Sea Turtle
Natural History

Outer Banks Center
for Wildlife Education
Sea Turtles

- reptiles (air breather, cold blooded, lay eggs)
- have flippers, not legs with 5 claws
- if healthy, they only come ashore to nest (except for Pacific greens who haul out to sun bathe)
- protected in US waters by the Endangered Species Act of 1973
- 7 species found world-wide
• All species of sea turtles follow the same generalized life cycle.

• There are three primary habitats sea turtles utilize during different stages.
  • Beach
  • Open Ocean
  • Coastal waters

• The following slides generalize the typical life cycle of sea turtles.
Nesting occurs from May to September, primarily at night with the exception of the Kemp’s Ridley.

Mean clutch size varies from about 85 to 150 ping pong ball-sized eggs.
• Incubation takes 49 to 70 days with 61 being about average for northeast NC.

• Temperature-Dependent Sex Determination: Loggerhead Pivotal Temp = 84.6°F
• Hatchlings pip out of their eggs a few days before they emerge from the nest at night.
• Hatchlings rely on elevation and light cues (brighter horizons) to find the ocean.
• Once in the water, hatchlings stop using light cues for orientation.
• Hatchlings use wave orientation to get offshore.
• Once offshore, they then rely on magnetic orientation to navigate the ocean.
• After orienting, hatchlings begin a 24 to 48 hour swimming frenzy.
“The Lost Years” refers to the time hatchlings spend out in the ocean riding currents in the North Atlantic Gyre.
• How long they ride the currents is still unknown. Estimates range from 3-13 years.
• Loggerheads return to NC coastal waters when they reach about 2ft CCL.
• Greens return to NC coastal waters when they reach about 1ft CCL.
• Turtles leave the currents and head for shallow waters on the continental shelf.

• Turtles spend most time feeding until they reach sexual maturity around 15-40 years.

• Loggerheads feed on the ocean bottom eating crabs, whelks, and the occasional fish and even jellyfish.
- Loggerheads mature on avg.* around 35 years (70 -100 cm)

- Turtles typically migrate offshore of their nesting beaches, find mates, and about a month later...
- Nesting females come ashore to lay nests.

- They return to the nesting beach in 2 week intervals for an average of 4 visits/nests during the season.
• After nesting, turtles travel back to their foraging grounds in warm waters along the continental shelf.

• After recouping and restoring energy, loggerheads begin the mating & nesting process over again.

• Nesting seasons typically occur in intervals of 2 to 3 years.
Then the cycle begins again!
Turtle Talk

Common topics discussed on the beach

**Natal Homing**
when a turtle returns to lay eggs on the very same beach it hatched from

**Nest Site Fidelity**
when a turtle returns to the same beach to lay her nests year after year (it may or may not be her natal beach)

**Current Evidence**
There is evidence that sea turtles exhibit both these behaviors however not all of them do. We have seen some turtles in our DNA study lay nests within the same 3 miles of beach and others nest in 4 different states all in one season.
Turtles lay an average of 4 nests per summer

DNA Project
- Turtles laid anywhere from 1 to 9 nests in a single season
- As you move north, the average number of nests per female decreases
  - SC – about 4.5 nests/female
  - NC – about 4.2 nests/female
  - Pea Island and NEST – about 2 nests/female

Turtles nest every 2-3 summers
- DNA project results is consistent with this on average but a few turtles have nested consecutive summers and one turtle took 8 years between nesting
Turtle Talk
Common topics discussed on the beach

How old do sea turtles get?
Not 150 years young!
Turtle Talk

Common topics discussed on the beach

How old do sea turtles get?

*Loggerheads from mid-Atlantic – avg. 57 years (max 83 yrs)*
## Turtle Talk

*Common topics discussed on the beach*

<table>
<thead>
<tr>
<th>Species</th>
<th>Size and Age at Coastal Recruitment</th>
<th>Size and Age at Sexual Maturity</th>
<th>Life Span</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kemp’s</td>
<td>21 cm (8 1/4 in.) 1 year</td>
<td>56-66 cm (1.8-2.2 ft)</td>
<td>9-18 yrs</td>
</tr>
<tr>
<td>Hawksbill</td>
<td>21.4 cm (8.4 in.)</td>
<td>79-89 cm (2.6-2.9 ft)</td>
<td>14-20 yrs</td>
</tr>
<tr>
<td>Loggerhead</td>
<td>44-67 cm (1.4-2.2 ft) 8-19 yrs</td>
<td>75-105 cm (2.5-3.25 ft)</td>
<td>23-51 yrs</td>
</tr>
<tr>
<td>Green</td>
<td>20 - 30 cm (8-12 in.) 1-7 yrs</td>
<td>85-102 cm (2.8-3.3 ft)</td>
<td>36-44 yrs</td>
</tr>
</tbody>
</table>

Loggerhead figures - Avens et al. (2015) & Avens et al. (2013); Green figures - Goshe et al. (2010) and OBX stranding data; Kemp’s and Hawksbill – Biology of Sea Turtles Vol. 3 (2013)
Turtle Talk

Common topics discussed on the beach

One hatchling in a thousand survives to adulthood
Take a little salt with this figure. Consider it ‘bar math’.
Sea Turtles of NC

5 species

• loggerhead (Caretta caretta)
• green (Chelonias mydas)
• Kemp’s ridley (Lepidochelys kempii)
• leatherback (Dermochelys coriacea)
• hawksbill (Eretmochelys imbricata)
• hybrids
• Loggerheads seen in NC are mostly immature turtles with straight length around 2-2.5 ft
• Likes to eat crabs, horseshoe crabs, whelks
• Appear May to late fall, then head to warm currents
• Classified as threatened both federal and state law

Loggerhead

• Most common sea turtle in NC
• Grow up to 4 feet in length and weigh up to 250 pounds
• 2nd most common turtle to nest in NC
• maximum size of about 4 feet and a weight of 350 lbs
• immature greens are found throughout NC coast with an average shell size just under 1 ft
• eats sea grasses and algae, makes its fat green
• appears especially in late summer and early fall
• classified as threatened under federal and state law
Leatherback

- Largest sea turtle
- Can reach 4.5 to 5 feet in length and 500 to 2000 lbs
- Typically nest in the tropics but reported nests in NC have increased over the past decade
- Love to eat jellyfish
- Appear primarily in May and June as they migrate north (can tolerate arctic waters)
- Classified as endangered federal and state law
KEMP’S RIDLEY

- most endangered sea turtle
- adults reach about 2 feet and weigh up to 100 lbs

- in NC are mostly juvenile and sub-adult turtles found in coastal waters and estuaries (~10-15 in.)
- likes to eat blue crabs
- appear May to late fall, then head to warm currents
- classified as endangered both federal and state law
HAWKSBILL

- least common sea turtle in NC
- average about 2½ ft and weigh between 100 to 150 lbs

- has been documented in NC but is rare (fewer than 10 are documented in our stranding database)
- relatively small head with a distinctive hawk-like beak
- feed primarily on sponges and is most often associated with the coral reef community
- classified as endangered under federal and state law
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<th>Size and Age at Sexual Maturity</th>
<th>Life Span</th>
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</thead>
<tbody>
<tr>
<td>Kemp’s</td>
<td>21 cm (8¼ in.) 1 year</td>
<td>60 cm (2 ft) 15 yrs</td>
<td></td>
</tr>
<tr>
<td>Hawksbill</td>
<td>21.4 cm (8½ in.) -</td>
<td>83 cm (2.5 ft) 17 yrs</td>
<td></td>
</tr>
<tr>
<td>Loggerhead</td>
<td>55 cm (1.8 ft) 13 yr</td>
<td>90 cm ♀ (3 ft) 96 cm ♂ (3¼ ft)</td>
<td>about 60 yrs, some well into 70s</td>
</tr>
<tr>
<td>Green</td>
<td>29 cm (10 in.) 3 yr</td>
<td>90 cm ♀ (3 ft) 100 cm ♂ (3¼ ft)</td>
<td>40 yrs</td>
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Loggerhead figures - Avens et al. (2015) & Avens et al. (2013); Green figures - Goshe et al. (2010) and OBX stranding data; Kemp’s and Hawksbill – Biology of Sea Turtles Vol. 3 (2013)
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