

Green Sea Turtle Migration

1. Green sea turtles, shelled reptiles that plowed the oceans eons before mammals evolved, are known for their prodigious migrations. One group of green sea turtles makes a regular journey from feeding grounds near the Brazilian coast to breeding beaches on Ascension Island, a barren, relatively predator-free island in the central equatorial Atlantic. Notoriously slow on land, these turtles cover a distance of more than 2,000 kilometers in as little as two weeks. But how is this navigation of deep, featureless ocean accomplished? Scientists have several different hypotheses.

2. Green turtles appear to have an excellent sense of smell, so the turtles may orient themselves by detecting traces of substances released from Ascension Island itself. Because Ascension Island lies in the midst of a major westward-flowing ocean current, scientists believe that chemical substances picked up from the islands would tend to flow westward toward the feeding grounds of the turtle. As a result, these substances may provide a scented chemical trail that the turtles are able to follow. A mathematical model has been used to show that a concentration of substances delivered from Ascension to the turtles' feeding grounds, though diluted, may be sufficient to be sensed by the turtles. However, it is likely that other factors help the turtles orient themselves.

3. In addition to possessing a strong sense of smell, the turtles also have keen eyesight. This may help direct the turtles from their feeding grounds into the path of this chemical trail. It is an established fact that turtles are capable of distinguishing between different light densities. Turtles recognize at least four colors and are especially attuned to the color red because it often appears in their shell coloration. Researchers believe that these turtles swim east toward the rising sun at the beginning of their migration, changing course toward Ascension's beaches as soon as their route intersects with the scented path.

4. Finally, turtles may also have the ability to orient themselves using Earth's magnetic field. Since this sense is deeper than either sight or smell, it may serve as an additional guide during cloudy days or times when the turtle has difficulty picking up the scent trail. Experimental results have shown that turtle hatchlings have the ability to use magnetic fields to determine the direction in which they are swimming. Furthermore, since turtles are known to return to the exact beach from which they hatched, they may "imprint" the magnetic field of this particular beach at a very young age.

5. Green sea turtles are an endangered species, and their numbers are steadily decreasing throughout the world. Understanding how they accomplish their migrations will allow scientists to make intelligent recommendations to policy makers and help ensure the survival of this magnificent animal. For example, since the turtles use light to navigate, they are especially vulnerable to light pollution from coastal developments. Similarly, their acute sense of smell means that an excessive amount of foreign materials in the water may disorient them. Human decisions in the coming years will determine whether the seas will continue to be inhabited by the green sea turtle or if its celebrated migrations will be only a memory.

1. Which statement best describes the central idea of the passage?
 - A. Green sea turtles are an endangered species that cannot survive if their natural habitat continues to be polluted.
 - B. The green turtle's outstanding eyesight and sense of smell have evolved over many eons.
 - C. The tropical weather in the central equatorial Atlantic is an integral part of the 2,000-kilometer ocean migration.
 - D. The migratory behavior of green sea turtles is made possible by a variety of factors.

2. What is the most likely reason green sea turtles breed on Ascension Island?
 - E. There is an abundance of food there.
 - F. It has a cooler climate than Brazil.
 - G. The turtles have fewer natural enemies there.
 - H. Its beaches are cleaner than Brazil's beaches.

3. The phrase "several different hypotheses" conveys the idea that
 - A. scientists have not fully tracked the migration patterns of green sea turtles.
 - B. green sea turtles use their sense of smell to compensate for their poor eyesight.
 - C. knowledge about green sea turtles is limited by a lack of scientific evidence.
 - D. there is more than one way to explain how green sea turtles navigate toward their breeding grounds.

4. What is one way turtles find the trail of chemical substances that are released from Ascension Island?
 - E. the position of the rising sun
 - F. an instinctive sense of direction
 - G. the path of underwater ocean currents
 - H. a mathematical model

5. Turtles are especially sensitive to the color red most likely because
 - A. it helps them identify other turtles.
 - B. it is the most intense of the primary colors.
 - C. it matches the colors of the rising sun.
 - D. it seems more attractive than other colors.

6. Jeremy sold 100 ice cream bars on day 1, 200 on day 2, 157 on day 3, and 244 on day 4. Find the mean, median, and range of the number of ice cream bars he sold on those 4 days.

7. I have 10 blue marbles, 4 green marbles, and 7 red marbles. Find the probability that, randomly, I will pick:
 - a) A green marble
 - b) A marble that is not red
 - c) 2 blue marbles in a row.