Fishery bycatch rapidly driving Mexico's vaquita to extinction, new studies find

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The vaquita, a porpoise that lives only in the upper Gulf of California, Mexico, is the world's smallest and rarest marine mammal. Credit: Paula Olson, 2008

One of the most sophisticated networks of acoustic detectors ever developed for wildlife science has documented a devastating 34 percent per year decline of Mexico's critically endangered vaquita porpoise, according to a new study published this week in the journal *Conservation Biology*.

A companion paper published in *Conservation Letters* uses both acoustic

and visual surveys to estimate that only about 60 vaquitas remained, as of last year.

"We are witnessing the end of a species, if the illegal fishing continues," said Armando Jaramillo-Legorreta of Mexico's Department of the Environment and Natural Resources (SEMARNAT) and lead author of the research describing the acoustic array and its findings. "The acoustic array is a powerful new tool that helps us see the tragic direction of this population by listening for the porpoises' voices."

Intense fishing that began in the 1940s for totoaba, a large fish whose swim bladder is highly prized in China, had driven both species onto the endangered list by the 1980s - the totoaba as the fishery's target and the vaquita as an unintended bycatch.

To save the vaquita, the Government of Mexico has set aside half of the small porpoise's range as a no-fishing refuge and implemented a two-year ban on all gill net fishing in the range of the species. The government is compensating local fishers and related industries at a cost of about $74 million. Scientists and government officials hoped that these actions would reverse the decline.

Fishermen from a local fishermen's community organization, Pesca ABC, working with SEMARNAT to launch the acoustic monitoring devices. Credit: NOAA Fisheries/Barbara Taylor

"The science revealing the decline was key to spurring the Government's emergency actions," said Rafael Pacchiano, Mexico's Secretary of the Department of the Environment and Natural Resources (SEMARNAT).

Instead, the new acoustic study found that the decline has accelerated along with a resumption of illegal gillnet fishing for totoaba. Totoaba bladders are now worth up to $5,000 per kilogram and can command as much as $100,000 on the black market in China, according to a report released last month by the Environmental Investigations Agency.

"Long-term monitoring like this is usually about as newsworthy as an annual check-up," said Barbara Taylor, a NOAA Fisheries marine

mammal biologist and coauthor of the new study. "In this case the monitoring exposed the shocking degree of illegal fishing that is rapidly driving the vaquita toward extinction. The science is showing us the urgency of the situation."

Vaquita observers on "big eye" binoculars are capable of spotting vaquita more than 3 km (1.9 miles) away. Credit: NOAA Fisheries/Barbara Taylor

Unfortunately, vaquitas continue to die in totoaba nets despite the valiant efforts by law enforcement agencies, the Mexican Navy, and conservation groups to prevent illegal fishing since the gillnet ban came into effect in April 2015, immediately before the new acoustic and visual studies were launched. Three vaquitas killed in gillnets were

recovered during surveillance activities last spring and alarming quantities of totoaba gill nets have been found and removed in recent months. A new abundance estimate using acoustic monitoring that builds on last year's abundance estimate is expected out soon.

"This pioneering research revealed just how sharply vaquitas are declining, and how urgent the situation has become," said Cisco Werner, director of NOAA Fisheries' Southwest Fisheries Science Center. "Science may have bought the vaquita some precious time by supporting the extra protections. But we are now on the verge of losing the species altogether."

More information: Armando Jaramillo-Legorreta et al, Passive acoustic monitoring of the decline of Mexico's critically endangered vaquita, *Conservation Biology* (2016). DOI: 10.1111/cobi.12789

Barbara L. Taylor et al. Extinction is Imminent for Mexico's Endemic Porpoise Unless Fishery Bycatch is Eliminated, *Conservation Letters* (2016). DOI: 10.1111/conl.12331

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