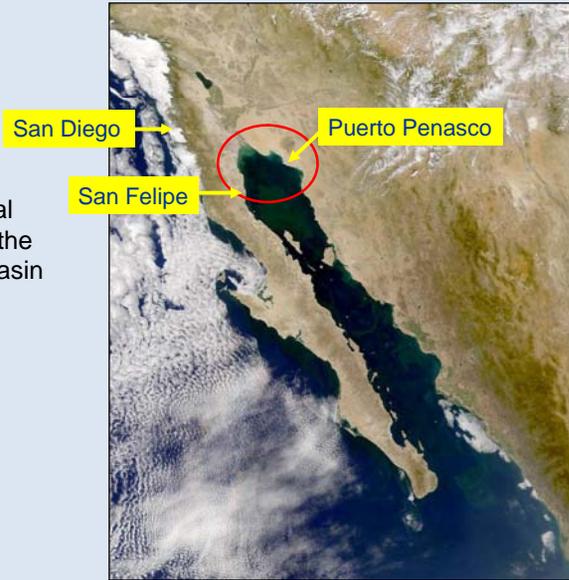


Appendix D11: The Vaquita and the Upper Gulf of California

Conservation: Vaquita and the upper Gulf of California

- Arid
- Productive
- Second highest tidal range in the world in the northern end of the basin



The vaquita is the most critically endangered cetacean in the world
 will the species become the second cetacean to go extinct "under our watch"?



Taylor, Barlow, Gerrodette - Southwest Fisheries Science Center, NOAA Fisheries Service
 Rojas-Bracho, Jaramillo-Legoretta - Instituto Nacional de Ecología, SEMARNAT
 and many more

NOAA NMFS SWFSC PRD photo by Tom Jefferson

Family: Phocoenidae

Scientific name: *Phocoena sinus*

Common name: Vaquita



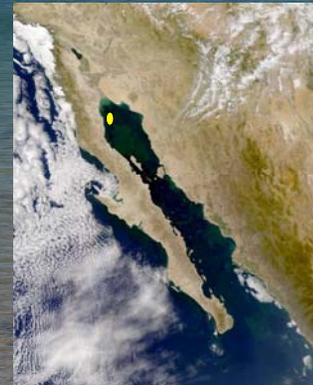
Described as a new species in 1958

Natural History

One of the smallest cetaceans in the world:

adult female: 135 - 150cm; adult male: 128 - 145cm

Smallest geographic distribution of any cetacean; naturally rare



Foraging: ~26 different species; main prey: mollusks (squid) and crustaceans

Vaquita are difficult to see in the wild

- Small size (triangular fin about the height of a milk carton visible about 3 seconds at a time)
- Spends most of its time under water
- When surfacing vaquita rarely splash or jump
- Small group size (average 2)
- Avoid boats

<http://vaquita.tv/blog/2008/10/23/meet-vaquita-marina/>

Fisheries by-catch

Study by D'Agrosa et al. in 1993-1995:

Vaquitas were killed in a variety of artisanal gill net fisheries

By-catches occurred year-round

By-catches occurred throughout the upper Gulf of California

About 78/year estimated killed

(D'Agrosa et al. 2000)



What are the threats?

(Taylor et al. 1999)

- Pollutants (no threat ...clean blubber)
- Inbreeding depression (no threat (yet)...many calves, naturally rare)
- Lack of Colorado River flow (no threat now)
 - Dead vaquita fat
 - Many calves
 - Many fewer vaquita than normal levels
- Bycatch (accidental death in fishing nets)
 - Estimated 78/year...is that too many?



How many vaquita are there?

Joint Mexican/U.S. abundance surveys in 1997 and 2008

Biosphere Reserve Boundary

Area de la Refugio de Vaquita



2008



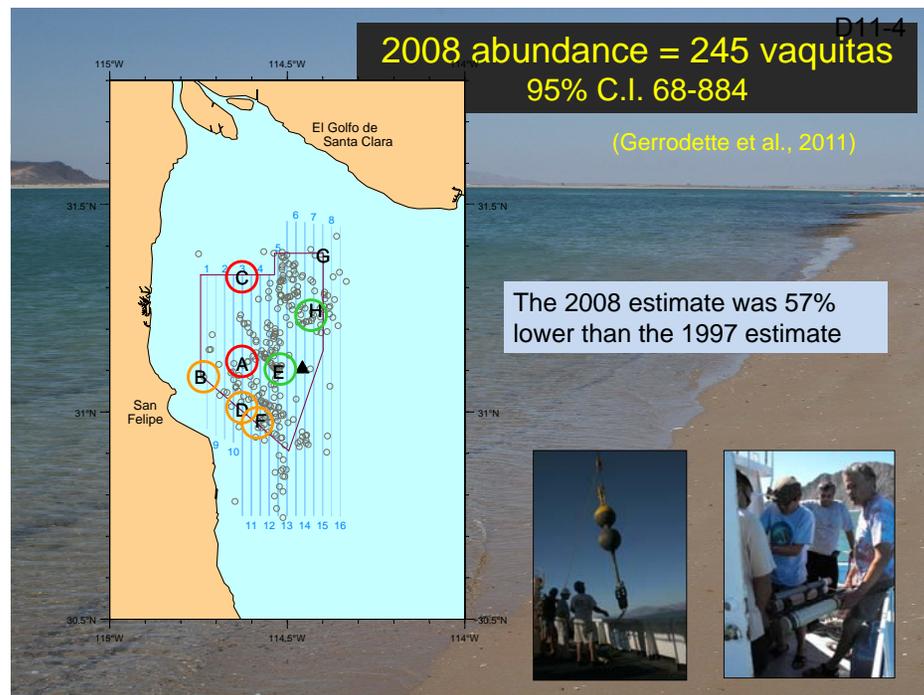
1997 abundance = 567 vaquitas
95% C.I. 177 – 1073

(Jaramillo et al., 1999)



2008 abundance = 245 vaquitas
95% C.I. 68-884

(Gerrodette et al., 2011)



Science is clear: nets must go

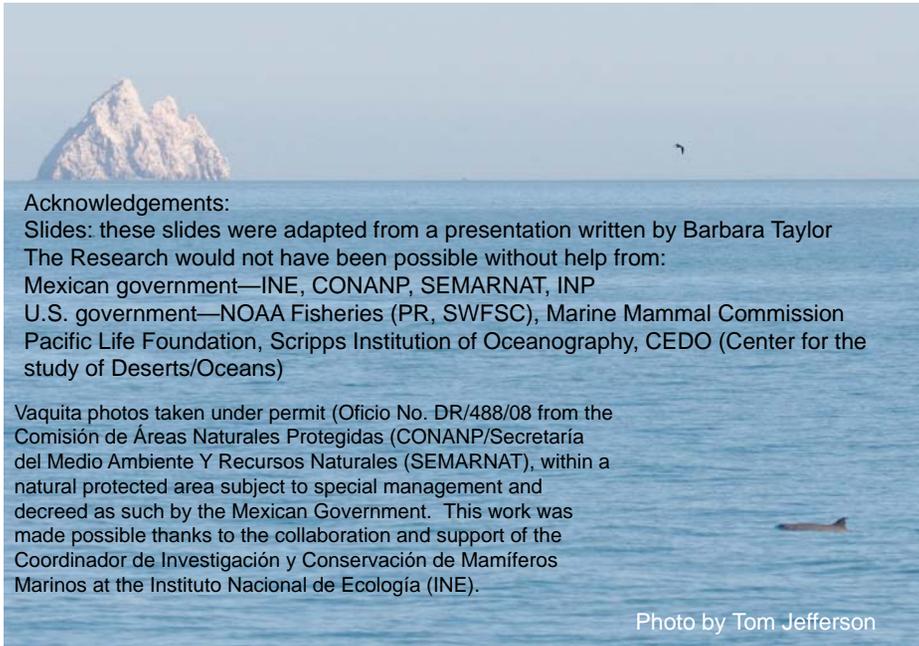
However, a net ban is likely to have a significant socioeconomic impact on the local fishing communities.

Funds will be needed to:

- compensate fishermen for the economic loss
- support the transition to alternative livelihoods
- enforce the removal of fishing nets
- find alternative fishing methods
- engage markets

Mexico has invested
>\$18 Million US
into vaquita efforts
(buyout + enforcement)





Acknowledgements:

Slides: these slides were adapted from a presentation written by Barbara Taylor

The Research would not have been possible without help from:

Mexican government—INE, CONANP, SEMARNAT, INP

U.S. government—NOAA Fisheries (PR, SWFSC), Marine Mammal Commission
Pacific Life Foundation, Scripps Institution of Oceanography, CEDO (Center for the study of Deserts/Oceans)

Vaquita photos taken under permit (Oficio No. DR/488/08 from the Comisión de Áreas Naturales Protegidas (CONANP/Secretaría del Medio Ambiente Y Recursos Naturales (SEMARNAT), within a natural protected area subject to special management and decreed as such by the Mexican Government. This work was made possible thanks to the collaboration and support of the Coordinador de Investigación y Conservación de Mamíferos Marinos at the Instituto Nacional de Ecología (INE).

Photo by Tom Jefferson