

Male sea turtle numbers decline as Earth's temperatures heat up

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Image 1. A marine biologist holds a hatchling in Boa Vista, Cape Verde. Photo by: Danielle Paquette/Washington Post

BOA VISTA, Cape Verde — She emerged from the ocean just before midnight. The sea turtle clambered up the shore as her ancestors have for 200 million years.

She arrived to lay eggs on the beach. She dodged plastic, fishing nets and oil spills to get here. Yet another threat to her species lurks in the ground. Warming sand temperatures have started changing the gender of the turtle babies.

"This nest will be 100 percent girls," whispered a biologist crawling next to the pregnant reptile.

Scientists predict that as the Earth gets hotter because of climate change, this will happen more often. Turtle hatchlings worldwide will more likely hatch as females. This threatens their survival.

The tiny West African island nation of Cape Verde is home to one-sixth of the planet's nesting turtles. Here, the imbalance in the sexes of hatchlings is already visible. In July, researchers from Great Britain's University of Exeter found that 21 out of 25 youngsters are now female.

Populations in Florida and Australia are also showing huge differences in genders. The gap is sparking fears that the creatures that outlived dinosaurs are headed toward extinction.

Male Turtles Could Be Completely Wiped Out

"Males here could vanish in two or three decades," said Adolfo Marco Llorente. He's a Spanish researcher who spends summers on Boa Vista, one of Cape Verde's 10 islands in the Atlantic Ocean. "There will be no reproduction."

The past five years have been the hottest on record for the globe. Roughly a tenth of the planet has warmed more than 3.6 degrees Fahrenheit, a Washington Post study says. With that rise, scientists say temperatures can lead to irreversible damage to ecosystems. Here in Cape Verde, the warming is above average. It's increased by about 2.3 degrees Fahrenheit just since 1964, based on airport records.

If the trend continues, researchers estimate that less than 1 percent of the country's sea turtles will be born male by the end of the 21st century. Higher temperature rises could wipe them out completely.

This has raised alarm on the archipelago, or group of islands. Businesses there rely on the roughly 30,000 sea turtles that swim there every year to nest. Tourism accounts for 15 percent of economic growth.

Turtle murals greet thousands of visitors each week. Turtle pottery brings in cash. Turtle signs urge cars to stay off the sand.

"Turtles are the brand of Cape Verde," said Paulo Veiga. He works for the country's government to develop coastal business.

Working To Protect The Turtles

The Cape Verdean government works with nonprofit organizations to protect the reptiles. It uses money from hotel taxes to keep beaches clean. They put up security to stop people from stealing eggs and they also build fences to keep animal predators away.

Turtle guides on the islands lead visitors on overnight beach treks. They're supposed to educate the tourists about climate change.

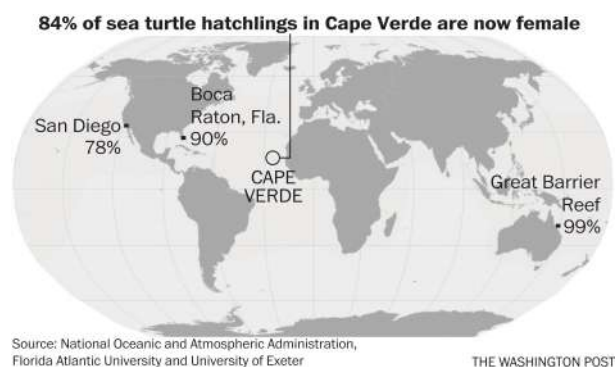
"They see the turtles like toys," said Manuel Delgado Rodrigues, who organizes tours. "We have to tell them about the problems."

Not everyone thinks all these efforts do much to protect the sea turtles from the boiling weather.

"Humans can do nothing about that," said Djamilton Ramos, a Boa Vista City Council member.

Humans do not know why the environment affects the gender of some lizards, crocodiles and various species of sea turtles.

Methods To Keep Nests Cool



The National Ocean and Atmospheric Administration says that sea turtle eggs that hatch in sand cooler than 81.86 degrees Fahrenheit produce males. Nests in the mid-80 degrees create a mix of male and female.

Anything higher than 87.8 degrees produces 100 percent female turtles.

"All over the world, the sea turtle gender balance is being thrown way out of whack," said Lucy Hawkes. She's an ecologist who led the University of Exeter study on Boa Vista.

Scientists have been testing methods to cool the turtles' nests. Gently digging up eggs and moving them to shadier parts of the beach has worked. Sprinkler systems have also worked, along with dividing offspring into smaller batches. Eggs crammed together tend to heat up.

It all starts with tracking pregnant turtles. Instinct brings them to Boa Vista each July through October. They come to shore to pick a spot in the sand to lay their eggs.

"Here," Llorente said. He pointed to a sea turtle's tracks. After the team found the mother turtle, she soon began scooping sand up with her flippers: first her right flipper, then her left. She was digging a nest in the sand. Once she dug about 50 centimeters into the sand, an egg plopped down. Then another. They looked like golf balls. The turtle then walked back to the sea never to see her babies again.

In all, Llorente's team counted 74 eggs. He collected them in a sack. Llorente carried them to a spot on the beach behind a fence so researchers could ward off predators and monitor the eggs' temperature.

Quiz

- 1 Which sentence from the article would be MOST important to include in a summary of the article?
- (A) The sea turtle clambered up the shore as her ancestors have for 200 million years.
 - (B) Warming sand temperatures have started changing the gender of the turtle babies.
 - (C) The past five years have been the hottest on record for the globe.
 - (D) Humans do not know why the environment affects the gender of some lizards, crocodiles and various species of sea turtles.
- 2 Read the following sentences from the article.
1. *"This nest will be 100 percent girls," whispered a biologist crawling next to the pregnant reptile.*
 2. *Turtle hatchlings worldwide will more likely hatch as females.*
 3. *In July, researchers from Great Britain's University of Exeter found that 21 out of 25 youngsters are now female.*
 4. *Populations in Florida and Australia are also showing huge differences in genders.*
- What central idea do these details support?
- (A) Scientists are working together to control the temperature of the eggs to produce more male sea turtles.
 - (B) Warming temperatures are causing the sea turtle population to become overwhelmingly female.
 - (C) Female turtles are becoming stronger than male turtles and are living longer in the warmer temperatures.
 - (D) Businesses on Cape Verde should consider finding a new way to make money.
- 3 How does the author build understanding of solutions for ensuring more male turtles are born?
- (A) by explaining how people can donate money to the University of Exeter
 - (B) by providing quotes from citizens of Cape Verde about the importance of turtles to the country
 - (C) by interviewing scientists responsible for developing solutions
 - (D) by describing various methods for keeping turtles' nests cool
- 4 What is MOST likely the reason the author included the information about Cape Verdean businesses?
- (A) to emphasize turtles are in danger because Cape Verde cares more about its businesses than the turtles
 - (B) to demonstrate that businesses on Cape Verde are not responsible for the turtles
 - (C) to highlight how much people on Cape Verde care about the turtles
 - (D) to prove the turtles would be safer if tourists stop visiting the island