

Vaquita



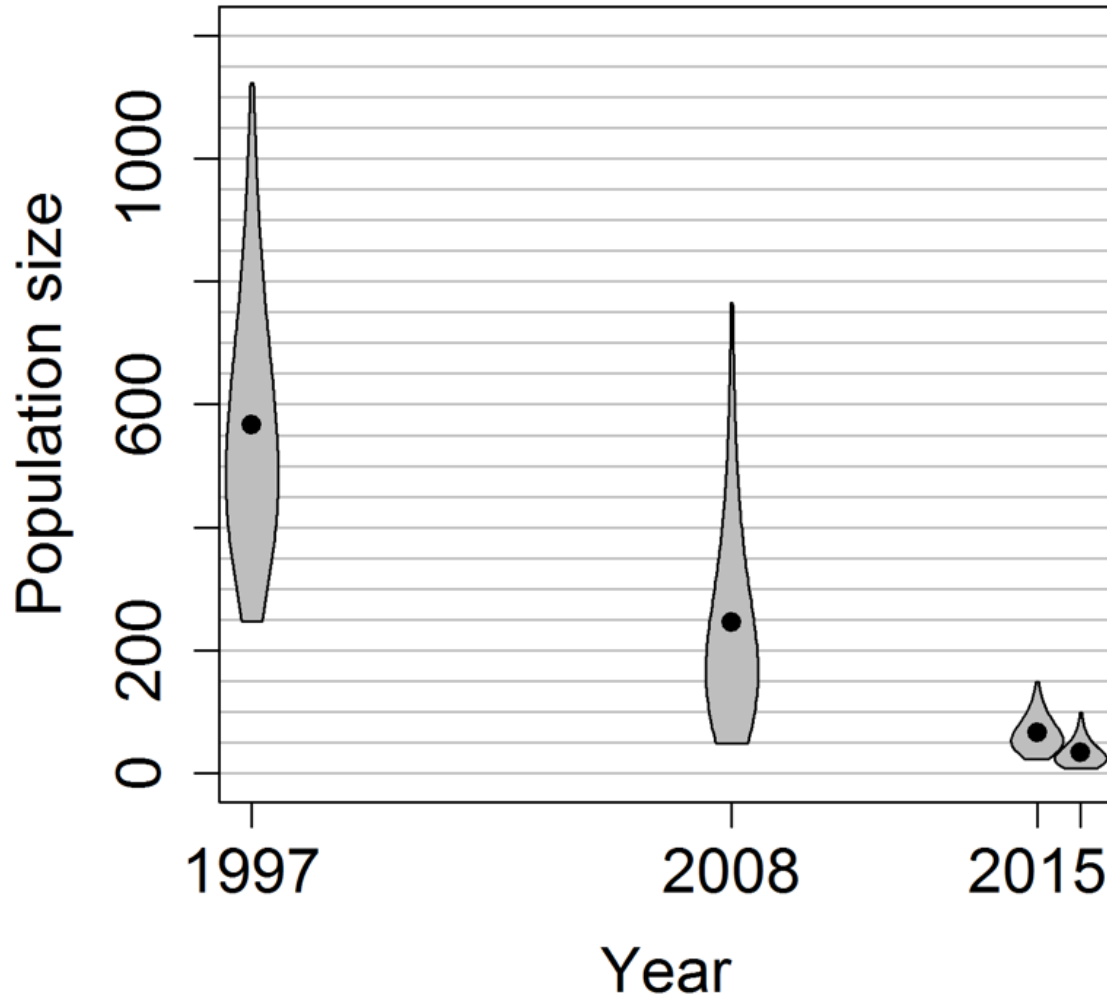
CIRVA -8 Nov 2016

Findings

- Vaquita population decline has accelerated, 49 % 2015-16
- September 2016 30 vaquitas remain
- Gillnet ban to expire in April 2017
- Illegal fishing continues, enforcement is inadequate
- Sunken derelict and active gear are abundant
- Progress on development of alternative gear is slow

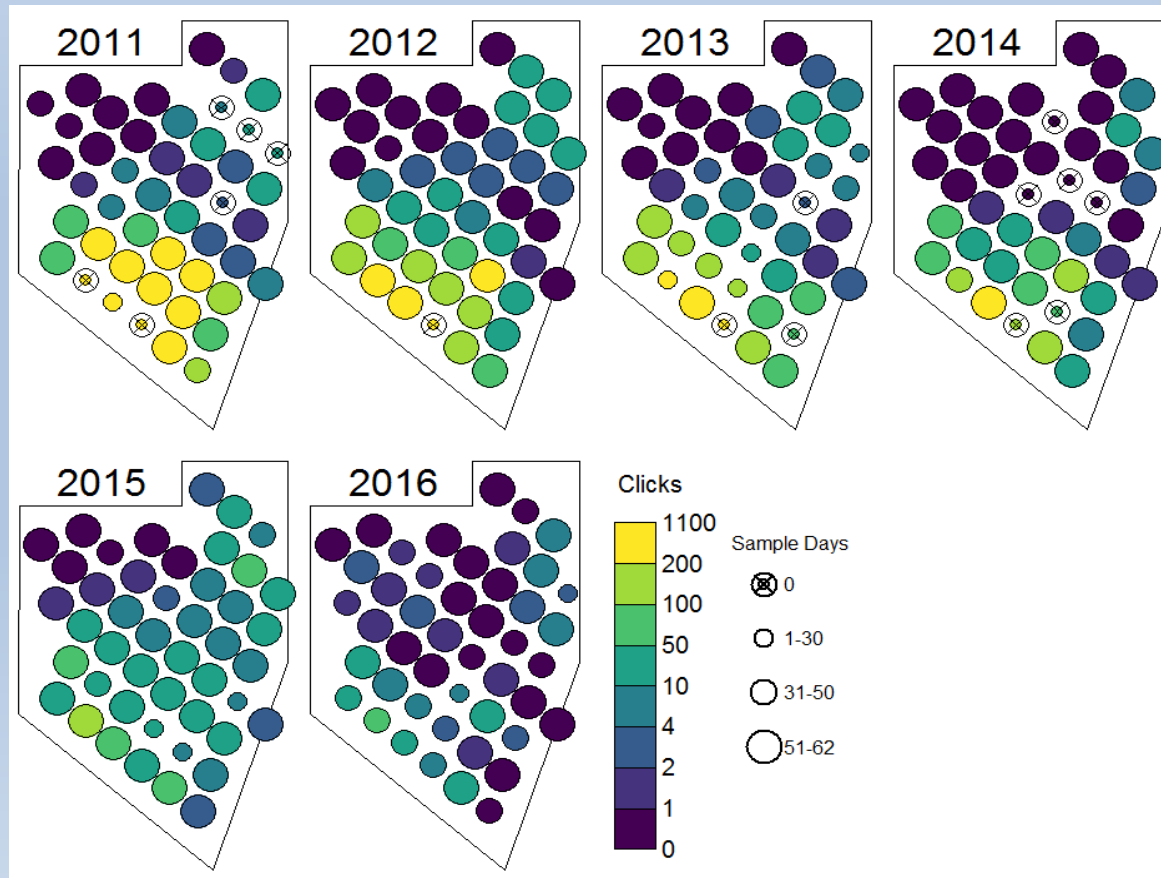


Vaquita Population Status



Acoustic Monitoring

- C-PODS in refuge each year in summer since 2011
- Between 2015-2016 49% decline
- Summer 2016 30 vaquitas remaining



Estimated median number of vaquita clicks per day at 46 sampling sites

Illegal and Derelict Gear Removal

- 15 days work in October - November 2016
(*SEMARNAT, Fishermen, WWF, Sea Shepherd, TMMC*)
 - 105 pieces of illegal, abandoned, or derelict fishing gear were discovered, 85 of these were removed.
 - 31 illegal totoaba gillnets, including 23 nets that had been recently set, were recovered.

CIRVA-8

Recommendations

- Gillnet ban be made permanent
- Sale or possession of gillnets within area of ban should be made illegal
- Enforcement must be enhanced, penalties increased
- Alternative gear development should progress
- Continue work on alternative livelihoods
- Derelict gear removal must continue
- Some vaquitas be placed in a sanctuary

2017

- Draft MX Federal regulations for permanent gillnet ban from April 2017
- Curvina fishery not opened due to lack of EIA
 - Exemption for Cucapá tribe
- US NGOs announced intent to boycott MX shrimp
- California proposed legislation to ban import of “vaquita-harmful” seafood
- Riots in EGSC, demonstrations in San Felipe
- Threats to Sea Shepherd Conservation Society



2017 (cont)

- 63 days work Dec 15 2016 - March 7 2017
(*Sea Shepherd Conservation Society alone, WWF no staff in San Felipe, no fishermen willing*)
 - 87 totoaba nets, 15 other illegal gillnets, 5 long lines.
- 3 (4?) dead vaquita within refuge
- SEMARNAT invited NMMF to initiate Vaquita rescue asap



USG Activities

- US-Mexico Fisheries Bilateral Meetings (NMFS lead)
- High-level USG-Gov of Mexico bilateral meeting tomorrow in Mexico City
- US Embassy Mexico – raising the issue as often as possible.

Laws and Regulations

- MMPA import rule – List of Fisheries under new regulations may include UGC gillnet fishery.
- Pelly Amendment – Filed 2014 by Center for Biological Diversity for trade diminishing the effectiveness of CITES (Convention on International Trade in Endangered Species).
- Lacey Act - prohibition on importing products that were illegally harvested.

Private Market Measures

Boycott announced by eNGOs at Boston Seafood Show

- * Garnering attention
- * Potential unintended impacts on other conservation projects

MMC co-funding research looking at markets and price premiums for ecolabels

- * Revealed preference surveys
- * Direct contact with major U.S. shrimp buyers



Alternative Livelihood

- Alternative fishing gear
- Sport fishing
- Other tourism
- Renewable energy
- Challenge of "nonmalleable capital and labor"

CIRVA 8 Recommendation re Ex Situ Conservation

“Some Vaquitas Should Be Placed in a Temporary Sanctuary

Given the dire situation, CIRVA **recommends** that attempts be made as a matter of urgency to place some vaquitas into a temporary sanctuary. The goal of this program is to protect these animals until they can be returned into a gillnet-free environment. “

Vaquita: Concerns with Capture & Sanctuary

- “Not needed” as threat is identified and can be removed
- Total gill net removal will conserve vaquitas
 - Ex situ* effort could distract from effort to remove gill nets
- Philosophical opposition to cetaceans in captivity
- Removal will further reduce wild population, with unknown social impact
- High risk of mortality during capture
- Lack of any experience in maintaining or reproducing in captivity

Recent Advances in Porpoise Capture, Husbandry, & Reproduction

- Rehabilitation, release of stranded harbor and finless porpoises
- Capture, tagging and release of harbor and Dall's porpoises
- Translocation of finless porpoises into semi-natural reserves
- Breeding of harbor porpoises in rehabilitation, & when captive in net pens



Vaquita CPR



2 Planning Phases:

Harderwijk Workshop

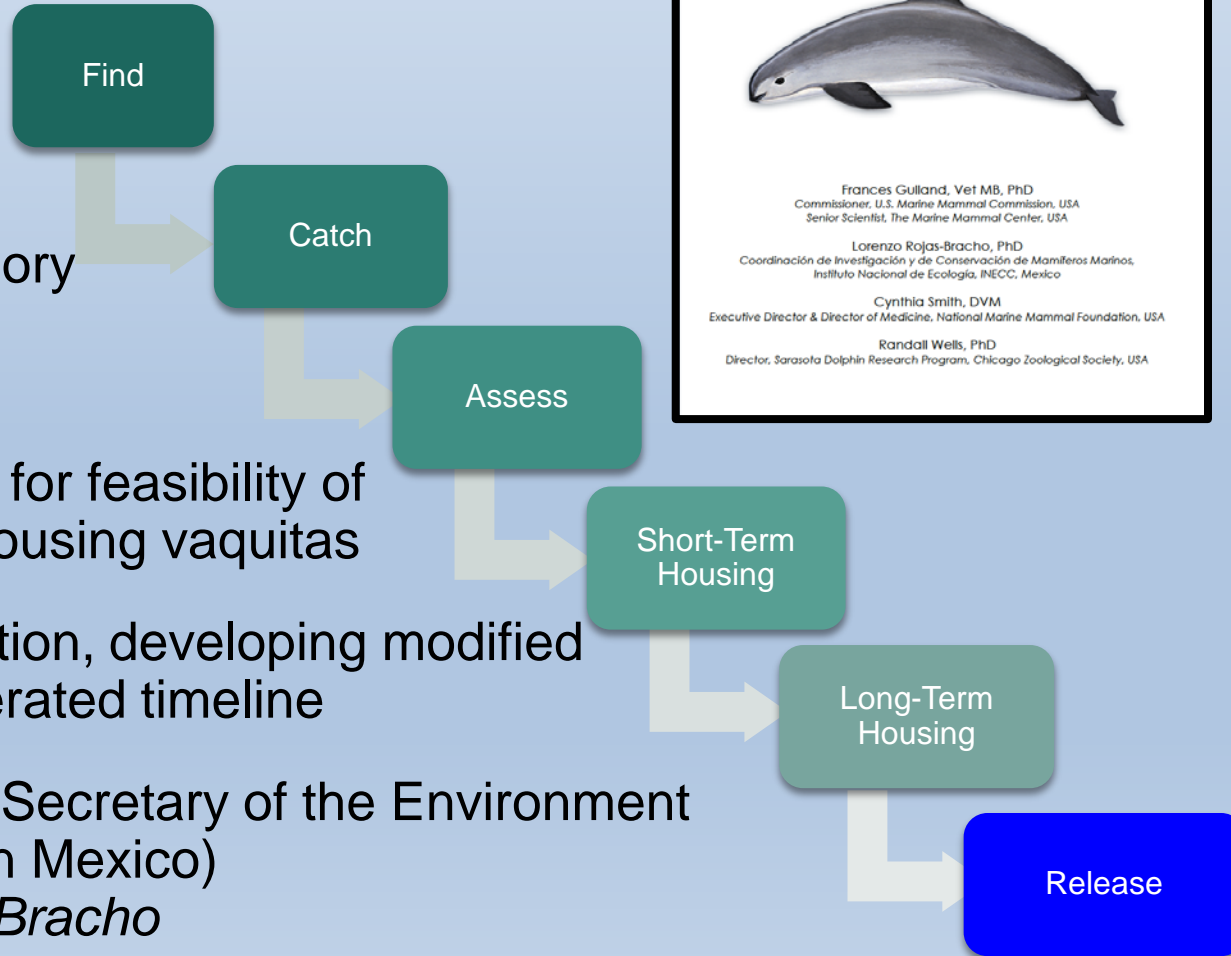
- Early 2015 - Ex-situ measures must be considered in such a dire situation
- Harderwijk Workshop (Sept 2015)
- Experts in porpoise capture, handling, care, housing
- Developed step-wise framework to identify methods and requirements
- Reported to CIRVA-7 which recommended further consideration of the feasibility and a site survey

Methodology / Planning

- NMMF and TMMC lead feasibility and site survey efforts (May - November 2016)
- Define methods, equipment and expertise required for capture, handling, care and housing
- Identify leads and personnel
- Develop review process
- Review by CIRVA
- Basic mantra – step-wise process – must succeed at each step before moving ahead

Staged Approach

- CIRVA's Steering Group became Consortium for *Vaquita*CPR
- Established Expert Advisory Group & Independent Review Panel
- Developed field program for feasibility of locating, catching, and housing vaquitas
- Per CIRVA recommendation, developing modified field program with accelerated timeline
- SEMARNAT leadership (Secretary of the Environment and Natural Resources in Mexico)
 - *Dr. Lorenzo Rojas-Bracho*
 - *Alfonso Blancafort*



Field Program to Evaluate and Test the Feasibility of Locating, Catching and Housing Vaquitas in the Upper Gulf of California



Frances Gulland, Vet MB, PhD
Commissioner, U.S. Marine Mammal Commission, USA
Senior Scientist, The Marine Mammal Center, USA

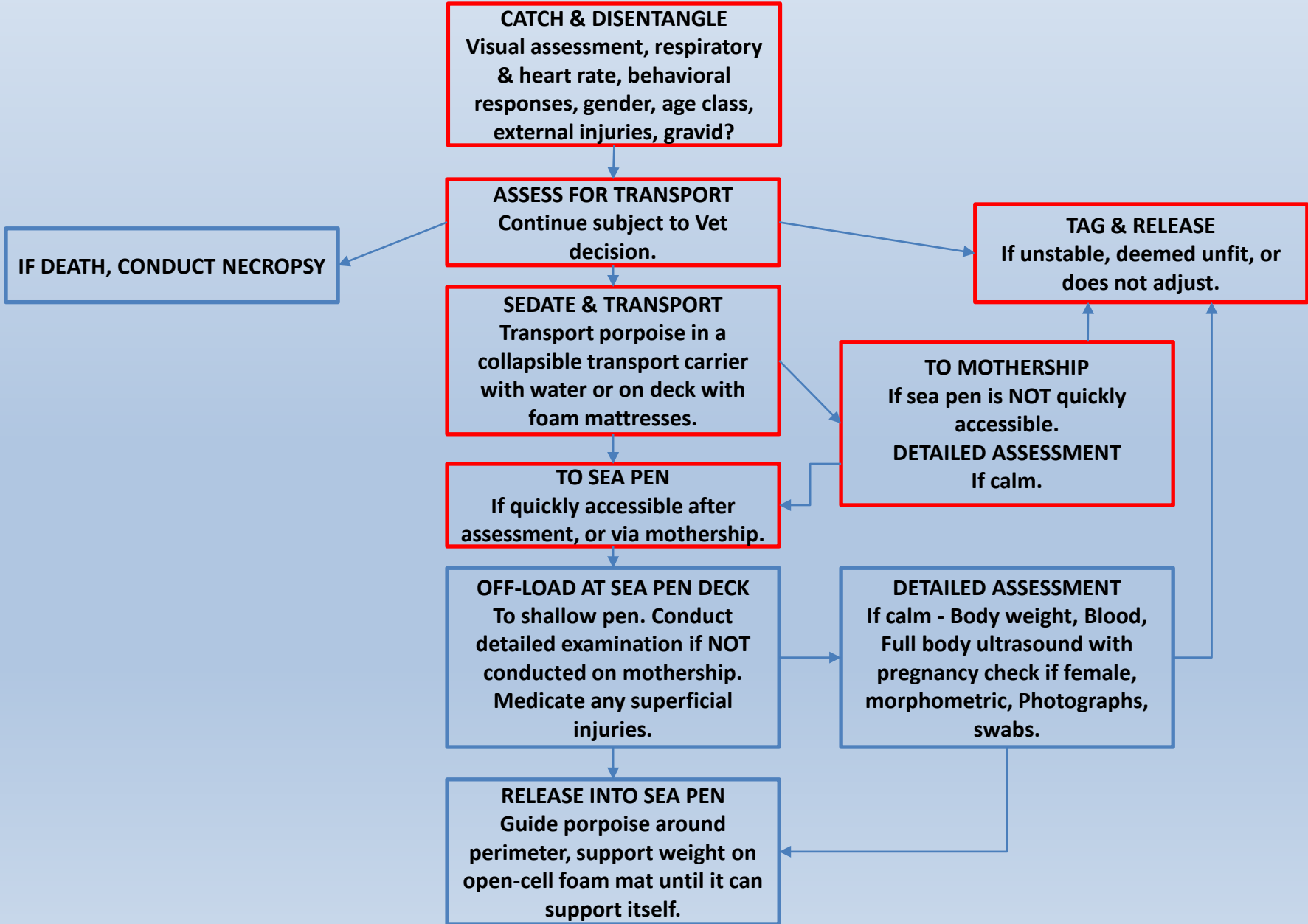
Lorenzo Rojas-Bracho, PhD
Coordinación de Investigación y de Conservación de Mamíferos Marinos,
Instituto Nacional de Ecología, INECC, Mexico

Cynthia Smith, DVM
Executive Director & Director of Medicine, National Marine Mammal Foundation, USA

Randall Wells, PhD
Director, Sarasota Dolphin Research Program, Chicago Zoological Society, USA

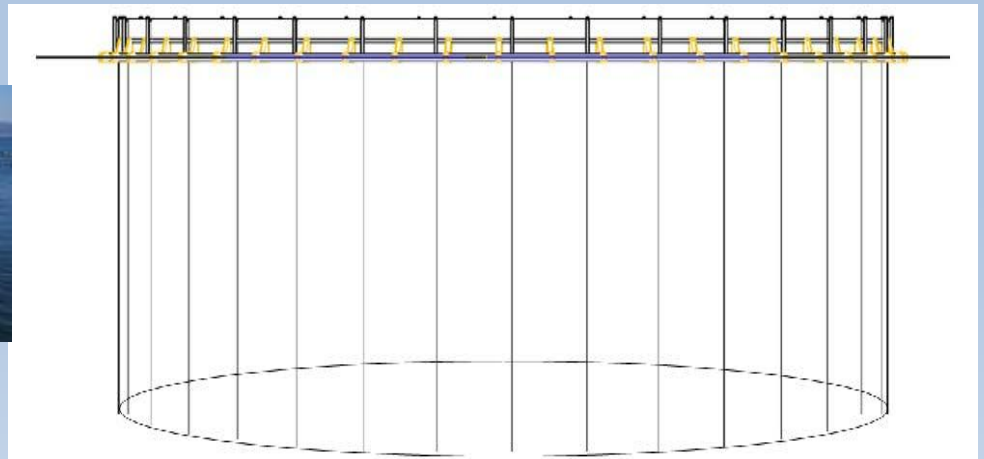


Vaquita Capture - General Approach



Floating Sea Pens

- 2-3 in-refuge, sea pens with a surrounding platform/walkway to allow for animal care and handling, with option for quick release to the wild
 - 1-2 enclosures: *~1.5 meters in depth, 2.5 cm mesh*
 - 1 enclosure: *~2.5-3 meters in depth, 2.5 cm mesh*
- Allow for acclimation to human care



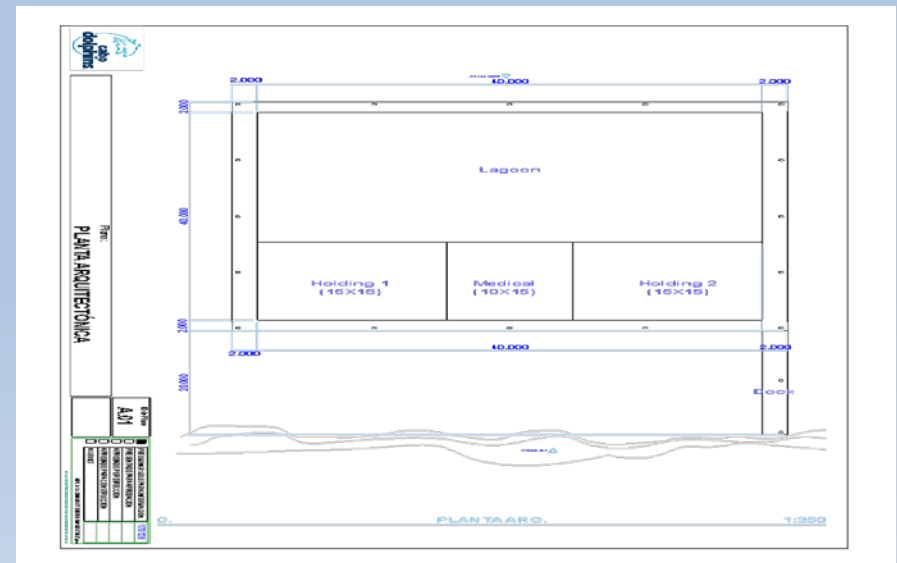
Land-Based Pools

- Temporary animal holding, specifically in case of inclement weather
- Four pools (~7 x 1.5m) with water filtration & temperature control
- Environmentally-controlled temporary building rated to withstand 177 km/h winds
- Veterinary care, fish storage, & fish preparation facilities



San Felipe Sea Pen Sanctuary

- Shore-based sea pen facility at “Machorro Cove” in San Felipe
- AMHMAR determining costs, timeline, & needs
- Provisional vs long-term engineering considerations



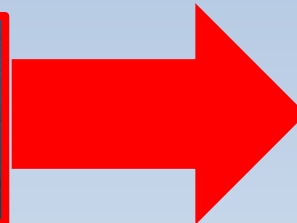
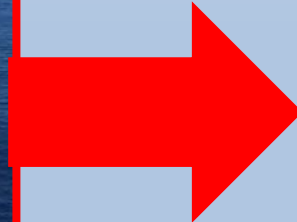
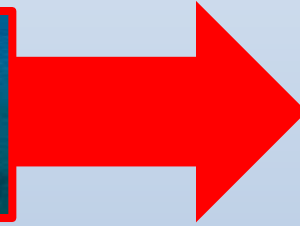
Emergency Evacuation

- In case of severe weather, vaquita may need to be evacuated out of San Felipe
- Animals would be transported in water-filled containers, secured in an enclosed vehicle, and transported by land or air to an established marine mammal facility
- If not possible to safely evacuate, animals would be fitted with a satellite tag and released



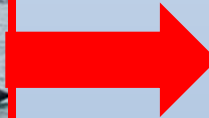
Searching for Vaquitas

3 vessels with experienced observers search with high power binoculars from elevated vantage points



Finding Vaquitas

Navy dolphin is deployed to locate vaquitas once they are sighted



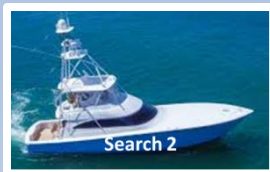
Locating Vaquita

Navy dolphin signals when it locates a vaquita



Catching Vaquita

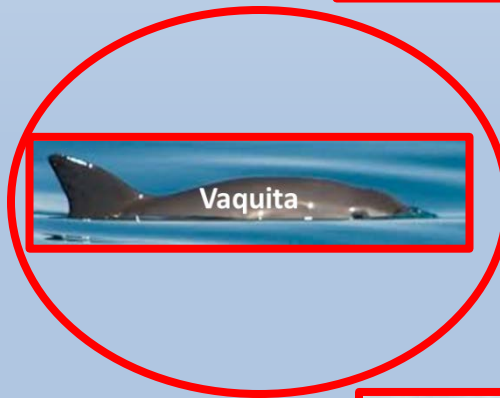
Net boats encircle vaquita, deploy nets from chutes



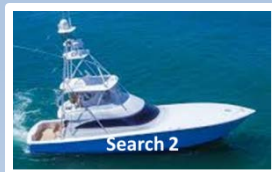
Each net boat is equipped with 260 m of 7-m-deep gillnets (2 x 130 m nets tied together; 18 cm sq mesh, 25 meshes deep).

Catching Vaquita

Net boats and recovery boat watch nets for indications a vaquita has hit the net



Net Corral

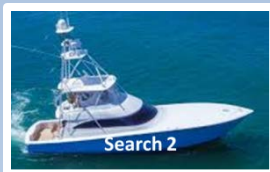


Catching Vaquita

Nearest boat responds to movement of the net corks and removes vaquita from net; if more than one, second boat moves in; remaining boat(s) watch net for additional hits until nets are retrieved



Net Corral



Initial Transport of Vaquita

Veterinarian assesses fitness for transport, if satisfactory, vaquita is placed in specially designed container on one of the catch boats for transport to Maria Cleofas



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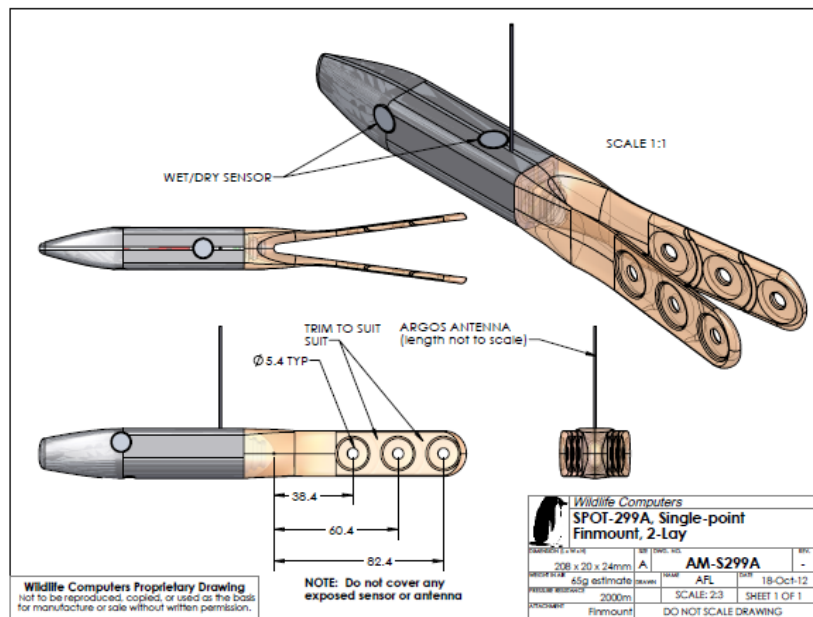
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- **If a vaquita does not respond well to the process, it will be returned to the water at the discretion of the veterinarians. If time allows, it will be tagged before release.**

If the vaquita needs to be released, it will get a satellite-linked tag if time allows

SPOT-299A Tag, Single-Point Finmount, Location-Only, Wildlife Computers



- We have deployed this and similar iterations of SPOT/SPLASH tags on 88 bottlenose dolphins.
- Experiments with before and after health assessments performed in Sarasota Bay in 2012.
- No adverse effects from tag or attachment.
- Mean transmission duration of ~170 days, up to ~260 days.

Deployments on Other Species

We and colleagues have deployed these tags and variants on:

- Harbor porpoise (1)
- Franciscanas (9)
- Common dolphins
- Short-finned pilot whales (2)
- Guiana dolphins (2)
- Pygmy killer whales (2)



Harbor porpoise "Levi"
Vancouver Island
63 days



Chico feeding



Franciscana "Chico"
Babitonga Bay, Brazil
191 days