Diet of River Otters in Stocking Versus Non-Stocking Season in the Youghiogheny River
Introduction
River Otters

- *Lutra canadensis* species
- *Mustelidae* family
- Other members
  - Weasels, Sea-otters, Minks, and Badgers
- Life span
  - 15 years (wild)
  - 25 years (captivity)
Physical Attributes

- Fur
  - Light to dark brown
- Height
  - 40 inches long and 10 inches in shoulder height
- Weigh
  - 10 to 25 pounds in weigh
- Size
  - Females are smaller than males
Physical Attributes (continued)

- Sensitive whiskers
- Scent gland
- Delayed implantation
- Sharp teeth
- Web feet
Habitats

- Lake edges
- Rock piles
- Steep slopes
- Beaver dens
- Isolated areas
- Wilder territory
- Clean water
Diet

- **Main prey items**
  - Fish (winter)
  - Crayfish (summer)

- **Secondary prey items**
  - Invertebrates
  - Small mammals
Ectothermic (cold-blooded)

- Occurs when body temperature changes due to outside temperature
  - Summer
    - Warmer and faster
  - Winter
    - Colder and slower

Source: science.nasa.gov
Population Declines

- Nearly extinct in PA
- Average population of 375
  - Researched in 1978
  - Confined to Northeast
- Pollution of water
- Trapping for fur
  - Outlawed in 1952
Reintroduction

- 22 otters in Pine Creek (North Central PA)
  - May 1983 – July 1984
Gamefish

- Fish that:
  - Are hunted for fun
  - Have desirable taste
  - Have regulations for capture
Fishermen Opinion

- Reintroduction caused worry
  - River otters lived in rivers
  - River otters preyed on fish
  - Gamefish population decreased in river
Ohiopyle State Park

- Large portion of study site
- Fish Present
  - Bass
  - Yellow perch
  - Bluegill
  - Stocked trout
    - Rainbow
    - Brown
The Youghiogheny River

- Data collected from this 11 mile stretch

- Ohiopyle State Park to Confluence, PA
Gamefish in our Study

- Trout (*Salmonidae*) family
  - Only gamefish stocked
  - Any *Salomindae* scale found in scat is either brown and rainbow trout
Stocking Schedule

- April 5- June 29
- February
- Rainbow and brown trout
Stocking Season Rationale

- Stocked continuously each month multiple times
- Recorded by Pennsylvania Fish and Boat Committee through 2008
- Found record that river was stocked 2001
Purpose

- See if there is a difference in trout consumed during stocking season versus non-stocking season
Hypotheses

- Null: The river otters will eat the same amount of trout in the stocking season and non-stocking season.
- Alternate: The river otters will eat more stocked trout in the stocking season than the non-stocking season.
Methods
Time of Collection

- April-November 2000
- January-June 2001
Sampling

- Population of otters along the Youghiogheny River
  - 54 total samples
    - 27 from stocking season
    - 27 from non-stocking season
Procedures

- Collected the scat (Dr. Serfass)
- Put the scat in a glass beaker with three drops of soap
- Filled beaker half full with hot water
Procedures (continued)

- Placed under hood overnight
- Strained and rinsed
- Repeated process
Procedures (continued)

- Dried for three nights on paper towels
- Examined the scat
Analyzing the Scat

- Dissecting microscope
- Presence/Absence chart
- Fish identification chart
  - Made by Christina Fairbanks (2011)
### Fish Identification Data Chart

<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Season</th>
<th>Salmonidae (Trout family)</th>
<th>Catostomidae (Sucker family)</th>
<th>Cyprinidae (Minnow family)</th>
<th>Percidae (Perch family)</th>
<th>Cantrarcanidae (Sunfish family)</th>
<th>Crayfish</th>
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**Notes and observations:**
- For 21, maybe more of scales?
- 140 = Bones of scales?
- 145 = Little stuff in flesh?
- 200 is a good example of what is being measured.
Fish Identification Families

- *Salmonidae* (Trout)
- *Centrarchidae* (Sunfish)
- *Cyprinidae* (Minnow)
- *Percidae* (Perch)
- *Catosomidae* (Sucker)
- Crayfish
Confidence Intervals

- Used 95% intervals

- 95% of the time data will fall between the bars

- Microsoft Excel calculated the percentages
Prey Present

- Percentages
- Presence/Absence

<table>
<thead>
<tr>
<th>Sample #</th>
<th>Salmonidae (trout family)</th>
<th>Catostomidae (suckerfish)</th>
<th>Cyprinidae (minnow)</th>
<th>Percideae (Perch)</th>
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Results
## Percentages of Fish Scales in Scat

Table 1.- The percentage of fish scales found in stocked and non-stocked samples

<table>
<thead>
<tr>
<th></th>
<th>Salmonidae</th>
<th>Catostomidae</th>
<th>Cyprinidae</th>
<th>Percidae</th>
<th>Centrarchidae</th>
<th>Crayfish</th>
<th>Total Samples</th>
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<tbody>
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<td><strong>Stocked</strong></td>
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<td>0</td>
<td>3</td>
<td>5</td>
<td>26</td>
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<td><strong>Unstocked</strong></td>
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<td>5</td>
<td>4</td>
<td>26</td>
<td>27</td>
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<tr>
<td>% Stocked</td>
<td>11.11%</td>
<td>3.70%</td>
<td>0.00%</td>
<td>11.11%</td>
<td>18.52%</td>
<td>96.30%</td>
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<tr>
<td>% Unstocked</td>
<td>11.11%</td>
<td>0.00%</td>
<td>3.70%</td>
<td>18.52%</td>
<td>14.81%</td>
<td>96.30%</td>
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</table>
Overlapping Confidence Intervals

- No difference
- Possible range in data
Comparison of Prey Items of River Otters Between Stocking and Non-Stocking Season

Consumption by Percentage

Prey Families

- Salmonidae (Trout)
- Catostomidae (Suckerfish)
- Cyprinidae (Minnow)
- Percidae (Perch)
- Cambrachidae (Sunfish)
- Crayfish

% Stocked
% Unstocked
Conclusions & Discussions
Conclusions

- Accept null hypothesis
- Reject alternate hypothesis
- No difference
  - 95% intervals overlap
  - Same amount of stocked trout
Limitations

- Collect more data
  - Could be clearer
  - Could be more accurate

- Use fresh scat
  - May include more intact scales
  - May show more current trends
Suggestions for Future Studies

- Dry our own scat
  - Can have fresh scales/bones to examine
  - Can have more accurate data

- Use different rivers
  - May affect results or data
  - May change stocking schedules
  - May stock different fish
Suggestions for Future Studies (continued)

- Identify crayfish
  - Different Species
  - Species preference
References Cited

Questions?