Introduction
Kim Asmus M.S. 2002

Predator-prey relationship between muskrats and mussels

- Stable isotope analysis / muskrats consume mussels
- Mussels increase muskrat carrying capacity
- Sm, transient population of river otters
- Muskrat density estimate

Freshwater Mussels in Green River Drainage

- 72 species
- 53 today
- 14 T & E
River Otter (*Lontra canadensis*)

- Semi-aquatic mustelid
- 1-6 pups/year
- Relies on other animals for dens
- Valued furbearer
- Delayed implantation
- Historic Range
- Reintroductions

Justification

Mussels are in decline

Anecdotal observations suggest that muskrats decline after river otter reintroductions

\[
\text{Otter Presence} = \text{Muskrat Population} = \text{Mussel Population}
\]

Project Outline

- Continue muskrat density estimate
- Capture, release otters
- Capture muskrats
- Monitor muskrat middens
- Use of study area
- Scat analysis

Interaction?
Objectives

I. Determine the effects of river otter augmentation on muskrat and mussel populations

II. Determine the success of augmentation

Study Area

Mammoth Cave National Park

- 52 km of waterways: Green and Nolan Rivers (32.2 mi)
- 21,450 ha forested ecosystem (53,004 ac.)
- World's Largest Cave system
- World Heritage Site in 1981
- International Biosphere Reserve in 1990

Methods

- Modified #11 foot hold traps
## Methods

- Transported to Vet
- Anesthetized
- Intraperitoneal radio-transmitter implanted

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## Methods

- Spotlight surveys
- Relative index of muskrat density
- Control area

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## Methods

- Muskrat Colony traps
Methods

• Anesthetized

• Intraperitoneal radio-transmitter implanted

• Telemetry simultaneously on both species for comparison of locations

Methods

• Tennessee Cooperative Fishery Research Unit

• Predation rates

Methods

• Scent stations: 1 m²

• Multiple lures

• Resident otter trap sites were used as stations

• Telemetry
Methods

- Muskrat hair presence or absence

Methods

Estimate survival, reproduction, movement, and home range

Radio telemetry and sign/track identification
Preliminary Results

- Spotlight surveys are indicating a reduction in muskrat population
- Scent station surveys show that otters are using the area
- 16 otters tagged and relocated

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[Graph showing muskrat population over time]