



# The Epic Journey Begins

An approaching storm portents the perils hatchlings will face in the vast Atlantic Ocean.

**BY SALLY R. MURPHY**

It is mid-summer and female loggerheads are continuing to come ashore to nest along the Georgia and South Carolina coasts. Nests that were laid earlier in the spring are now beginning to hatch. The sequence of events that take place for hatchlings during incubation, emergence, their first swim and the early years of their life is truly an epic journey.



Without protection, many nests are eaten by raccoons.



Hatchlings, "boiling" from this nest at night, are unaware of the night scope capturing the start of their journey.



When reaching floating Sargassum weed mats offshore, the hatchling's various hues of brown will be perfect camouflage.

Beneath the warm sand, most of the nests are safe. A few unlucky ones have been eaten by raccoons, ghost crabs, and foxes or were washed away by spring tides. During the middle of their 60-day incubation, an amazing response takes place. The temperature within the egg chamber determines the sex of the hatchlings. Warmer temperatures produce females and cooler ones produce males. Several factors can influence this outcome. These include: 1) the position of the eggs within each nest where the upper eggs are warmer and the bottom ones are cooler, 2) local rain showers, 3) a sunny or shady site on the beach or 4) the time of the season they were laid, with more males being produced from May and August nests and more females from June and July nests.

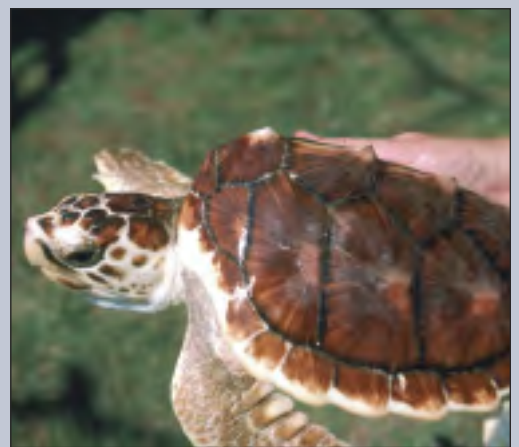
The temperature also determines how fast the embryos develop. The temperature within the nest is not necessarily uniform. The upper eggs may be a degree warmer than the lowest ones and you would think they would hatch first, but this is not the case. By some mysterious means, the tossing and turning of each embryo inside its egg bumps the ones around it, and this synchronizes their development so that they all come out of their eggshells at about the same time. They rip open the shell with an egg tooth that is located on the end of their beak.

Once out of the egg, they must rest and absorb the remaining yolk sack that is attached to their plastron, or lower shell. They also need time for their upper shell, or carapace, to straighten out from being confined in the round egg. After a few days they begin the first part of their journey, to dig out of the sand. As they scratch at the roof of the chamber, sand sifts down and builds up the floor. They do this as a group, and one stimulates the other to start digging again.

As they near the surface, the upper layer sinks to form a saucer-like depression. This is a sign that the hatchlings will soon emerge. When they are near the surface during the day, the heat of the sand stops their movements. As night comes and the surface sand cools, that is the cue for them to emerge. This usually occurs between 10 p.m. and 2 a.m. Emerging at night avoids the birds that would snatch them up during the day. There are still dangers on the beach at night. Raccoons and ghost crabs can kill a few hatchlings as they make their way down the beach. That's another reason why there is "safety in numbers" as they all scramble together.



This post-hatchling is growing fast in the safety of the Sargassum.



This beautifully colored "dinner plate" size loggerhead inhabits the eastern Atlantic, not our coastal waters

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To find the ocean, the hatchlings rely on several cues. A high, dark profile behind them and the slope of the beach start them off in the right direction. The most important is the amount of light ... the dim light of reflected stars and moonlight over the water. Since sea turtles evolved when there was no electricity, an artificial light source can over-power the natural light and cause them to go in the wrong direction. That is why it is so important for residents and visitors to abide by local lighting ordinances and turn off exterior lights and draw their drapes so that hatchling will not go the wrong way to a certain death.

Their run down the beach is also important for them to have the correct orientation once they are in the water, so do not carry hatchlings down to the water's edge. As they feel the first rush of waves, their crawling motion changes into a swimming stroke. The waves tumble some about, but they right themselves and try again. When there is enough water under them, the waves actually help them get offshore. They will dive as the waves break and then the undertow draws them out into deeper water.

Once beyond the breakers, they orient into the waves to help them get offshore. They also begin what is known as a "swimming frenzy." They will swim continuously for 24 to 36 hours. This takes them well offshore and away from coastal predatory fish. It also brings them to the mats of Sargassum where they find food and cover. Unfortunately, they also find tar, plastics and other

marine debris that they may try to eat.

Young loggerheads can also detect the earth's geomagnetic field. Both the strength of the field and its inclination angle acts like our latitude/longitude system to let them know where they are in the ocean. As the Gulf Stream slowly carries them, they begin another epic journey to the other side of the

Atlantic Ocean in the north Atlantic gyre.

This part of their lives was once called the "lost year." Through tagging studies and genetic research, we now know it is a decade and they are no longer lost! Our hatchlings spend the first 7-12 years of their lives around the Azores, Canary Islands, and Madeira and even go into the western end

of the Mediterranean Sea. They are feeding mostly on jellyfish. When they are too large for this food source to sustain them, the southern portion of the gyre system returns them to the eastern seaboard of the United States.

Here, mingling with cohorts from Florida, they will covert to feeding on crabs, mollusks and other bottom-dwelling animals. When they are mature, at about 30 years of age, they will return to their natal region to mate, nest and start the cycle again.

To learn more about loggerheads, other sea turtle species, and follow their movements by satellite telemetry, go to <http://www.seaturtle.org/>. ■

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