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# Assessing vaquita abundance and trends

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Review of NOAA Fisheries' Science on Marine Mammals & Turtles  
Southwest and Northwest Fisheries Science Centers

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La Jolla, CA



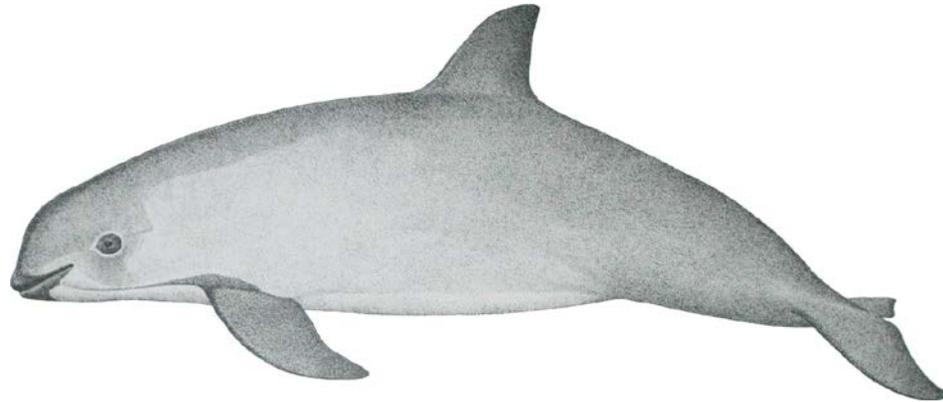
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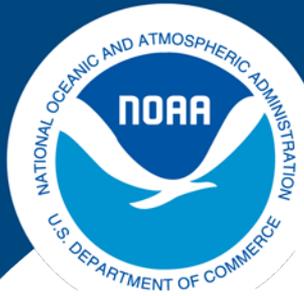
# *Phocoena sinus*

## Vaquita

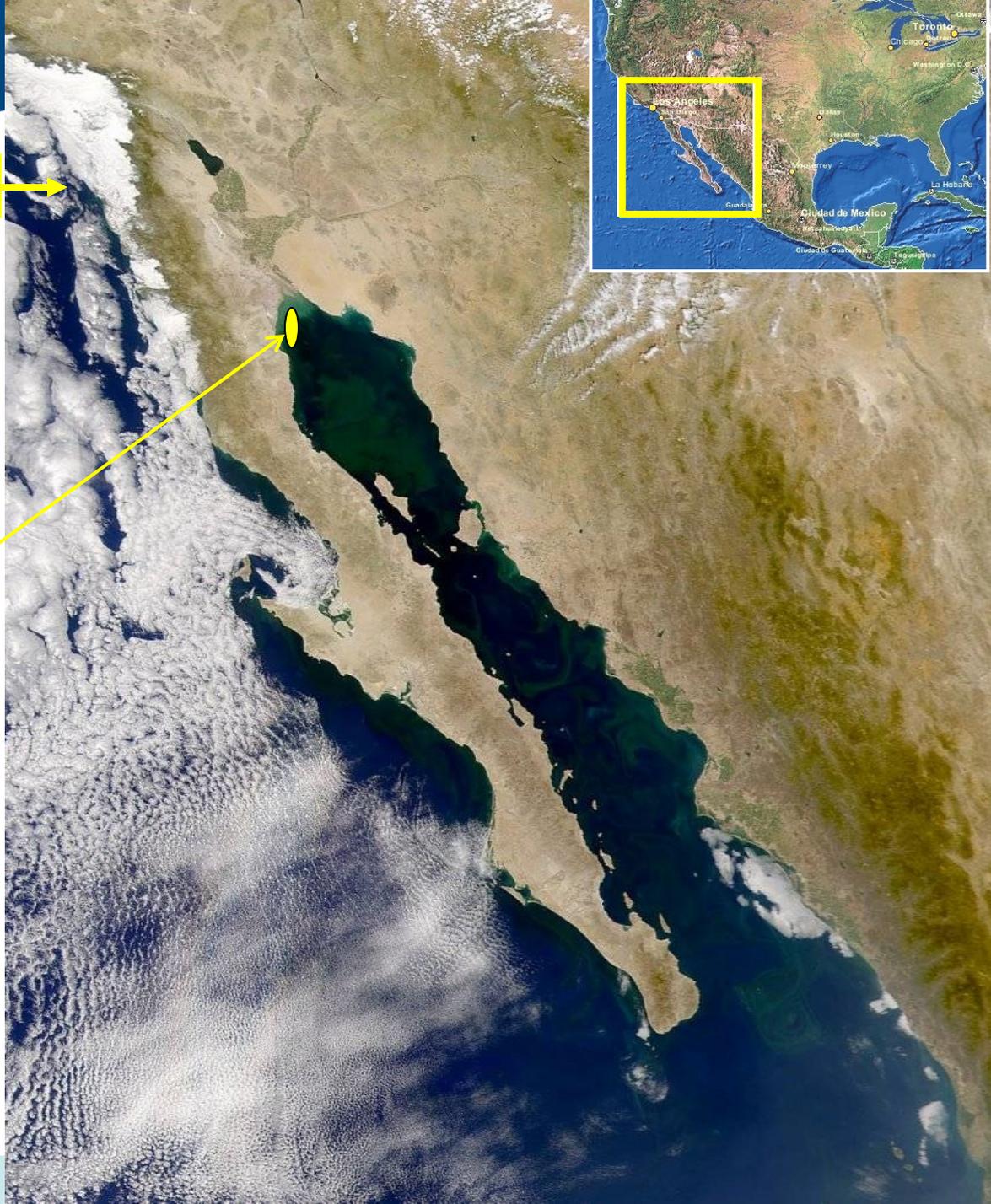
### Gulf of California porpoise



Described as a species in 1958 by Norris & McFarland  
Range confined to northern Gulf of California, Mexico  
External appearance described in 1987 by Brownell et al  
Concern about bycatch in fisheries



San Diego



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- Tiny distribution
- Naturally rare



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# SWFSC contributions to studies of the vaquita

- Descriptions of morphology, genetics and distribution
- Ship surveys to estimate abundance (1993,1997,2008,2015); aerial survey (1991)
- Evaluation of threats, population assessment model
- International vaquita recovery team (CIRVA), Mexican Presidential Commission, IWC Scientific Committee, steering committee for acoustic monitoring
- Expert panel to estimate rate of acoustic decline
- Development of markets for vaquita-safe products

# Vaquita population trajectory

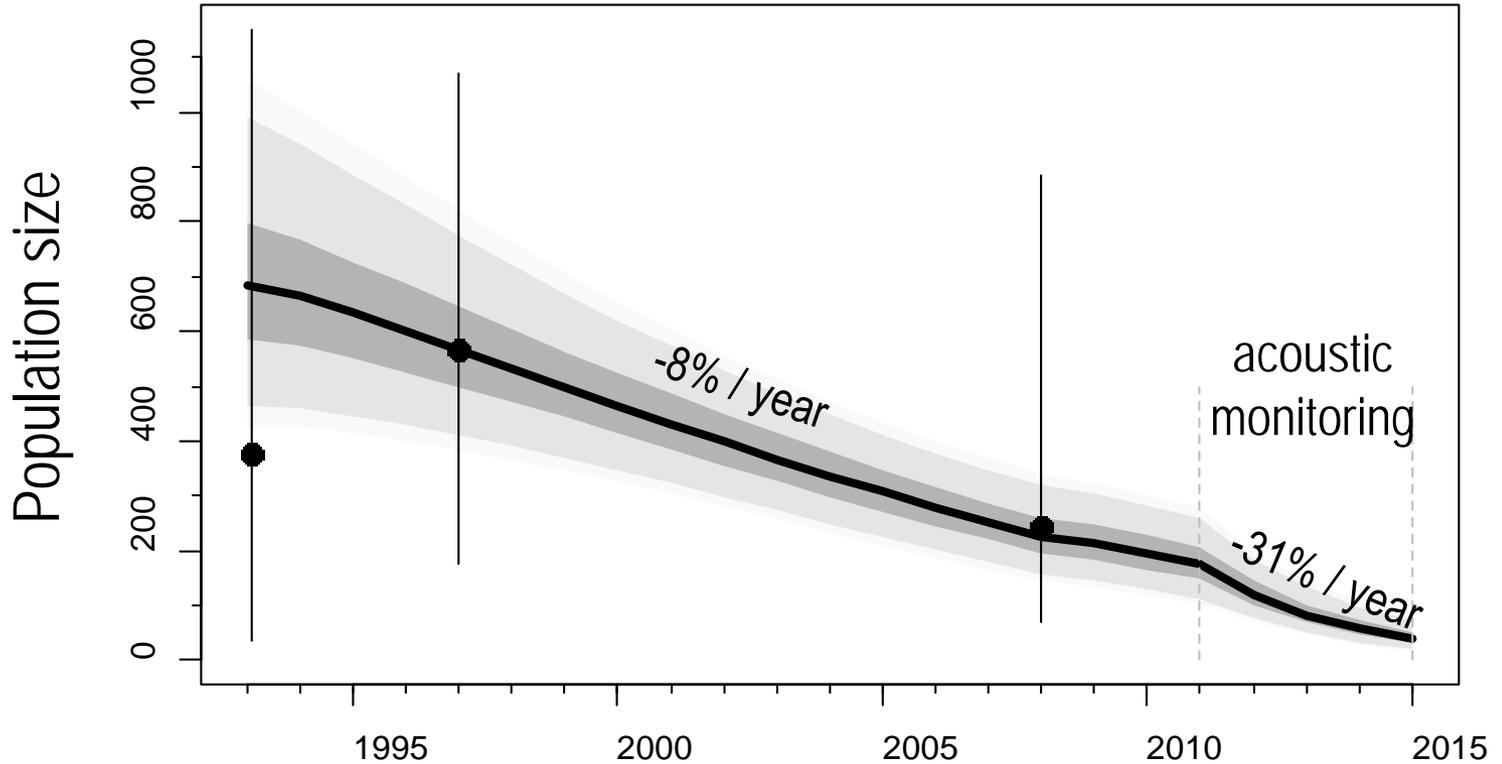


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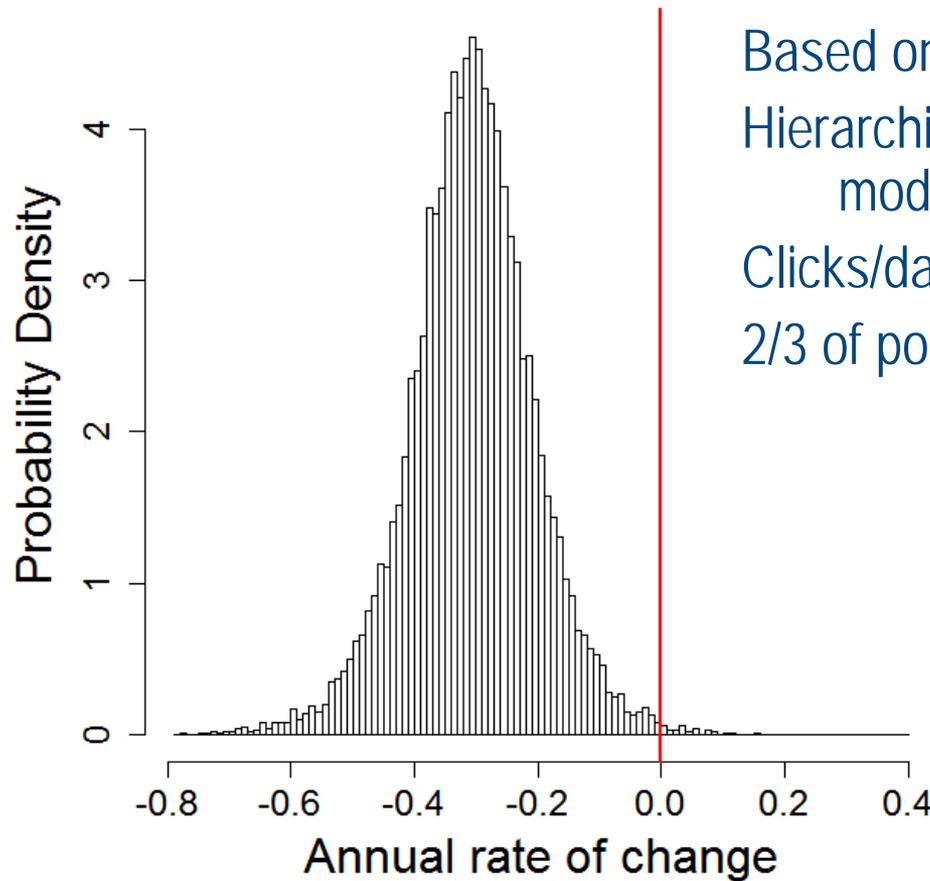




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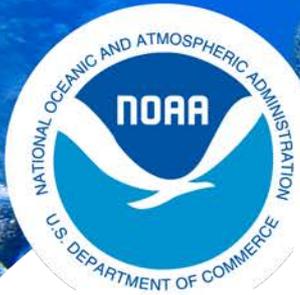
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# Rapid decline from 2011-2014



Based on array of ~45 detectors  
Hierarchical spatial and non-spatial  
models

Clicks/day declined 31% / year  
2/3 of population lost in 3 years



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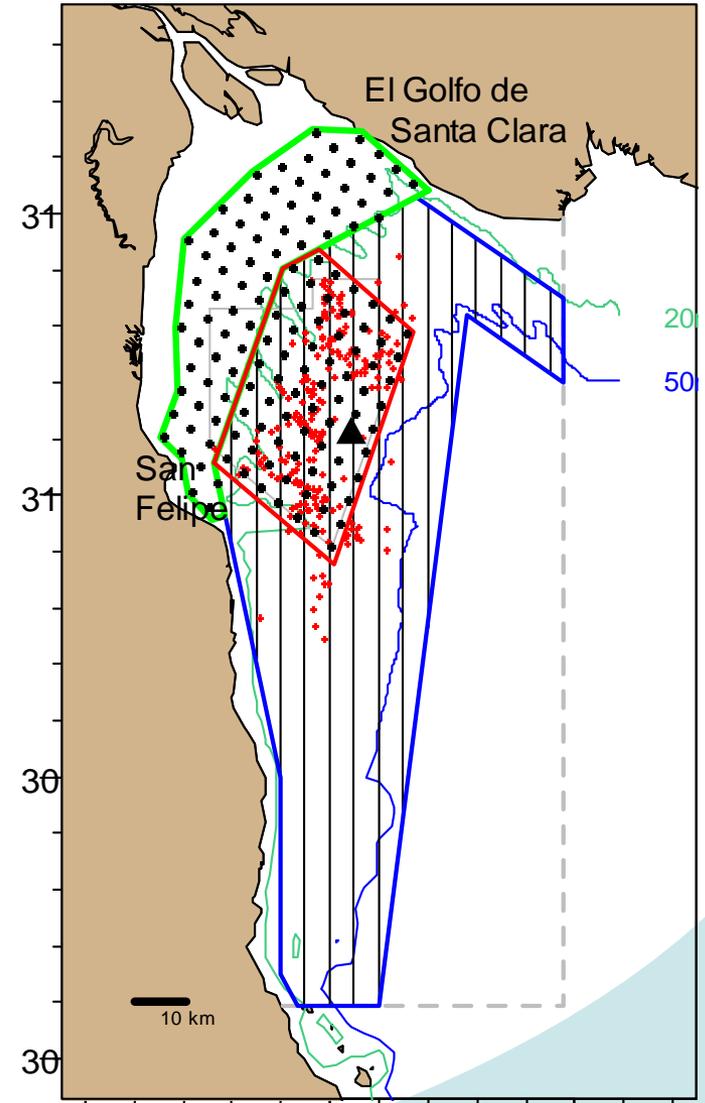
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# 2015 cruise



NOAA NMFS SWFSC PRD photo by Todd Pusser

North latitude



115 114.5 114

West longitude