

# Restoration of the critically endangered seabird

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Chinese crested tern. Credit: Dan Roby, OSU

The global population of the critically endangered Chinese crested tern has more than doubled thanks to a historic, decade-long collaboration

among Oregon State University researchers and scientists and conservationists in China, Taiwan and Japan.

The project included OSU's Dan Roby and Don Lyons and was led by Chen Shuihua of the Zhejiang Museum of Natural History. When it began, fewer than 50 of the seabirds remained.

"The species is still far from being safe from extinction, but the population is now well over 100 adults and the future is much brighter than 10 years ago," said Roby, professor emeritus in the Department of Fisheries and Wildlife in the College of Agricultural Sciences.

Findings were published in *Biological Conservation*.

First described in 1863, the Chinese crested tern has been a largely mysterious species and is arguably the world's most threatened seabird.

After 21 specimens were collected in 1937 along the coast of Shandong Province, China, it wasn't until 2000 that any other sightings were confirmed: four adults and four chicks within a large colony of greater crested terns in the Matsu Islands, Taiwan.

The discovery was big news in the ornithology world, which had generally considered the Chinese crested tern to be extinct. In the years since, breeding has been confirmed in five locations: three along the Chinese coast, plus an uninhabited island off the southwestern coast of South Korea and the Penghu Islands of Taiwan.

The Chinese crested tern is among the nearly one-third of seabird species threatened with extinction because of entanglement with [fishing gear](#), reduction in food supplies, environmental contaminants, overharvest, and predation and other disturbances by invasive species.

"Most seabirds select nesting habitat largely by [social cues](#), whose absence may delay recovery even when there is suitable habitat," Roby said. "Since the 1970s, new techniques have been developed and implemented to enhance seabird restoration efforts. These techniques are social attraction and chick translocation and have been used in at least 171 different seabird restoration projects conducted in 16 locations in an attempt to restore 64 [seabird](#) species."

Social attraction was the strategy for the Chinese crested tern project, the first major conservation effort for seabirds in the People's Republic of China.



Chinese crested tern with chick. Credit: Dan Roby, OSU

"Terns feed their young and provide other parental care for extended periods post-fledging, suggesting that chick translocations would likely not result in fledged young that would survive to recruit into the breeding population," Roby said.

Social attraction involves decoys, recorded bird vocalizations, mirrors, scent and artificial burrows that work in concert to lure adult seabirds to restoration sites with the goal of establishing breeding colonies.

"The most serious immediate threat to the survival of the species was the illegal harvest of eggs by fishermen," Roby said. "Beyond just taking the eggs, the disturbance associated with fishermen landing on breeding islands to collect eggs or shellfish apparently caused breeding terns to abandon their nesting sites."

The scientists believed that if Chinese crested terns could be attracted to a site with suitable nesting habitat that was continuously monitored and secured against egg harvest and other human disturbances, the species could have a chance to recover from the brink of extinction.

In 2013, a tern restoration project was launched on Tiedun Dao, an uninhabited, densely vegetated, 2.58-hectare island in the Jiushan Islands, home to a former breeding colony of Chinese crested terns that was abandoned in 2007 in the wake of illegal egg harvesting.

"It's near the original breeding island of Jiangjunmao but was not known to have been previously occupied by breeding seabirds," Roby said. "To improve the chances for Chinese crested tern success, we used social attraction techniques to try to establish a new breeding colony of greater crested terns because since their rediscovery, Chinese crested terns had only been found nesting in large colonies of greater crested terns."

In 2015, Yaqueshan, a 1-hectare island in the Wuzhishan Archipelago,

was chosen as a second restoration site, where social attraction would be deployed in an attempt to stabilize the breeding colony there.

Three years later, the researchers attracted a total of 77 breeding adult Chinese crested terns to the Tiedun Dao and Yaqueshan colonies—88.5% of the known number of breeding adults in the [global population](#) for that year.

Also in 2018, 25 Chinese crested tern chicks fledged from the Tiedun Dao and Yaqueshan colonies, or 96% of the known number of Chinese crested tern fledglings produced that year.

"Consequently, we now know for the first time in history that the global population of Chinese crested terns exceeds 100," Roby said. "The population increase from under 50 to more than 100 is a cautiously hopeful sign that this species can be brought back from the very edge of extinction. The success of this international project is a testimony to what can be accomplished when scientists from China, the U.S. and Taiwan work together toward a common conservation goal."

**More information:** Yiwei Lu et al, Creating a conservation network: Restoration of the critically endangered Chinese crested tern using social attraction, *Biological Conservation* (2020). [DOI: 10.1016/j.biocon.2020.108694](#)

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