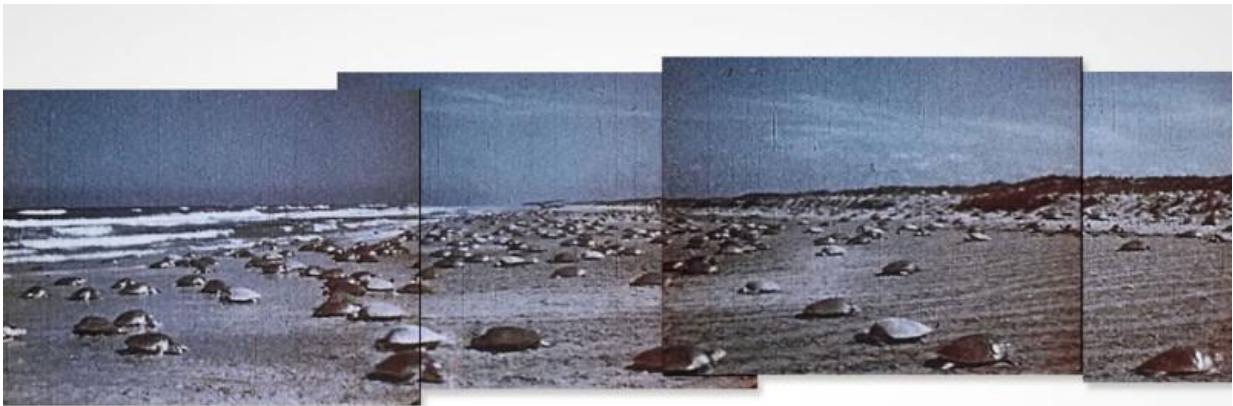


World's most endangered sea turtle species in even more trouble than we thought

March 29 2016, by Katherine Shonesy



"Tens of thousands of nesting sea turtles were found on the beach in Mexico on just a single day. It was a phenomenon that had never been brought to light before."

– Thane Wibbels, Ph.D., UAB professor of biology

Newly examined video of Kemp's ridley sea turtles, which are found primarily in the Gulf of Mexico, shows that the species' recovery from endangerment has stalled at less than one-tenth of historic nesting levels.

Researchers at the University of Alabama at Birmingham came to that

conclusion after being tasked with identifying the qualifying measure of endangerment for the [species](#) by the International Union for Conservation of Nature, or IUCN.

Kemp's ridley turtles are currently classified as critically endangered on the [IUCN's Red List of Threatened Species](#). The species was on the brink of extinction in the 1980s, but a Mexico-U.S. bi-national conservation program initiated in 1978 was able to reverse its decline.

The decades of intense conservation efforts were evident by 2009, with the Kemp's ridley exhibiting an exponential recovery rate that was expected to continue for many years. However, an unanticipated downturn occurred in 2010 when the amount of nesting dropped significantly, and since that time, the species has not regained an upward trajectory to recovery.

How many Kemp's ridley turtles should there be in the Gulf? Scientists and conservationists weren't sure; there was a lack of data between 1880, when the species was discovered, and the start of the conservation efforts in 1978.

UAB's study, led by Thane Wibbels, Ph.D., a biology professor in the College of Arts and Sciences, and doctoral student Elizabeth Bevan, set out to answer that question through the evaluation of a historic film recorded in 1947 by Andres Herrera, a Mexican sportsman, on the Kemp's ridley's primary nesting beach in the western Gulf of Mexico near Rancho Nuevo, Mexico.

The film captured a mass-nesting event known as an arribada, involving tens of thousands of nesting turtles on a single day in 1947. It would help provide a rare benchmark for evaluating the historic population size of a species prior to its becoming endangered, which is usually not available for endangered species.

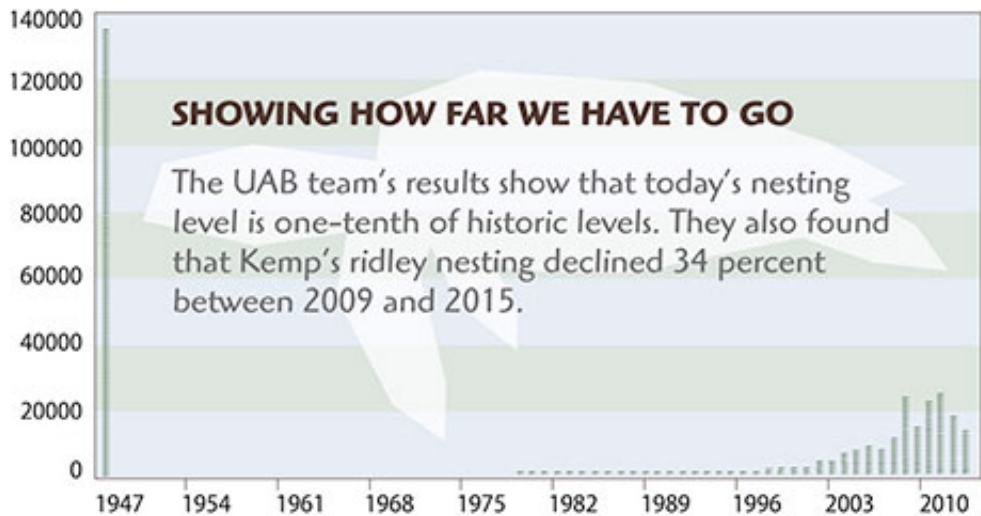
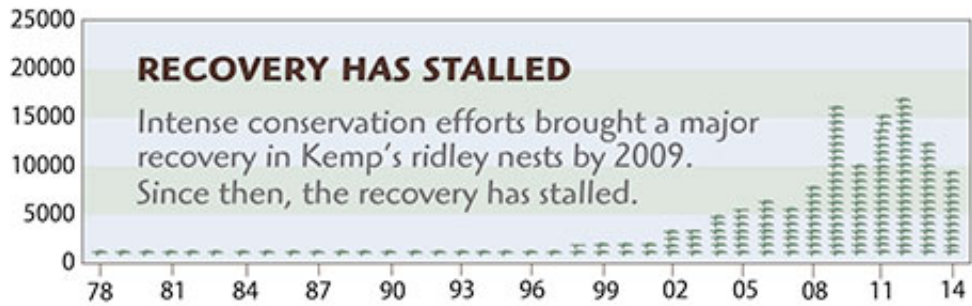
Uncovering the original riddle of the ridley

Prior to the film, the location of the Kemp's ridley nesting grounds was a mystery. After hearing about a large mass nesting of [sea turtles](#) from locals, Herrera recognized the significance of such a unique biological phenomenon and became committed to documenting this unique event for society.

During a two-year period, Herrera flew his own plane 33 times over the Gulf Coast north of Tampico, Mexico, conducting aerial surveys in search of the mass sea turtle nesting. In 1947, he finally uncovered the event, but his discovery would remain unknown to the scientific community for more than a dozen years.

"At the time of the film's development, no one was able to connect the dots between the phenomenon of the mass nesting and that the nests belonged to the Kemp's ridley sea turtles," Wibbels said. "Herrera was a hobby enthusiast who wasn't aware of the pursuit in the scientific world to uncover this location. Meanwhile, Archie Carr, who was considered to be the world's leading sea turtles expert, had been searching for the nesting beaches for this species for decades."

Carr searched for the Kemp's ridley nesting beaches in all of the usual nesting regions—Florida, the Caribbean and the northern Gulf of Mexico; but after 20 years, he had found nothing.



"He had no logical explanation for the fact that this abundant turtle was seemingly not breeding or nesting," Bevan said. "Scientists began to wonder whether the Kemp's ridley could actually be a hybrid turtle."

The dots were finally connected, and part of the mystery debunked, by Henry Hildebrand, Ph.D., from the University of Corpus Christi, who heard about the film and viewed it in 1961. Later that year, Hildebrand presented that film at the annual meeting of the American Society of Ichthyologists and Herpetologists, revealing the news to the scientific community for the first time.

Breaking down the nesting numbers

It was estimated by some who viewed the original black-and-white footage that there were more than 40,000 nesting Kemp's ridley sea turtles on the beach that day. Wibbels and Bevan's recent study reflects more conservative, but still remarkable, numbers.

Wibbels and Bevan calculate that there were 26,000 sea turtles on a 1- to 2-mile stretch of beach on the day the film was taken.

The results from UAB's study published this week indicate that approximately 120,000 to 180,000 nests were laid over the entire 1947 nesting season in contrast to approximately 14,000 nests in the most recent nesting season.

This new information on the historic population size greatly increases the mystery surrounding the abrupt decline in the recovery of this endangered species since 2009. The number of nests laid in the 2015 nesting season represents a 34 percent decline in comparison to 2009, and this occurred during a time when exponential growth of the population back toward historic levels was expected.

What this means for conservation

Intense conservation efforts are continuing, and this critically endangered species is protected throughout its range.

"Because the Kemp's ridley is so protected, scientists believe that potential factors limiting its recovery may be habitat-related," Bevan said. "Another hypothesis among the field is that environmental pollution, in particular the 2010 Deepwater Horizon oil spill, may have significantly impacted the population, and many years may be required

before the species regains an exponential recovery rate."

An alternative hypothesis is that the Gulf of Mexico ecosystem may have changed over the past seven decades since the Herrera film was recorded, and can no longer support the abundance of Kemp's ridleys documented in the 1947 film. For example, studies have shown that the abundance of blue crabs, a preferred food item for the Kemp's ridley, has significantly declined in the northern Gulf of Mexico in recent decades.

"The Kemp's ridley could be significantly impacted by long-term changes and the overall health of the Gulf of Mexico ecosystem because of its near exclusivity to the area and presence as a higher-trophic-level predator," Bevan said. "That's why it's so important that we continue our research into the mystery of its stalled growth."

"Solving the mystery will require continued monitoring of turtles on the nesting beach, a better understanding of the ecology of the Kemp's ridley in its foraging and developmental habitats, and an evaluation of potential changes in the Gulf of Mexico ecosystem since the 1947 Herrera film," Wibbels added.

More information: Bevan, E., T. Wibbels, B. M. Z. Najera, L. Sarti, F. I. Martinez, J. M. Cuevas, B. J. Gallaway, L. J. Pena, and P. M. Burchfield. 2016. Estimating the historic size and current status of the Kemp's ridley sea turtle (*Lepidochelys kempii*) population. *Ecosphere* 7 (3):e01244. [DOI: 10.1002/ecs2.1244](https://doi.org/10.1002/ecs2.1244)

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