THE CONSERVATION STATUS OF THE KEMP'S RIDLEY WORLDWIDE

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The Kemp's ridley is a signature species for the Gulf of Mexico, and it has become an icon for conservation. Its story includes a long-term international conservation effort, undertaken by Mexico and the United States, which brought the species back from the brink of extinction. A recently completed IUCN Red List assessment not only evaluated the Kemp's ridley's current conservation status but also provided a rare glimpse into the history of a critically endangered species prior to its decline. The good news from that assessment is that the Kemp's ridley has been gradually recovering from near extinction in the mid-1980s to about 24,000 nests in the 2017 nesting season. The bad news is that historic nesting levels were estimated to be as high as 181,000 nests per season in 1947, and the species is no longer recovering at the exponential rate seen before 2010.

One of the most common challenges in evaluating the status of a threatened species is the absence of historical data about the species' abundance. Many species gain scientists' attention only after they are already threatened. The Kemp's ridley is a rare exception. In the late 1940s a Mexican businessman named Andrés Herrera became driven to find and document the nesting beach of the Kemp's ridley. Over a two-year period he flew his small airplane on 33 reconnaissance surveys, scanning the coast of Tamaulipas, Mexico, in search of nesting turtles. What he ultimately discovered was a phenomenon unknown to science at the time: a coordinated mass nesting event with tens of thousands of turtles coming onshore simultaneously, now known as an arribada. Fortunately, Herrera filmed the event. His 1947 film not only provided the first documentation of this amazing biological phenomenon, but it also provided a historic benchmark of the Kemp's ridley's abundance, when its population was still stable and robust.

The team working on the new IUCN Red List assessment of the Kemp's ridley capitalized on this benchmark by conducting a thorough evaluation of the film. They uncovered previously unreported information about the arribada when the Herrera family graciously provided the personal files of the late Andrés Herrera. The IUCN team also evaluated the historic office files of Henry Hildebrand, who initially reported the Herrera film to the scientific community in 1963. The analysis of the film and related files allowed the team to accurately estimate the number of nests in that single arribada—26,000 to 40,000 nests—but this was only part of the story. An important question remained: How did the size of that single 1947 arribada relate to the size of the entire population?

The idea of how to solve this mystery came to the assessment team during a long research trip to the Kemp's ridley nesting beach at Rancho Nuevo, Mexico. The Rosetta Stone was the recovering Kemp's ridley population itself. In recent years, the large arribadas at Rancho Nuevo beach had resumed after decades. The resurgence of this phenomenon allowed us, for the first time, to determine that the number of nests laid during a single large arribada was 22.15 percent, on average, of total nests for the season (from 2006 to 2014). This was the key to estimate the total nesting population size at the time of the 1947 arribada. We were thus able to estimate that a total of 121,000 to 181,000 nests were laid during the 1947 nesting season, providing a truly rare and important benchmark from the Kemp's ridley's past, before its decline and brush with extinction.

AT LEFT: A large Kemp's ridley *arribada* in 2011 at Rancho Nuevo, Tamaulipas, Mexico is an encouraging sign of slow but steady population growth for this species that was once at the verge of extinction. © TONI TORRES

ANNUAL KEMP'S RIDLEY NESTS (1947, 1978–2017)

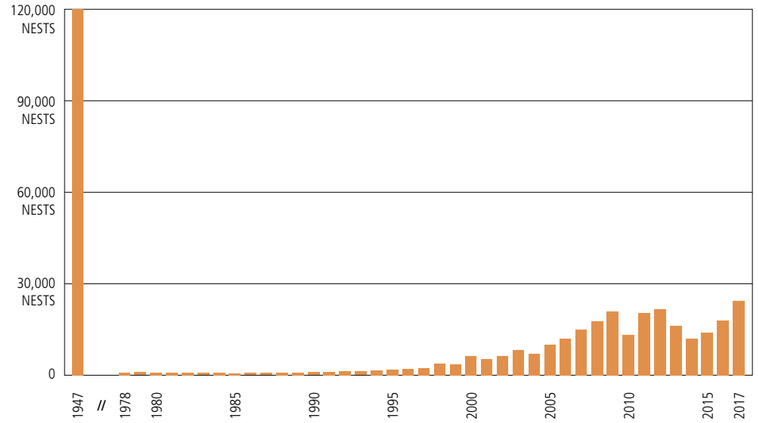

FIGURE: Annual Kemp's ridley nests from 1947, estimated (1947) and observed (1978–2014). Source: Bevan, E., T. Wibbels, B. M. Z. Najera, L. Sarti, F. I. Martinez, J. M. Cuevas, B. J. Gallaway, L. J. Pena, and P. M. Burchfield. 2016. Estimating the historic size and current status of the Kemp's ridley sea turtle (*Lepidochelys kempii*) population. *Ecosphere* 7 (3):e01244.

Although the Kemp's ridley has shown significant recovery since the mid-1980s, the approximately 24,000 nests recorded throughout Mexico and Texas in the 2017 nesting season still represents only a small percentage of its historic population size in 1947. The population has also deviated from the exponential recovery it was undergoing from the 1990s through 2009. Nesting numbers actually dropped precipitously during 2010 but have since increased in recent years, hovering at over 20,000 nests per season (see figure).

It is not clear whether the Kemp's ridley will regain its exponential recovery trend or whether the current nesting levels represent the new normal for the Kemp's ridley. One hypothesis is that the species may be reaching its carrying capacity for the Gulf of Mexico in its current condition, which is dramatically different from its condition in 1947. Time will tell. What we do know is that because of an intensive international conservation effort by Mexico and the United States, this species has shown significant recovery since its near extinction in the 1980s. What we don't know is whether the Kemp's ridley will ever recover to its historic levels. ■

GLOBAL STATUS
Critically Endangered

The Kemp's ridley turtle is categorized as critically endangered globally for two reasons: (1) the global population is estimated to have declined by 88–92 percent over the past 67 years (more than three generations), based on the new evaluation of the 1947 arribada size and its context in the annual nesting population; and (2) the causes of the decline have not ceased. Unique among sea turtle species, the Kemp's ridley is represented by a single subpopulation, or regional management unit; therefore, a single global Red List assessment was completed.