

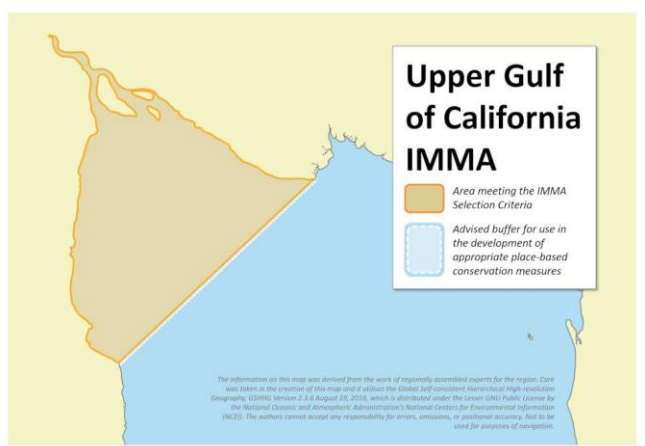
Upper Gulf of California IMMA

Summary, continued.

eliminate illegal fishing in this small area where the last few vaquitas remain (12 km x 24 km), called the Zero Tolerance Area (ZTA). The Government of Mexico passed a regulation in 2020 prohibiting any fishing in the vaquita distribution area and declaring the ZTA a no-entry zone. Despite this and other regulations, the environmental and naval authorities were able to reduce illegal fishing by more than 90% within the Zero Tolerance Area (ZTA) with the installation of 193 anti-gillnetting devices. However, illegal fishing has not stopped throughout the Upper Gulf, outside the ZTA, and the gillnet exclusion zone.

Description:

The Upper Gulf of California (Northern Gulf of California) is, historically and currently, one of the most biologically productive marine regions on Earth. This high productivity is driven by a unique mix of factors, including coastal upwelling, wind-driven mixing, extreme tidal mixing and turbulence, thermohaline circulation that moves intermediate waters into the mixed layer, coastal-trapped waves, regular sediment resuspension, and, to a lesser extent, agricultural runoff, released nutrients from erosion of ancient Colorado River Delta sediments, and perhaps input from decomposing tidal-flat plant debris. Despite the reduced flow of the Colorado River, this marine ecosystem remains rich in nutrients, high in biodiversity and productivity, and appears to continue to be healthy and support a rich marine ecosystem with abundant and diverse fauna, including seabirds and marine mammals (Álvarez-Borrego, 2003; Rojas-Bracho & Taylor, 1999).



Area Size

4 054 km²

Qualifying Species and Criteria

Vaquita – *Phocoena sinus*

Criterion A; B (1)

Marine Mammal Diversity

Delphinus delphis, *Tursiops truncatus*,

Pseudorca crassidens, *Orcinus orca*,

Balaenoptera edeni, *Balaenoptera physalus*,

Balaenoptera musculus, *Megaptera novaeangliae*,

Ziphius cavirostris, *Zalophus californianus*,

Eschrichtius robustus, *Kogia breviceps*

Summary

The vaquita (*Phocoena sinus*) is endemic to the northern most part of the Gulf of California, Mexico, and its current range is confined entirely to the area encompassed by this IMMA. It is the most critically endangered mammal species in the world, with fewer than 10 individuals thought to remain in 2021. Vaquitas are being driven towards extinction through incidental capture in gillnets. Acoustic data have shown a substantial reduction in the area used by the remaining vaquitas. In 2019 CIRVA, the international vaquita recovery team, called on the Government of Mexico to fully mobilize its enforcement assets to

However, illegal gillnetting of shrimps, chano (*Micropogonias megalops*), totoaba (*Totoaba macdonaldi*) and other finfish, remain very high in this region. (Brusca et al., 2017).

For decades the recommendations by the Vaquita Recovery Team (CIRVA—Comité Internacional para la Recuperación de la Vaquita) has stressed that vaquita (Figure 1) could be saved from extinction only if gillnets were banned throughout its range (gillnet exclusion zone) and fishers had adopted viable vaquita-friendly fishing methods.



Figure 1: Vaquita (*Phocoena sinus*). Photo : Adam Ü / El Museo de la Ballena y Ciencias del Mar.

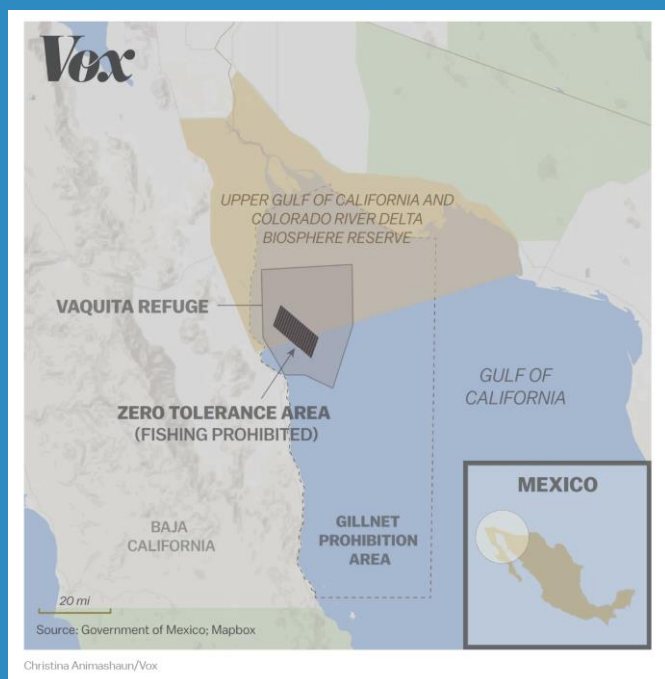


Figure 2: Vaquita Refuge, Zero Tolerance Area (ZTA) and Gillnet Prohibition Area in the Upper Gulf of California. Photo : Replicated from Christina Animashaun / Vox, 2023

In 2020, a series of regulations were enacted that included:

- The establishment of the Zero Tolerance Area (ZTA), a no fishing and no entry zone, 225 Km² enforced 365/24 through maritime, air and satellite patrols and surveillance (Figure 2),
- The gillnet exclusion zone bans the use of gillnets throughout the vaquita's range, the possession, manufacture, sale, and transportation of gillnets in and around this exclusion zone,
- No fishing at night and landing only in specific authorized landing sites,
- Fishermen report bycatch and lost gear,
- Artisanal fishing boats (pangas) should have the vessel monitoring systems, and
- fishers were to turn over all gillnets within 60 calendar days of the date of publication of this Agreement.

However, none of this happened and fishing with gillnets is still rampant throughout the gillnet exclusion zone and within the ZTA.

Mentioned should be made that in 2023, the Navy and the Secretary of the Environment deployed 193 anti-gillnetting devices on the seafloor of the Zero Tolerance Area (Figure 3). These are concrete blocks with hooked rods, 3 meters high, that trap or entangle the nets (Figure 4). In this first year, fishing inside the ZTA has been reduced by more than 90%. In fact, during the vaquita survey cruise in May 2023, no vessels with gillnets were observed within the ZTA. Based on the success of the anti-gillnet devices and the results of the 2023 survey, the Government of Mexico has announced the installation of more devices and the extension of the ZTA (Figure 5).

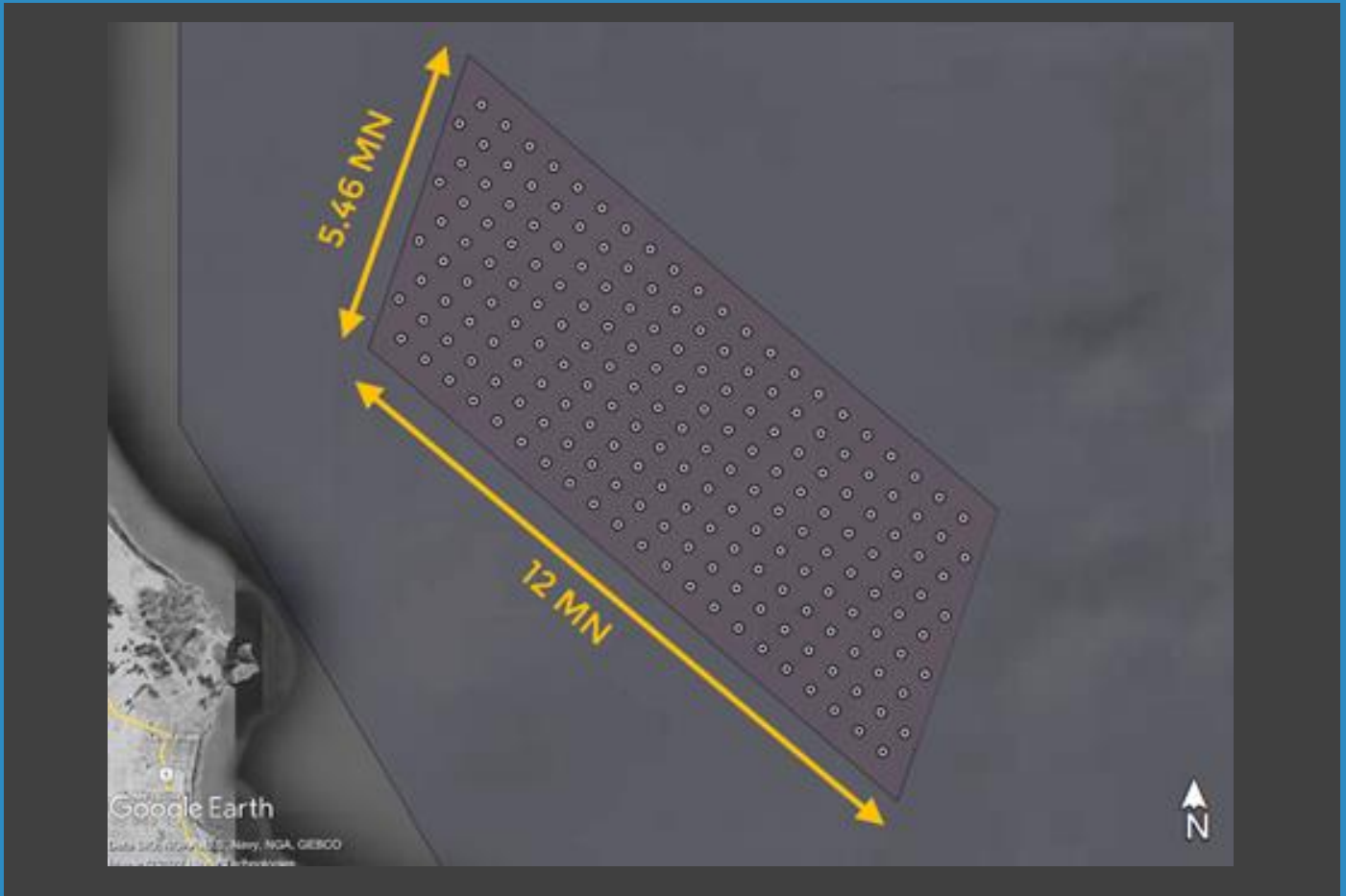


Figure 3: The current number and placement of anti-gillnet devices in 2023.



Figure 4: Deployment of anti-gillnetting devices made of concrete blocks with hooked rods, 3 meters high, that trap or entangle the nets on the seafloor of the Zero Tolerance Area (ZTA).

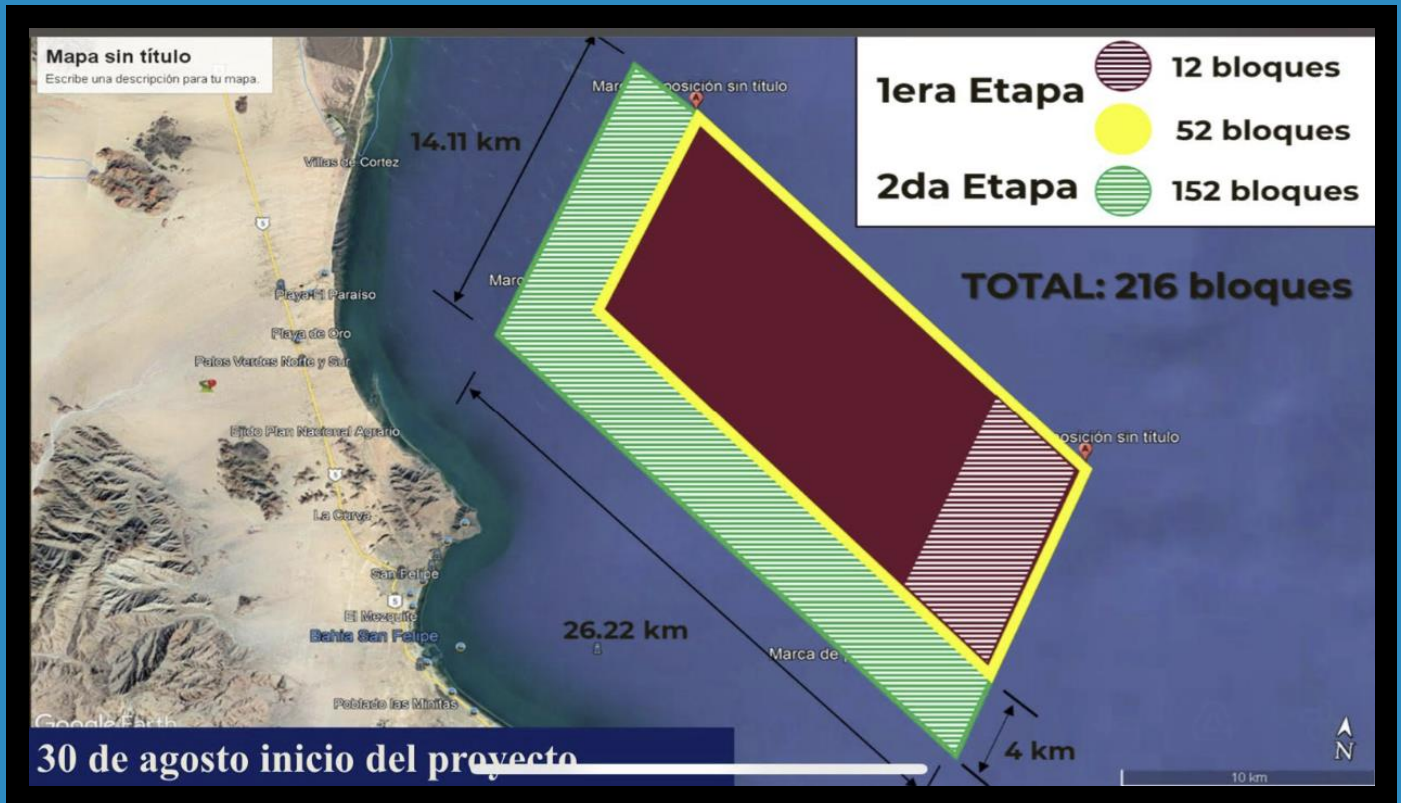


Figure 5: Expansion of Vaquita Refuge, Zero Tolerance Area (ZTA) and Gillnet Prohibition Area with the installation of anti-gillnet devices in the Upper Gulf of California in 2023.

Criterion A: Species or Population Vulnerability

The Upper Gulf of California is, historically and currently, one of the most biologically productive marine regions on Earth. This productivity gives rise to an active fishery, and illegal gillnetting of shrimps, chano (*Micropogonias megalops*), totoaba (*Totoaba macdonaldi*) and other finfish, remain very high in this region (Brusca et al., 2017). For decades the recommendations by the Vaquita Recovery Team (CIRVA—Comité Internacional para la Recuperación de la Vaquita) has stressed that vaquita could be saved from extinction only if gillnets are banned throughout the species' range and if fishers adopt viable vaquita-friendly fishing methods. The Vaquita is presently assessed as Critically Endangered (CR) on the IUCN Red List (Rojas Bracho et al., 2022). The estimated rate of decline is extremely high: a 48% decline was estimated in 2017 (95% Bayesian credible interval (CRI) 78% decline to 9% increase) followed by

a 47% decline in 2018 (95% CRI 80% decline to 13% increase). The estimated total population decline since 2011 is 98.6% (Jaramillo-et al., 2019).

Criterion B: Distribution and Abundance

Sub-criterion B1: Small and Resident Populations

The entire species is confined within the limits of the IMMA. In the summer of 2018 it was estimated that fewer than 19 vaquitas remained (posterior mean 9, median 8, 95% CRI 6–19; Jaramillo-Legorreta et al., 2019). Acoustic data have shown a substantial reduction in the area used by the remaining vaquitas. Rojas-Bracho, Taylor, Booth, et al. (2022) used Expert Elicitation to examine data from two surveys (2019 and 2021) and suggested that the number of calves seen in the Zero Tolerance Area (ZTA) may have decreased between 2019 and 2021. The most likely number of vaquitas sighted in 2019 in the ZTA was about 11 individuals including 3 calves and the most



Figure 6: Vaquitas (*Phocoena sinus*) sighted in the ZTA of Upper Gulf of California. Photo : Adam Ü / El Museo de la Ballena y Ciencias del Mar.

likely number of vaquita seen in 2021 in the ZTA was about 7 or 8 individuals including 1 or 2 calves (Figure 6).

During the May 2023 survey cruise, the first to take place in the spring, there were three times as many days of good weather to search for vaquita. It was estimated that within the area studied (ZTA), the mean estimate for the number of vaquita sighted in the 16 sightings was 10.6 with a 76% probability that there were between 8 and 13 sighted and a 65% expert confidence that there were at least 10. These results are very similar to what we saw in 2019 and 2021. The results of these surveys indicate that vaquita are no longer declining at a rate of 45% per year, as previously estimated, but may be declining only slightly, if at all (Jaramillo-Legorreta et al., 2023).

Supporting Information

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Acknowledgements

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MARINE MAMMAL
PROTECTED AREAS
TASK FORCE

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IMMA

GOBI

TETHYS
since 1986

WHALE AND
DOLPHIN
CONSERVATION

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Bundesministerium
für Umwelt, Naturschutz,
Bau und Reaktorsicherheit

WDC

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