

## EXPEDICIÓN INTERNACIONAL

LEG 1 SUMMARY REPORT OCT 28

## VAQUITA MARINA 2015



### CHIEF SCIENTISTS:

LORENZO ROJAS-BRACHO

BARBARA TAYLOR

### CRUISE LEADER:

TIM GERRODETTE

### VISUAL SURVEY

### COORDINATOR:

ANNETTE HENRY

### SCIENTISTS (A-Z):

MELODY BARAN

DAWN BREESE

SUSANNAH CALDERAN

SARAH MESNICK

PAULA OLSON

ROBERT PITMAN

TODD PUSSER

JUAN CARLOS SALINAS

ADAM Ü

ERNESTO VAZQUEZ

SUZANNE YIN

### HONORARY VAQUITA

### OBSERVER:

SECRETARY RAFAEL

PACCHIANO ALAMÁN



R/V OCEAN STARR  
STABBERT  
MARITIME

### ESTIMATING ABUNDANCE OF MEXICO'S CRITICALLY ENDANGERED PORPOISE

The most exciting event of the past week was a sighting of vaquitas in perfect conditions and when observer Todd Pusser was returning to the ship on a vessel better suited to photograph vaquitas. The beautiful photographs were tweeted by President Peña Nieto (Oct. 26 <https://mobile.twitter.com/eptn>). Videos were taken by observer Suzanne Yin with her iPhone through the "big eye" binoculars, so you can see what we see (New multi-media imagery from Vaquita Expedition 2015 will be posted shortly at [Vaquita Photos Art and Sound](#)). The splashing vaquitas were reacting to the photography vessel. This is not behavior we have seen so far in the survey.



PAIR OF VAQUITAS WITH RIGHT ANIMAL SHOWING CHARACTERISTIC DARK LIPS AND EYEPATCH (PHOTO BY TODD PUSSER).



SAME PAIR SHOWING THE ERECT TRIANGULAR DORSAL FIN (PHOTO BY TODD PUSSER).

The first leg of the ship-based portion of Expedición Internacional Vaquita Marina 2015 began on Sep 27 and ended on Oct 28, 2015 near San Felipe, BC. The SEMARNAT-sponsored survey is being conducted from the research vessel *Ocean Starr*, using the same methods as previous surveys in 1993, 1997 and 2008. Further details of the survey design are at [Survey Design](#).



ONE OF THE PAIR WITH SAN FELIPE IN THE BACKGROUND (PHOTO TAKEN FROM SHIP BY PAULA OLSON)

Past surveys have shown that vaquitas can be effectively detected visually only in conditions of light winds (Beaufort sea state 2 or less) and low swell. During 32 days of leg 1, a total of 593 nm of transect effort was achieved under these restricted conditions, for an average rate of 18.5 nm/day (Table 1). For comparison, the average rates were 16.6 nm/day in 1997 and 33.6 nm/day in 2008.

On leg 1 there were 15 on-effort vaquita sightings, and 4 on-effort possible vaquita sightings. A sighting is usually a group of 1-2 vaquitas. “On-effort” means that the sightings occurred under the standardized search effort conditions that allow abundance estimation. Vaquita sightings are classified as certain if the cetaceans were positively identified as *Phocoena sinus*. However, the small size and cryptic behavior of vaquitas sometimes make it difficult to distinguish vaquitas definitely from bottlenose and common dolphins, especially if the sighting is brief. Therefore, some sightings which could not be positively identified to species are likely to be vaquitas. Such sightings are recorded as “possible vaquita” sightings with a score that indicates the probability of being vaquitas. For unbiased estimation of abundance, the probability that these possible vaquita sightings were, in fact, vaquitas will have to be taken into account.

By design, transect effort includes a large “primary” set of transects and a smaller “core” set of transects. During leg 1, more than 50% of the planned primary and core transect lines were covered (Fig. 1). All of the vaquita and possible vaquita sightings on these transects have occurred in the same area where vaquitas have been previously seen (Fig. 2). There is no indication of a shift in distribution, and the survey is covering all the areas where vaquitas occur. As was noted during the 2008 survey, vaquitas appear to be associated with submarine ridges that occur in the area (Fig. 3).

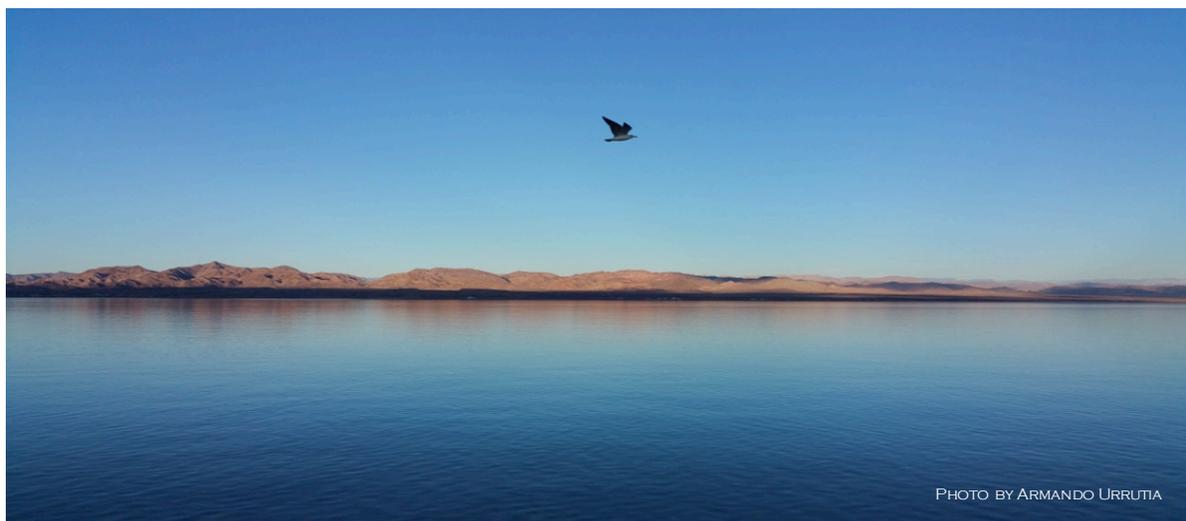


PHOTO BY ARMANDO URRUTIA

On Oct 1, the ship was visited by a large delegation of dignitaries and media, including the Secretary of the Department of the Environment and Natural Resources (SEMARNAT), Rafael Pacchiano. The visitors were fortunate to be able to see several vaquitas through the large 25X binoculars. Video photographers Matt Podolsky and Joe Shull of WildLens and Andrew Wegst of WildAid stayed on the ship for short periods during leg 1. Gilberto Genero Ortega of INAPESCA (CRIP Ensenada) was on board for most of leg 1. The Navy was represented sequentially by Ivonne Vomend Alvarez and Teodora León García, who assisted with communications with the Navy. In addition to helping with transportation of visitors, the Navy is to be thanked for their enforcement efforts during leg 1. The contrast in the reduced number of pangas compared to surveys in previous years was dramatic.

The end of leg 1 also makes us bid goodbye to a few of the scientists. Our great thanks to Todd Pusser (photographer of the fabulous vaquita photographs), Sarah Mesnick (a huge help on communications and getting the SWFSC web pages going), Tim Gerrodette (cruise leader leg 1 and a big help getting through the early stages of data curation), Melody Baran (the cheeriest recorder imaginable under duress) and Ernesto (Vaquita) Vázquez (hugely helpful with translation for these Reports and compiler of the vaquita video). The dedication of these scientists to vaquitas is outstanding, and they will be greatly missed during leg 2. Our thanks to the crew of the R/V *Ocean Starr*, who continue to make surveys on the old ship a pleasure with no days lost and who maintain a cheery and can-do attitude towards shifting schedules and odd requests.



**Bottlenose dolphins are much larger than vaquitas, have a blunt beak and curved dorsal fin (Photo by Melody Baran).**



**Common dolphins are only a bit larger than vaquitas, have a pointier more curved dorsal fin. They often jump so that their white sides and pointed beaks can be seen (Photo by Melody Baran).**



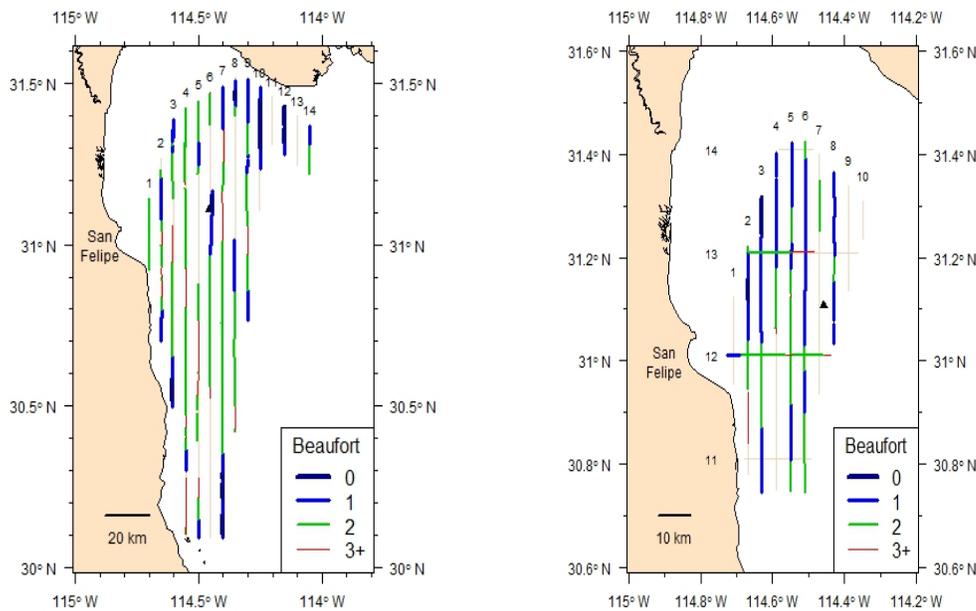


Fig. 1: Line-transect survey effort on primary (left) and core transects (right) during leg 1, stratified by Beaufort sea state. The planned transects are numbered and shown as light gray lines. Consang Rocks are shown as a black triangle.

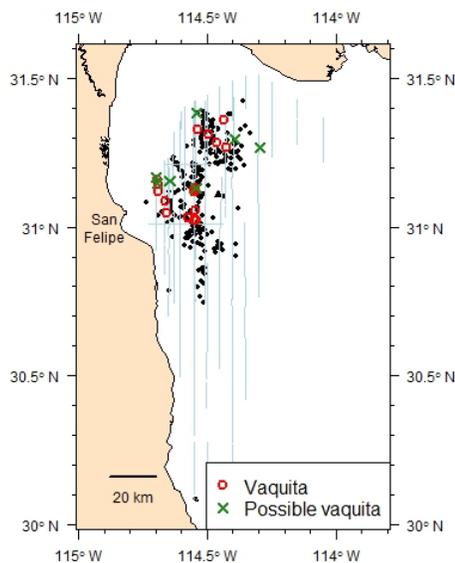


Fig. 2: On-effort vaquita and possible vaquita sightings during leg 1. Light blue lines show the transect lines covered in leg 1 (as in Fig. 1). Black dots show locations of vaquita sightings during similar line-transect surveys in 1993, 1997 and 2008.

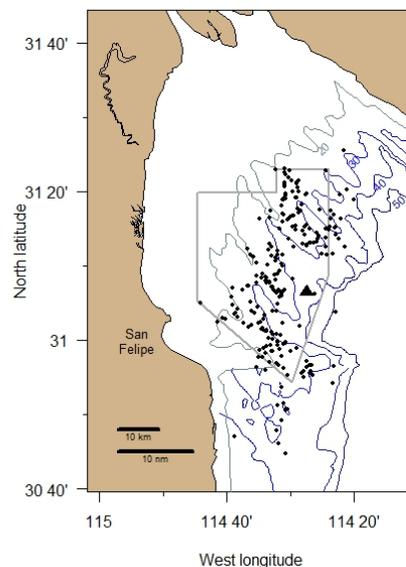


Fig. 3: Vaquita sightings in relation to underwater bathymetry. Depths are given in meters. The Vaquita Refuge Area is shown as a gray polygon.

Table 1. Nautical miles (nm) of transect effort by day on leg 1, in conditions suitable for vaquita detection.

<u>Date</u>	<u>Effort (nm)</u>
27 Sep 15	15.3
28 Sep 15	8.3
29 Sep 15	47.3
30 Sep 15	36.6
1 Oct 15	12.5
2 Oct 15	0.0
3 Oct 15	0.0
4 Oct 15	0.0
5 Oct 15	0.0
6 Oct 15	1.3
7 Oct 15	0.0
8 Oct 15	17.7
9 Oct 15	32.9
10 Oct 15	64.0
11 Oct 15	52.6
12 Oct 15	57.6
13 Oct 15	64.3
14 Oct 15	29.9
15 Oct 15	39.9
16 Oct 15	0.0
17 Oct 15	0.0
18 Oct 15	16.8
19 Oct 15	0.0
20 Oct 15	11.0
21 Oct 15	3.7
22 Oct 15	22.4
24 Oct 15	0.0
25 Oct 15	32.7
26 Oct 15	0.0
27 Oct 15	6.7
28 Oct 15	19.6
Total	593.0

## SURVEY OVERVIEW

Vaquitas are a critically endangered porpoise found only in a small part of the Upper Gulf of California, Mexico. Vaquita are the smallest porpoise and have the smallest distribution of any marine mammal. Recent acoustic data indicating a strong decline in vaquita numbers prompted the government of Mexico to take unprecedented steps to save their porpoise from extinction resulting from accidental deaths when animals drown in fishing nets that are set for fish and shrimp. The 2-year ban on gillnets within the distribution of vaquitas was announced by President Peña Nieto in April of 2015. This survey will obtain the most precise abundance estimate of vaquitas possible at the beginning of the ban period.

The Vaquita Expedition 2015 will take place from September 26 to December 3. Chief Scientists for the survey are Lorenzo Rojas-Bracho (from Mexico's Department of Environment and Natural Resources, SEMARNAT) and Barbara Taylor (from Southwest Fisheries Science Center, NOAA Fisheries); the survey is funded by SEMARNAT. Both visual and acoustic methods are required to obtain a precise abundance estimate. The entire distribution of vaquitas between 20 and 50 meters deep will be visually surveyed from a research ship (the R/V *Ocean Starr*) using 6 huge binoculars called 'big eyes'. These 25-power binoculars are needed to see the shy vaquita before they react to the ship. Scientists came from Mexico, the US, United Kingdom and Germany to provide porpoise sighting expertise.

Mexico is a world leader in acoustic monitoring of porpoises using a passive acoustic device called a CPOD. Armando Jaramillo-Legorreta and his team will deploy 134 CPODs in a grid in the shallow water vaquita distribution where the ship cannot go. The CPODs detect the very high frequency clicks that vaquitas use to find fish in the productive, muddy waters. Developing the acoustic monitoring system was the primary objective of the last vaquita survey in 2008. The system was designed to detect the hoped for 4%/year recovery of vaquita. Instead, the system detected a dramatic 67% decline between 2011 and 2014.

The project is a research collaboration between SEMARNAT and the Southwest Fisheries Science Center, NOAA Fisheries. Support is provided from Instituto Nacional de Ecología y Cambio Climático, Comisión Nacional de Áreas Naturales Protección, Comisión Nacional para el Conocimiento y uso de la Biodiversidad, and The Marine Mammal Center.