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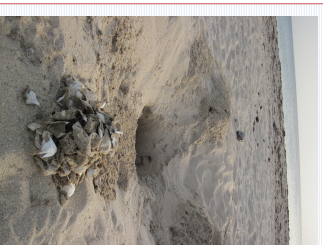
Size and weight changes of leatherback hatchlings among emergence groups

Objective

To determine how leatherback hatchlings change physically with time post-first hatchling emergence.

Abstract

In ideal leatherback sea turtle nests, all the hatchlings move together as a single group through the sand to leave the nest. Often, though, hatchlings emerge in two separate groups hours or days apart while others remain stuck in the sand where they may die unless they are dug out (excavation). First emergence groups spend the shortest amount of time in the sand while excavated hatchlings spend the longest amount of time in the sand (typically three days longer than first emergence hatchlings). Individuals from each of the separate emergences were weighed and measured (carapace only) in order to compare physical changes among the different emergence groups. It was found that hatchlings that spent more time in the sand weighed less and had narrower carapaces than those hatchlings which emerged earlier from the same nest. These physical changes may reflect lower fitness and decreased survivability.



Results

- First emergence groups were, on average, heavier with wider carapaces than later emerging groups.
- No significant changes in length or depth of carapace were present.

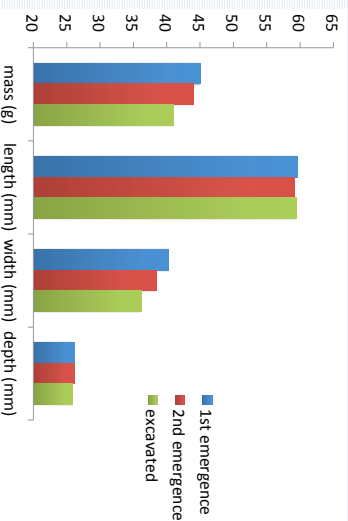


Figure 1: average mass and carapace length, width and depth for each of the three hatchling emergence groups

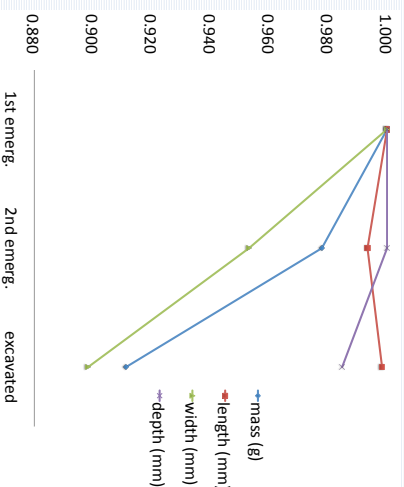


Figure 2: Mass and size as percent of first emergence hatchling group

Materials and Methods

- Hatchling emergence groups:
 - 1st hatchling group: first to reach surface of sand and leave nest.
 - 2nd emergence: hatchling group to emerge one or two days after first group.
 - Excavated group: hatchlings excavated from nests three days after date of first emergence.
- Weigh and measure hatchlings:
 - Hanging spring scale to measure mass (estimated to the nearest whole gram).
 - Digital callipers to measure carapace length, width, and depth (measured to nearest tenth millimeter).
- Sample sizes:
 - Maximum limited to 12 hatchlings from each emergence group.
 - Minimum sample size was nine (data was collected only for groups with nine or more hatchlings).
- Data analysis:
 - Calculations include all hatchlings of their respective emergence group.

Conclusion

- Mass and width decrease are likely due to dehydration and consumption of absorbed yolk sac.
- Decreased mass and width expected to correspond to decreased vigor and survivability.
- Future studies should focus on vigor related to emergence groups and survivability of hatchling from the different emergence groups.



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