Home Range and Habitat Use of Immature Green Sea Turtles (Chelonia mydas)

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Background Information

Home range in this area an animal normally occupies over a given time period, excluding atypical movements. Home range is influenced by an animal’s need to reduce energetic expenditure while increasing energetic intake when performing all activities. This study focuses on the home ranges of individual green sea turtles which will help to determine how and why turtles occupy these specific areas.

Methods: Acoustic Telemetry

The presence of predators can be very influential when organisms are deciding their home range (Fig. 3). Turtles avoid areas where predators are found. Individual size of turtles may affect how they react to predation. Habitat structure is another influential structure related to predation.

Results

In this study, acoustic transmitters were attached to 12 different turtles. Of these 12 turtles, 4 experienced tag loss or migrated away from the study site. The turtles ranged from 34.2 cm to 57.6 cm in straight carapace length. Each individual turtle had a unique home range. In this study it was also found that tidal fluctuations influenced both small and large turtles differently. All turtles monitored:
- Prefer shallow edges compared to the deeper center
- Readily make use of habitats exposed when tide is high
- Small turtles monitored (Fig. 4):
  - Reside in shallow, near shore waters, at mouth of creek
  - Can be found farther up creek when tide is high
- Second smallest turtle (#20) was found farthest up the creek

Large turtles monitored (Fig. 3):
- Prefer slightly deeper waters than small turtles, but still stay close to shore
- Largest turtle (#4) was never found in the creek or flats area

Habitat Structure

Table 1: Comparison of Home Range and Straight Length (cm) of all turtles in the study

<table>
<thead>
<tr>
<th>turtle</th>
<th>SCL (cm)</th>
<th>TRL (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>47.1</td>
<td>138.3</td>
</tr>
<tr>
<td>#2</td>
<td>46.3</td>
<td>140.0</td>
</tr>
<tr>
<td>#3</td>
<td>44.1</td>
<td>127.7</td>
</tr>
<tr>
<td>#4</td>
<td>57.6</td>
<td>155.5</td>
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<td>#5</td>
<td>46.3</td>
<td>140.0</td>
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<tr>
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</tbody>
</table>

Discussion & Conclusion

Our findings indicate that home range is influenced by:
- Individual size
- Tidal and temperature fluctuations
- Habitat characteristics

Individual size influenced where in Starved creek each turtle chose to reside. Smaller turtles may be more vulnerable to predation than larger turtles (Bresette et al. 2010). Smaller turtles choose to inhabit shallower waters where predators are unable to manoeuvre easily (Fig. 14). Larger turtles reside in deeper waters where they have more manoeuvrability and room to swim (Bresette et al. 2010).

Another factor influencing habitat selection is foraging opportunities. Seagrass is not highly abundant at Starved Creek, but can be found around the creek mouth and shore line. Sea turtles will try to stay where sea grass is more abundant, but will balance that decision with avoiding predation (Meledius 2007).

In conclusion:
- A turtle’s home range is influenced by individual size in regards to predation, foraging opportunities, and habitat structure
- This information can help us understand the affects risk such as coastal developments, have on juvenile sea turtle populations and can lead to more effective conservation practices

Acknowledgements

Thank you to the following people for assistance and support throughout our study:
- Amelie Brundy: CIU turtle manager
- Dr. Michael Salmon, Florida Atlantic University
- Alije Ginis, Progress series 242, 253-256
- The Kakabeka Environmental Institute
- The Island School
- National Sea Turtle Foundation

Citations


