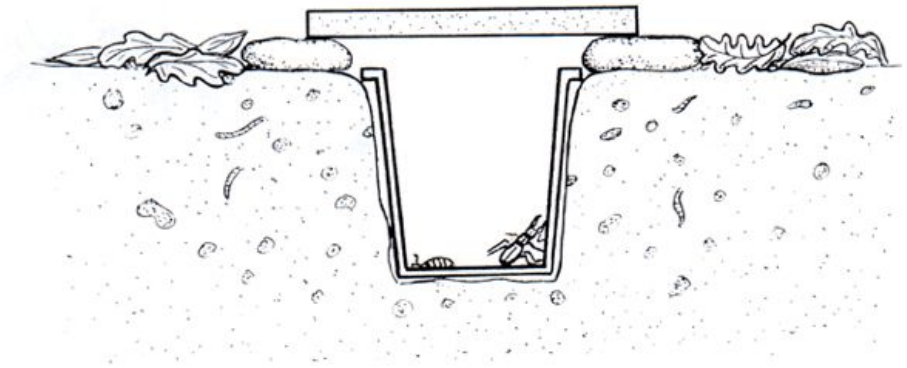
Field Herpetology Techniques & Methods

- Some sets of techniques that herpetologists employ
  - Techniques for finding / catching (other than, you know, just grabbing them)
  - Techniques for processing / taking data
  - Experimental techniques classically employed by herpetologists
- These techniques tend to be species dependent
  - Depends on **species abundance** and **movement** throughout its range
  - Depends on the unique natural history of a species

Catching Techniques: **Pitfall Traps**

- Useful for…
  - Biodiversity estimates
  - Discovering the edges of a species range
  - Finding very rare species
- Typically placed in grids
- Often using a fence to guide individuals into the bucket
- Really time intensive
  - Must constantly check, at least every 24 hrs
- Field guide page 23



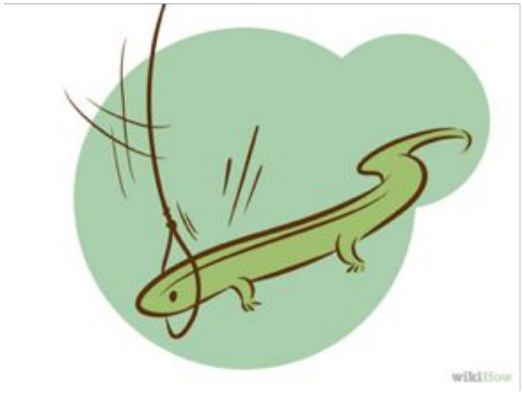


Catching Techniques: **Boards**

- Similar in use to pitfall traps, but without nearly as much effort
- Basically act as artificial cover objects
  - End up being very good basking spots
- Useful for…
  - Biodiversity estimates of snakes and/or fossorial species
- Typically placed haphazardly
  - But these are hard to hike in
- Wooden boards to metal boards typically used
- Can check at any time

Catching Techniques: **Lizard Noosing**

- Used widely to catch small, extremely fast lizards that bask
- Like it sounds - make a small noose from fishing line, slowly place it over the lizard's head, then yank!
- **DO NOT** try this on larger animals…it could result in damage or death
- Field guide pages 20 & 23



Catching Techniques: **Lizard Noosing**

Catching Techniques: **Snake Hooks & Tongs**

- Useful for large/venomous snakes
- Used in the same manner you would use your hands when handling large snakes
  - Support & manipulate the head and support the body
- Great care must be taken to avoid injury to the snake and the handler
- Field guide pages 17 & 20

Catching Techniques: **Turtle Hoop Traps**

- Used for aquatic turtles
- Can be used to accomplish the same goals as pit fall traps
    - But these are typically placed more haphazardly around turtle basking spots
- Traps are baited, then checked after 12 hours
- Adequate access to air must be ensured
- Field guide page 20 & 22

Catching Techniques: **Dip Nets**

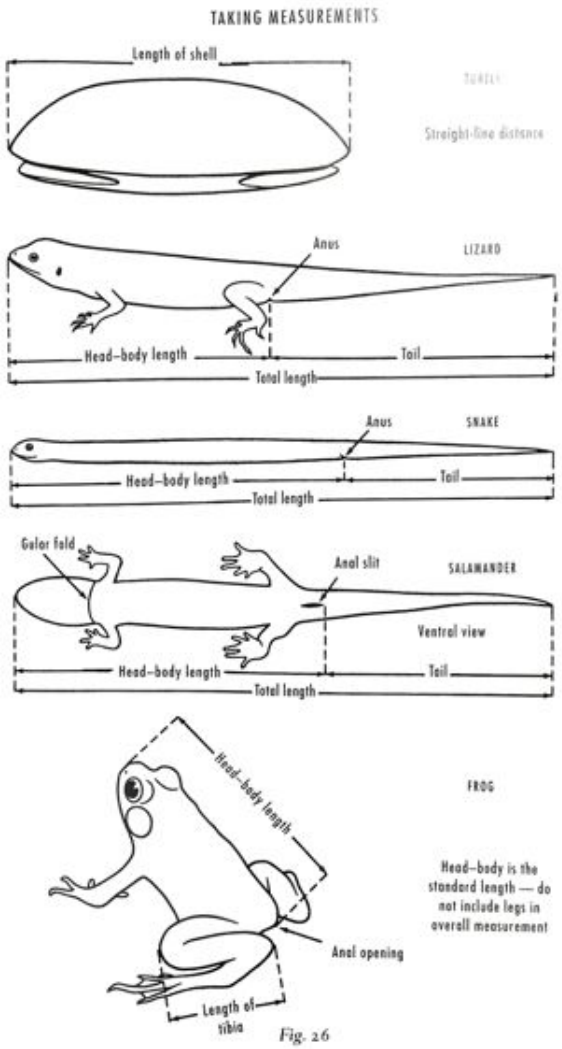
- Useful for collecting tadpoles, salamanders larvae, and aquatic salamanders (great for adult newts), or baby turtles (or, if you're Andrew, 1 ft long Wood Turtles)
- Fine mesh prevents escape and damage to captured individuals
- Field guide pages 20 and 22

Processing Technique: **Collection Bags**

- Useful for later processing after doing lots of collecting
- Lizards and snakes
  - Cloth bags (pillowcases) with a loose knot at the top
    - Animals almost immediately calm down - simulates being under a cover object
- Salamanders
  - Clear aquarium bag, place water or leaf litter inside, blow air in, then tie
- Field guide page 21

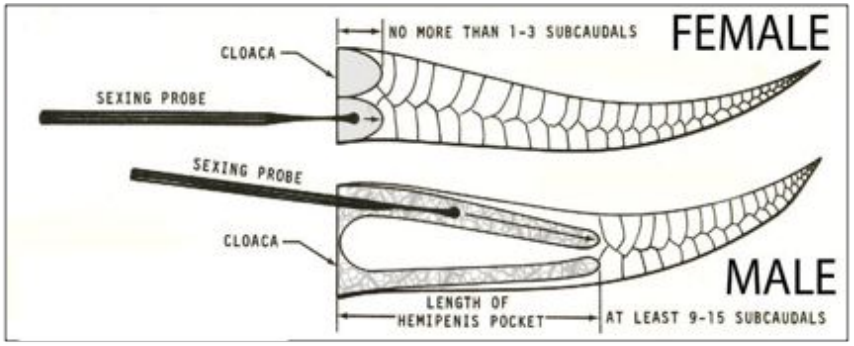
Processing Technique: **Field Measurements**

- **Snout Vent Length (SVL)** used for salamanders, lizards, and snakes
- **Shell length (head to tail)** straight line distance used for turtles
- **Head body length** used for frogs
- Field guide page 141



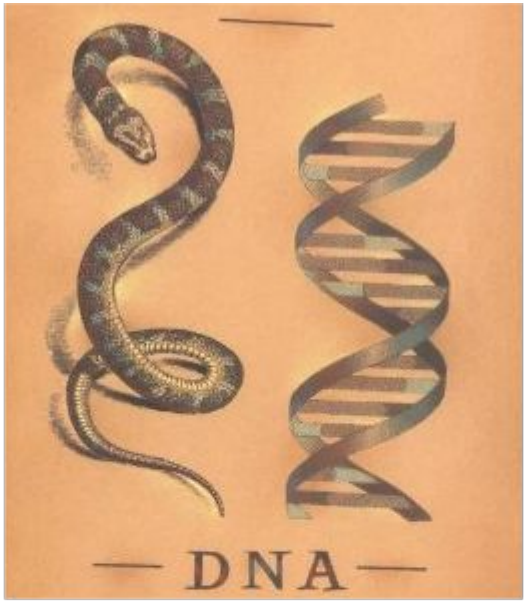
Processing Technique: **More Field Measurements**

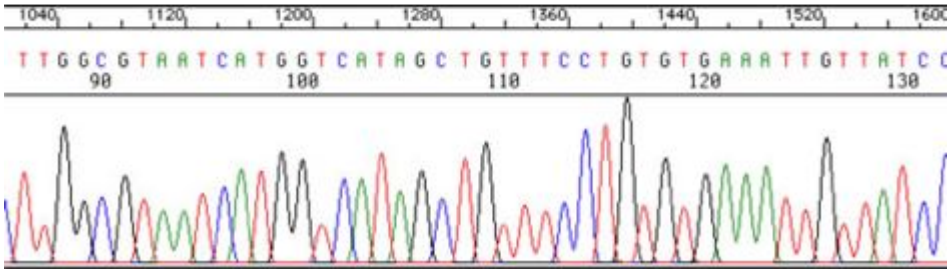
- Alternatively, take a photo with a ruler, and measure SVL later using software
- Other useful tools:
  - Field scale
  - Tube for containing snakes + metal probe for sexing



Processing Technique: **Tissue Sampling for Genetics**

- DNA sequences allow for…
  - Reconstruction of evolutionary history
  - Mapping ancestral ranges
  - Assessing hybridization





Processing Technique: **Tissue Sampling for Genetics**

	Tail clips	Toe clips	Shed skin	Blood sample
Frogs	✗	✓	✗	?
Salamanders	✓	✓ (Large only)	✗	?
Turtles	✗	✗	✗	✓
Lizards and Snakes	✓	✓	✓	?

Experimental Technique: **Mark / Recapture**

- A common method to measure population size and population range
- **Strategy:**
  - Survey an area by collecting many individuals
  - Mark/identify animals found,
  - Release animals found
  - Resurvey, note what animals you've already caught and new animals you didn't catch the first time
- **Marking the animal:**
  - Use natural markings
  - Paint the animal
  - Remove part of the animal
  - Inject a PIT tag

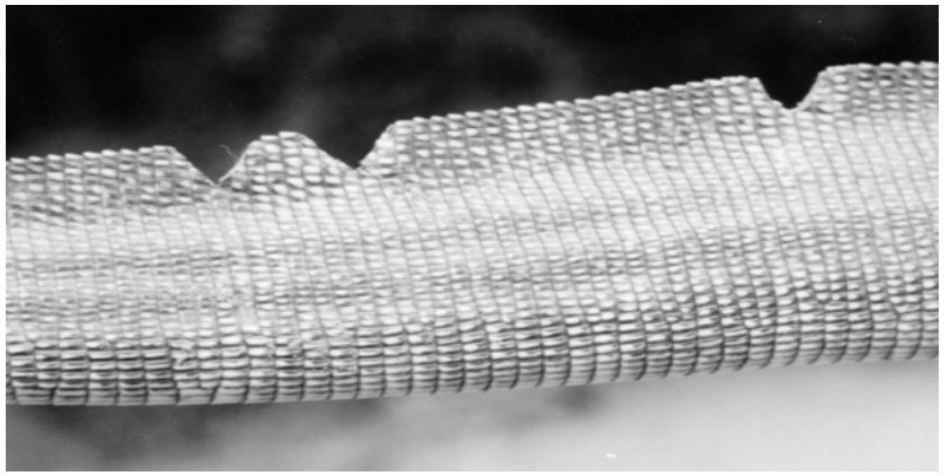
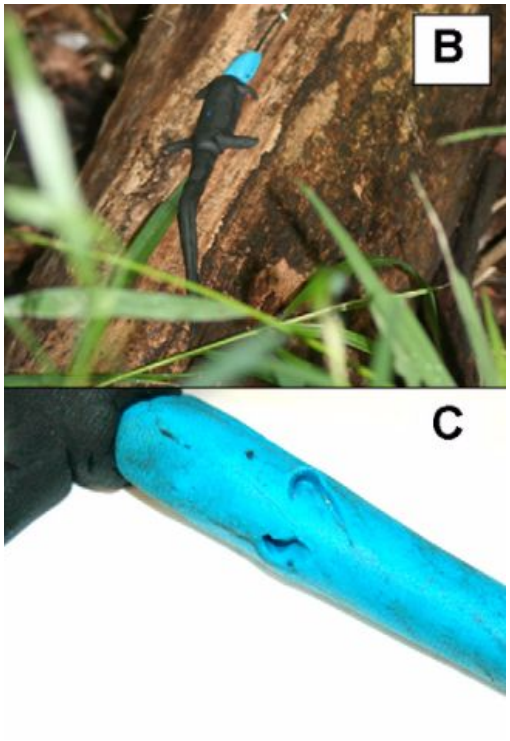
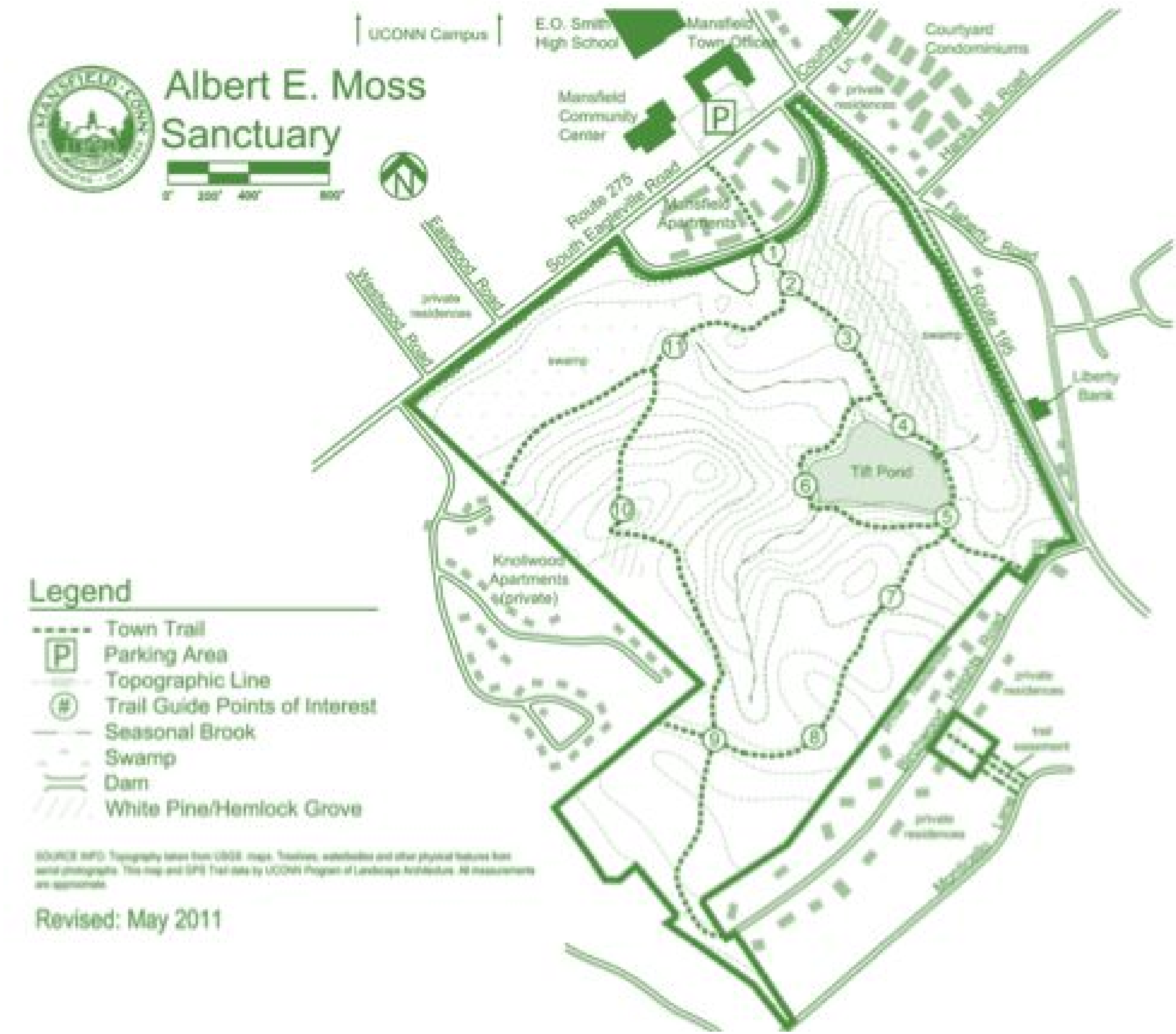


Figure 2.4: Tail notching is a cheap and harmless marking method

Experimental Technique: **Clay Replica Studies**



- A relatively recent method of studying predator-prey interaction
- **Strategy:**
  - Create clay replicas of animal you want to observe predation patterns on
  - Lay out the replicas in that animal's typical habitat, noting location
  - Recollect replicas and quantify number of predation attempts made on the replica



Albert E. Moss
Sanctuary
0' 200' 400' 800'
UCONN Campus
E.O. Smith
High School
Mansfield
Town Office
Courtyard Condominiums
Mansfield
Community
Center
P
private residences
Hunting Lodge Road
Route 275
South Eagleville Road
Mansfield
Apartments
private residences
swamp
swamp
Route 195
Liberty Bank
Tift Pond
Knollwood
Apartments
s(private)
private residences
trail easement
private residences
Legend
Town Trail
Parking Area
Topographic Line
Trail Guide Points of Interest
Seasonal Brook
Swamp
Dam
White Pine/Hemlock Grove
Revised: May 2011