Freshwater Turtle Population in an Urban Lake and the Benefits of Installing Basking Logs

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Abstract: In the recent years, the impact humans have on other species has become an ever increasing aspect of ecology. Reptilians have not had the study like that of other taxa due to their enigmatic behavior, including their avoidance of the public. In this study we focused on the population of freshwater turtles and their basking behavior with the installation of basking logs in Centennial Lake on the campus of Rider University in Lawrenceville, New Jersey. The population of Eastern Painted Turtles (Chrysemys picta picta) was female biased which differs from prior research in urban areas. The installation of basking logs showed that interspecific competition occurred and adults will relegate juveniles to a less preferable basking log closer to human activity. Our data suggests that the location of a basking log is essential to its usefulness and that urban water bodies may not be male based as previously thought.

Introduction

Freshwater turtles among most threatened vertebrate clades due to increased anthropogenic activity. Human actions result in alterations in basking, feeding, and reproduction. Removal of basking sites from water lead to decline in recruitment. Basking on land is dangerous for turtles due to increased chance of encountering predators and humans. Goals of Study:

• Identify population dynamics of freshwater turtles at Rider University before and after installing basking logs
• Observe the basking behavior on installed basking logs

Methods

Sample Site: Centennial Lake at Rider University, Lawrenceville, New Jersey

• Built in 1965 and restored in 2000
• Trapping conducted in August and September of 2012 and 2013
• Followed TurtlePop Protocol

Installation of Basking Logs:

• A fallen tree located on Rider’s campus was cut into two pieces
• Two I-bolts and steel cables connected cinderblocks to the logs so they would remain stationary in water
• First log installed on April 25 and second log installed on June 25, 2013
• Observations of basking turtles began at the end of May and continued until the middle of August
• Timing of observations varied based on availability and weather and conducted in hour-long shifts throughout day
• Data recorded when individual turtle started or finished basking on log

Results

Table 1: Collection data from 2012 and 2013. Recaptures not included in data set.

<table>
<thead>
<tr>
<th>Species</th>
<th>Adult Male</th>
<th>Adult Female</th>
<th>Juvenile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Painted</td>
<td>4</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Red-Eared Slider</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Common Snapping</td>
<td>4</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Figure 6: Differences in observed sightings of eastern painted turtles (C. picta picta) on each basking log. Log 1 indicates the log that was placed in the middle of Centennial Lake while Log 2 is the log placed along the shoreline. Data shown is the total number of sightings not the number of different individuals. Observations were conducted using binoculars from the shoreline during the summer of 2013. Figure show means ± standard error.

Discussion

Population Demographics of C. picta picta

• Population was not male biased as other studies have shown
• Females could be abundant due to availability of nesting sites without travelling far
• Juvenile populations could not accurately be determined

Basking Observations

• Decline in observed basking individuals most likely caused by environmental factors
• Macroalgae bloom provides enough solar radiation to raise their internal temperature while limiting their exposure from water

• Bird species that reside at Centennial Lake compete for space on basking logs

Further Research

• Another year of trapping will attempt to identify the cause of the decline in specimens trapped from 2012 to 2013
• Further observations of basking individuals will allow confirmation if logs are chosen selectively

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Works Cited