Report of the Campaign for Visual Observer Training and Photographing of Vaquita

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Executive Summary with Recommendations

The primary objectives of the 2026 Vaquita Campaign were to: 1) train community members as vaquita observers and in environmental DNA (eDNA) sampling methods; 2) obtain acoustic and visual data during May in the Zero Tolerance Area (ZTA), the Extension Area (EA), and the waters northwest of these areas, where numerous vaquita detections occurred in 2025; and 3) relocate the adult female named “Frida”, determine whether she had a calf, and obtain photos and drone footage. As in previous efforts in the ZTA and adjacent waters, acoustic data were used to focus visual efforts.

Training

Eight San Felipe community trainees successfully completed a total of 22 hours of pre-campaign training and 2 days of eDNA training. Trainees then increased their observer competency by working side-by-side with professional vaquita observers over 10 days at sea on the Sea Shepherd Conservation Society’s ship, M/V *Seahorse*. Four pairs of high-power binoculars were operated by 2 community trainees and 2 observers who searched along transects covering areas with recent vaquita acoustic detections. Poor weather resulted in only three vaquita sightings during the survey, only one of which occurred while the community trainees were on board. Nevertheless, the trainees gained valuable experience detecting other objects and marine mammals. Trainees also gained experience in other observer tasks, including writing observer narratives, sighting discussion, and practicing the expert elicitation process.

Recommendations for continued training prior to May 2027

1. A strategic training plan must be developed to provide community trainees with practical marine mammal observation experience. Fieldwork should be scheduled prior to next May in high-encounter regions, such as Ensenada or La Paz
2. Additional training on high-power 'big eye' binoculars is required. The training plan should schedule time aboard the Seahorse alongside one or two professional observers, ideally during periods of calm seas.
3. The plan should also incorporate hand-held binocular training aboard either pangas or the Koipai.
4. To maximize the rate of experience acquisition, only two trainees should be assigned to the Seahorse in 2027.
5. To ensure effective collaboration with international observers and recorders, trainees must practice delivering sighting data in English.

Acoustic and visual distribution of vaquitas

Both acoustic and visual efforts encountered unexpected challenges. In the area between the western border of the Vaquita Refuge and the northwestern border of the ZTA´s Exclusion Area (EA) acoustic monitoring overlapped with high concentrations of scallop fishers. Consequently, several acoustic detectors were cut loose -though some were recovered by visual operation teams prompting a decision to limit deployments in this zone and switch to sink moorings to minimize interference. Despite the resulting data scarcity, the available detectors confirmed the presence of vaquitas, which justified continuing visual search efforts in this area.

Visual efforts were hampered by exceptionally poor weather, characterized by high swells and strong winds. As a result, three short-duration vaquita sightings were recorded, occurring under conditions that prevented the deployment of pangas for photo-id or eDNA sampling. Although most visual effort concentrated within the ZTA -where acoustic detection rates were highest - all three sightings occurred outside its borders: one within the EA and two in the northwest zone (Figure 1). A significant portion of this year's effort targeted the northwestern corner of the ZTA where the vaquita named Frida had been frequently sighted in the past. However, the calm winds and low swells that had facilitated sightings in previous years were entirely absent during this 10-day training campaign.

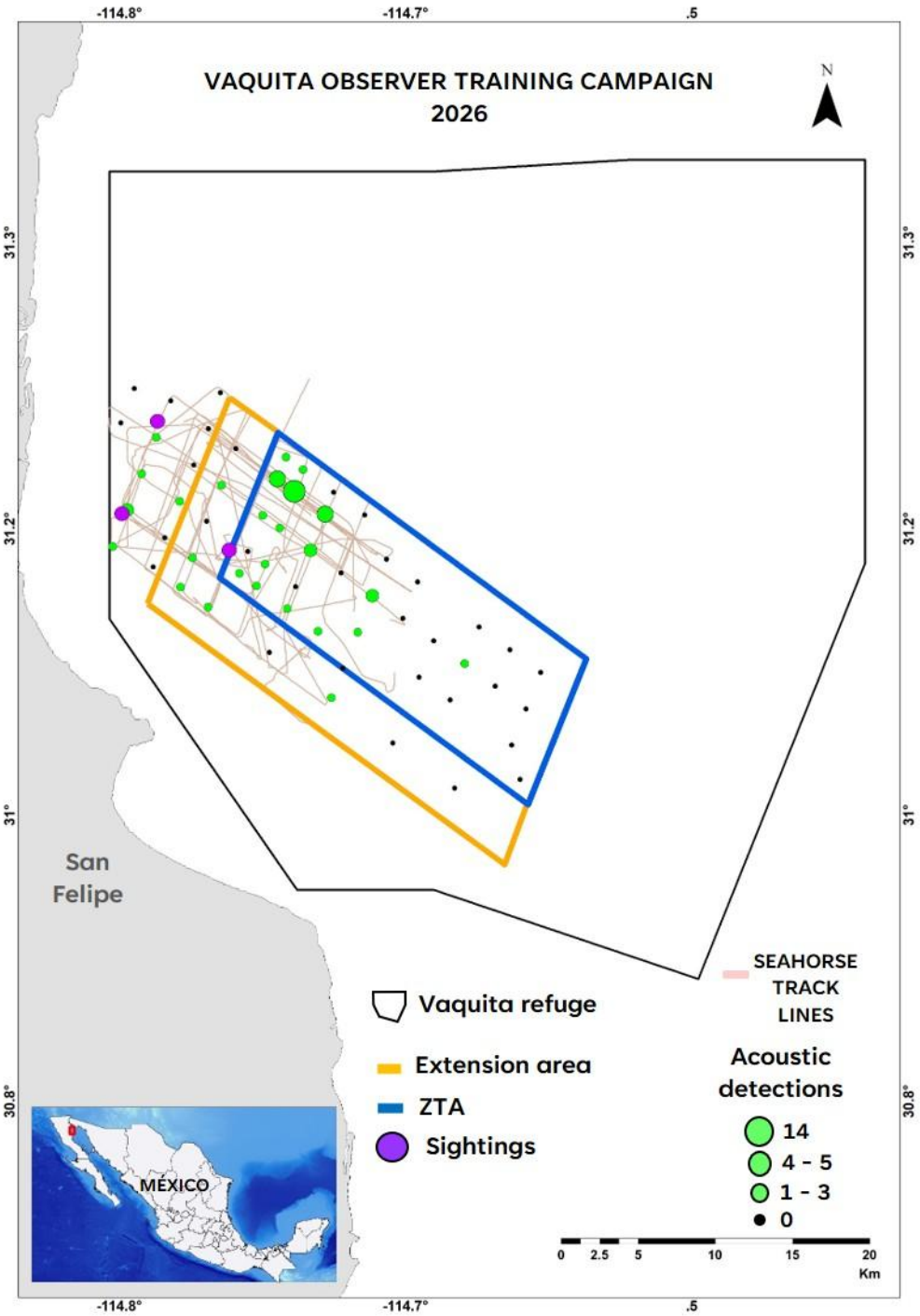

Figure 1. Vaquita sightings and acoustic detections are presented alongside ship tracklines. Although most acoustic detections occurred within the ZTA, no vaquitas were visually sighted inside this zone. Instead, all three sightings occurred outside the ZTA, one just outside the ZTA border and two in the area unprotected by concrete blocks with hooks to the northwest of the ZTA.

Recommendations from the May 2026 campaign for vaquita conservation and the spring 2027 vaquita acoustic and visual survey

1. The consistent presence of vaquitas northwest of the ZTA+EA in September 2025 and May 2026 makes the deployment of concrete blocks with hooks in this area an urgent conservation priority.
2. Weather patterns from April through June over at least the past three years should be analyzed. The next survey should be scheduled for a long enough period to ensure 10 days with winds below 5 knots and swell below 0.5 m.
3. The recommended survey area should focus on the ZTA+EA and the area to the northwest. The remainder of the Vaquita Refuge is best monitored acoustically.
4. The vessel configuration used in the 2023 and 2024 surveys is recommended: the *Seahorse* for big-eye observations and M/V *Sirena de la Noche* (*Sirena*) for handheld-binocular observations and photography. The *Sirena* allows the captain to steer directly toward locations indicated by observers, avoiding delays caused by communication issues. M/V *Koipai* lacks this capability and is a less stable platform.
5. The *Seahorse* should be equipped with three forward-facing big-eye binocular stations staffed by professional observers. A fourth big-eye station should be reserved for community trainees. Only two trainees should be assigned to this station, selected from the eight 2026 trainees who received additional marine mammal observation time and demonstrated strong sighting skills.
6. The *Sirena*, or a similar vessel that can be operated from the observation deck, should be staffed by a combination of professional observers/photographers and community trainees not selected for the *Seahorse*.

Recommendation on eDNA

1. eDNA sampling and analysis should continue as a complementary, non-invasive monitoring tool.
2. Building on the successful San Felipe community workshop, community participation in eDNA monitoring should continue to be expanded through citizen science, including opportunistic water sampling during vaquita sightings.
3. eDNA sampling logistics should be organized together with the photo-ID team, with defined roles and a standardized protocol for each sighting event.
4. If possible, sampling should extend to areas not covered acoustically since 2015, particularly shallow waters near El Golfo de Santa Clara. Sampling during neap tides is preferred to improve interpretation if vaquita-positive samples are documented.

5. Extending eDNA sampling to the *Seahorse* science team could be explored with the Sea Shepherd team, including a training module and a dedicated onboard filtration setup to maximize sampling opportunities.

Introduction

September 2025 was the concluding month of over 8,000 days of acoustic research throughout the recent distribution of vaquitas and a 2-ship, 28-day-each, visual survey. Experts agreed that the priority for 2026 should be analysis and publication of these data, which will include a new distribution map of current vaquita habitat use and a new abundance estimate. That research also identified an individual named Frida with a calf. Frida was first sighted in 2023 and drone measurements confirmed that her 2025 calf was just over a year old.

It was agreed that, following three years of training community members, it was time to begin transitioning select trainees to the role of vaquita observers before the next visual survey. This training effort recognized the importance of actively involving young members of local communities in vaquita research and conservation, and strengthening local capacity. In turn, this will help support the long-term sustainability of conservation actions in the Upper Gulf of California.

Debriefings from past visual surveys highlighted the need to improve communication procedures. As the vaquita survey has increasing numbers of participants who primarily speak Spanish, the need for an efficient set of communications has become clear. This need is particularly urgent with the desired incorporation of new observers. Because this campaign effort was not a standard survey, it provided an opportunity to work on improvement. A set of bilingual 'flash cards' was developed and trialed during the campaign to improve and standardize communication.

Obtaining photographs to identify vaquitas is difficult because they avoid vessel noise. The best strategy has been to position several vessels to track the vaquitas with the goal of at least one vessel being close enough to obtain high-resolution photographs. Communicating the location of vaquitas between different vessels has always been difficult. Several new methods were to be tried to maneuver vessels toward objects and, hopefully, toward vaquitas. These dedicated efforts would also allow drone pilots to refine their methods of locating vaquitas using directions from observers on the ship.

Regular updates from acoustic vaquita locations guided the visual survey efforts. The northern portion of the ZTA has consistently recorded the highest number of sightings and the area to its northwest was an important sighting area in September 2025. In addition, all sightings of Frida and calves have been in this northwest area, so a special effort was made to focus in this area.

As with all past visual surveys, days near the end of the campaign included media. In addition, maximizing time in areas of vaquita detections could allow further research on eDNA when vaquitas are seen. Sampling was to occur whenever sightings allowed, and training to conduct sampling was another objective.

In summary, the objectives were:

1) Training 8 new observers (from the local community and the scientific community) to replace retiring vaquita observer expertise;
2) Obtaining photographs and/or drone footage (with measurements) of Frida and any calves by focusing effort in the area where calves have been seen previously;
3) Increasing effort in the area northwest of the ZTA to better understand the importance of this habitat to vaquitas in a season (May) that has not had much effort there;
4) Trialing new methods to guide pangas to vaquita locations to improve photography of vaquitas;
5) Training communication procedures including 'flash card' commands
6) Including, to the extent possible, stakeholders, dignitaries and media in this effort; and
7) Continuing efforts to sample for eDNA where vaquitas have been recently detected.

Methods

Training

Land-based training

A total of 22 hours of training (Appendix 1) were dedicated to preparing trainees for the visual survey and the duties of a vaquita observer.

Remote training consisted of three pre-survey sessions, totaling 6 hours. The first session covered the objectives of the May survey, the biology of vaquitas, and techniques for studying them. The second session focused on what to expect as a marine mammal observer and how to search for vaquitas. The last session covered the Expert Elicitation method, which is used to estimate unique numbers of calves and unique numbers of vaquitas seen during regular surveys.

On 11–12 May 2026, the Vaquita eDNA Project held a workshop, "Taller de ADN Ambiental en el Alto Golfo de California: Fundamentos y aplicaciones para la conservación marina" in San Felipe, Baja California. The workshop (10 hours of instruction) was designed to strengthen the technical capacity of community members to participate as co-monitors to advance vaquita conservation.

The workshop's theoretical sessions began with an overview of the ecological and conservation context of the Upper Gulf of California as well as the biology and status of vaquita. Different types of biological monitoring and the specific role that eDNA can play as a complementary, non-invasive tool were presented. Afterward, participants traveled to the sampling site and conducted live water sampling using the Smith-Root environmental DNA Citizen Scientist

Sampler, following the full protocol of filtration, replicates, and sample labeling. On the second day, DNA samples were processed in a portable Bento Lab unit, where participants set up conventional PCR with positive and negative controls, ran agarose gel electrophoresis, and interpreted the resulting bands.

A two-hour session was held in San Felipe during which trainees received general instructions on using the big eyes and relaying sighting information to the recorder during a sighting. Each trainee practiced locating floating objects and reporting their bearing and reticle readings.

Because high winds on 22 May ruled out opportunities to visually survey, a three-hour photography and drone session for the trainees was led by Job Olguín Hernández (JOH). The session was carried out on land and aboard a panga. The exercises included tracking moving objects at different distances and locating objects simulating the bearing and distance obtained during a sighting on the big eyes.

A set of flashcards was developed to aid communication between the observers/trainees and the recorder, between ship and panga and between recorder station and the bridge. The flashcards included the commands most used during a sighting.

At-sea survey training

On the first day of the survey, all eight trainees received instruction from the observer team on the use of big eyes. One of the large Vaquita Refuge border buoy markers was used for practice, with all participants taking repeated positions and giving their angles and reticles to the recorders so that positions could be plotted. By the end of the day, trainees were doing well at finding and reporting objects seen in the big eyes.

For the remainder of the survey, the trainees were divided into two groups that came on the ship on alternate days. Observers were paired with a trainee each day to provide guidance in the use of big eyes, finding and distinguishing floating objects from marine wildlife and to give feedback on the narratives and expert elicitation exercises.

On the second day, regular survey rotations were conducted with two pairs of big eyes for trainees and two pairs for observers. Although no vaquita sightings were made, trainees gained experience by making or confirming sightings by others of acoustic detectors that had been cut loose from their moorings and several carcasses. Progress was made in guiding pangas to objects when retrieving acoustic detectors. The panga guide (Andrea Bonilla, AB) used position data from the survey software (WinCruz) and a navigation application on her cell phone. Drone operators continued to sharpen their skills by verifying the acoustic detectors and identifying carcasses to species.

Afternoons were frequently too windy to sight and track vaquitas. This non-survey time late in the day allowed for training in writing observer narratives. Both good and bad quality videos of vaquitas were shown to the group to simulate different sightings. Observers and trainees then wrote narratives and reviewed them as a group to achieve the level of detail needed for the Evidence Dossier. The group also used as examples one multi-sighting day from the September 2025 cruise and the sighting made on 22 May. At the end of every session the trainees assigned probabilities to the number of calves and total number of vaquitas sighted in every sighting. Afterward, they shared their answers with the group and received feedback.

When the trainees were not their scheduled time on the big eyes, Andrea Bonilla (AB) and JOH provided additional camera and drone training.

Photographic Identification

The vaquita photo-id catalogue was made available to vaquita photo-id experts to confirm if an animal sighted on this training campaign had been previously photographed in surveys or was a new animal. Professional observers provided their own cameras with zoom lenses that had at least the capability to 400mm. There were 2 similar cameras available for trainees.

Distribution of effort and detections

Tracklines and waypoints were designed to partially match the locations of acoustic detectors within the ZTA (Appendix 2). Acoustic detectors were placed as they had been in 2023 and 2024 within the ZTA but also placed in the EA and some additional nearby areas as in 2025 (Appendix 3). Ship survey speed was between 4-6 knots. Observers were housed aboard the *Seahorse* and the community trainees and eDNA team commuted by pangas.

One vessel was used for the 2026 survey – the *Seahorse* – with an eye height of 7.57 m. Eye height is the average eye height above the water that is used to calculate distance to sightings. The drone pilot, Fabián Rodríguez, used a drone with altimeter capability so that vaquita length and girth could be estimated for use in assessing health and determining age class. JOH worked with Fabián Rodríguez to hone his drone skills for vaquita research.

The Seahorse was equipped with 4 pairs of big eye Fujinon binoculars (25-power): three pairs of big eyes owned by SSCS and the fourth pair owned by PRONATURA. Eight scientists staffed the visual effort aboard the Seahorse, a proven stable platform for keeping the high-power binoculars steady even in 1 m of swell, something that is essential for carrying out effective vaquita surveys. Data were recorded using WinCruz software that allowed mapping of sightings.

Effort focused on locations with vaquita acoustic detections to maximize the opportunities for trainees to sight vaquita. Two vessel-guidance methods developed to guide pangas to objects or vaquitas were to be trialed during the survey. The first relied on WinCruz latitude and longitude

sighting coordinates, which were communicated to a panga guide to enter into a mobile navigation application while aboard a panga. The second method, called the Radar method and developed by François Van Sull (FVS), used the ship's radar together with sighting bearing and distance (Appendix 4). A headset with a microphone, radio access, and noise-cancellation capabilities was provided to the panga guide to improve communications.

Environmental DNA (eDNA)

The plan was to deploy a separate panga with both a photographer and the eDNA sampling team. Once photographs had been successfully taken, the panga would reposition within the vaquita 'footprint' for eDNA sampling. Building on the approach initiated in 2024, the design included collecting water within the vaquita footprint for time-series subsampling (replicate volumes retained and processed at successive time intervals) to characterize eDNA degradation.

Results

Training

All trainees became proficient at using the big eyes. Unfortunately, they were not able to participate during an actual vaquita sighting. Although vaquita sightings were very rare in this survey and only one observer was able to resight a vaquita, all observers became faster and more accurate in giving bearings and angles of floating objects – potential cues that might have been a marine mammal – and during a bottlenose dolphin sighting.

Photographic Identification

No photography was possible because sightings were too brief and conditions too rough to launch pangas or approach vaquitas with the ship.

Distribution of effort, and visual and acoustic detections

Although there were good numbers of acoustic detections (Appendix 3), wind and wave conditions greatly reduced the chances of seeing vaquitas. Table 1 compares sea conditions from 2023 through 2026. Conditions in 2026 were much worse than in 2023 and 2024.

The importance of both Beaufort and swell height was quantified for the 2015 vaquita survey (Taylor et al. 2016). In that survey, only Beaufort conditions of 2 or less and swell less than 0.3 m were used in abundance estimation. Figure 2 shows the derived relationship between these sea conditions and the probability of detecting vaquitas on the trackline: $g(0)$. The probability of detecting vaquitas on the trackline in Beaufort 0 and no swell is 0.975. Much of the 2026 survey was conducted in 1 m swell and Beaufort 2 conditions, which reduced the probability of detecting vaquitas to less than 0.2. In other words, vaquitas would not be visible more than 80% of the time.

Table 1. Survey effort (km) for the *Seahorse* by Beaufort sea state (0-4) in the ZTA and EA area. No survey effort occurred when Beaufort sea state was higher than 4.

Beaufort	**Distance (km) 2023** **May 11-24** **14 days**	**Distance (km) 2024** **May 5-24** **19 days**	**Distance (km) 2025** **Sept 3-30** **27 days**	**Distance (km) 2026** **May 19-28** **10 days**
0	43.7	64.1	12.8	0
1	150.5	238.3	91.4	0
2	205.4	304.8	307.5	202.6
3	44.8	138.1	487.7	191.2
4	112.3	108.8	67.7	73.9
TOTAL km	***620.8***	***857.0***	***967.2***	***467.7***
TOTAL B0-B1 km/day	***13.9/day***	***15.9/day***	***3.9/day***	***0/day***

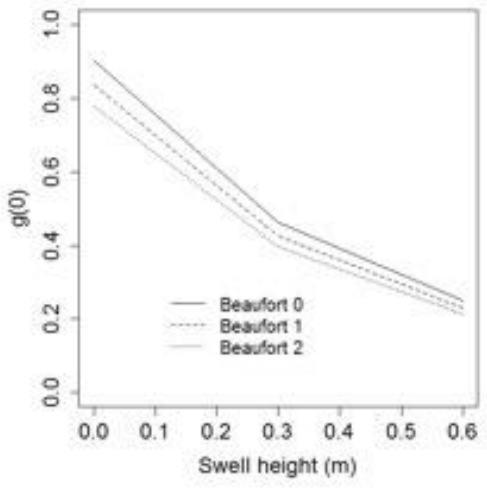

Figure 2. The probability of sighting vaquitas on the trackline (g(0)) by swell height and Beaufort.

Overall results are presented in Figure 3. The sightings are described in detail in the Evidence Dossier (Appendix 4), and their sighting locations are provided in Appendix 5.

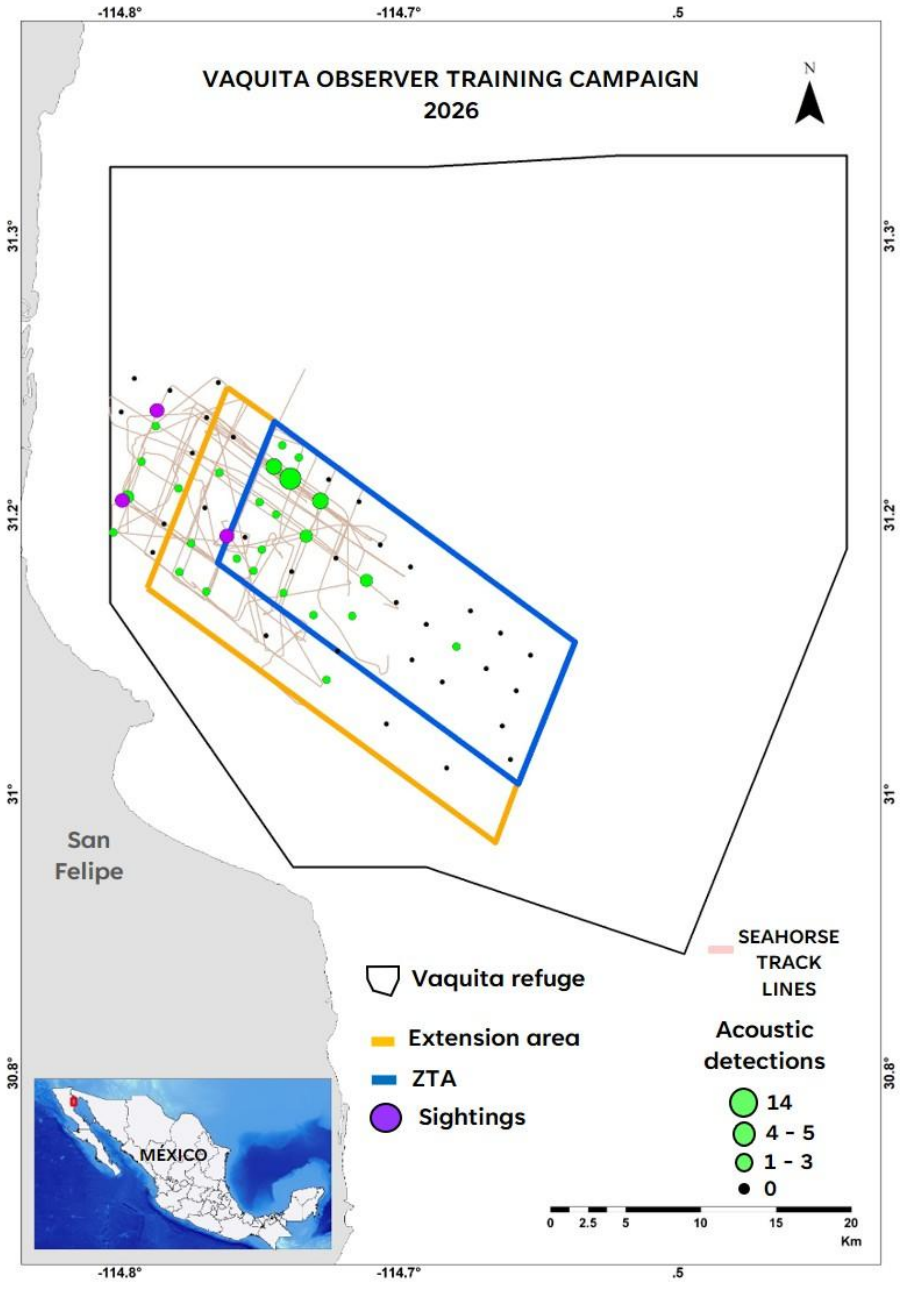

Figure 3. Sightings and acoustic detections together with ship tracklines. Most acoustic detections were within the ZTA, but despite most visual effort also in that area as well, no vaquitas were seen within the ZTA. One sighting was just outside of the ZTA and two other sightings were in the area unprotected by blocks with hooks to the northwest of the ZTA.

Method to guide vessels to objects and vaquitas, including a critique of flashcards

Even though the guidance methods were not trialed during a vaquita sighting, both the WinCruz sighting coordinate and Radar methods proved to be efficient in directing the panga to a specific geographic position. The Radar method has the advantage of having the panga position visible via radar, which provides more precision in adjusting the panga heading than using the big eyes. This method also allowed the recorder station to fully focus on taking information from the observers and entering data.

Flashcards were not used. Operations with trainees on the bridge were entirely conducted in Spanish. More time was needed, preferably with sightings, to work on bilingual operations.

eDNA

Successful training was conducted in San Felipe (Appendix 6). No sampling of waters where vaquitas were located was possible due to the poor weather conditions.

Acknowledgements

The Campaign Planning Group responsible for the coordination of the survey comprised: CONANP–CGH, LRB, Domingo de Jesús Zatarain González (DJZG), and Dulce María Ávila Martínez; Sea Shepherd Conservation Society (SSCS)–Julian Escutia, Nina Young, ABG, FVS; SEMARNAT–Valder Pliego del Ángel; CIBNOR –Tania Valdivia Carrillo (TVC) and independent scientists–Barb Taylor (BT), Annette Henry (AH), Rodrigo Huerta Patiño (RHP).

We thank CONANP and SSCS for funding the acoustic and visual efforts. Our appreciation to Almirante Raymundo Pedro Morales Ángeles, Secretario de Marina (SEMAR) for his commitment and leadership. Thanks to Contralmirante CG. DEM. Gabriel Guzmán Comparan, Comandante del Sector Naval de San Felipe, Baja California, who was always proactive and attentive in ensuring his support to the training campaign and provided opening and closing ceremonies that were much appreciated by campaign participants.

We thank Commissioner Dr. Pedro Álvarez Icaza-Longoria, Comisionado Nacional de Áreas Naturales Protegidas, and DJZG, Director of the Reserva de la Biosfera Alto Golfo de California y Delta del Río Colorado, and his team, particularly Melissa Beatriz Ortega, Técnico Operativo de Conservación, for their invaluable support with paperwork, coordination and participation with the community training program. We appreciate the participation of the community observer team at land-based training and aboard the ship during the survey: Karen Ávalos, Judith Lizárraga, Hugo Acevedo, Elián Gutiérrez, Andrés Amparo, Héctor Íñiguez, Georgina Castro and Melissa Beatriz Ortega. Their enthusiasm, dedication, and collaboration were key to the success of this

campaign. Our sincere thanks to the CONANP trainees for their enthusiasm about learning new skills and vaquitas.

Thanks to the extraordinary group of fishers doing the fieldwork for the acoustic component: Armando Castro Soto (Muelas), José Ernesto Martínez Díaz (Malacara), Rafael Sánchez Gastelum (Gordis) y Javier Valverde (Chino), Javier López, José Vargas, César Carrasco, Job Sánchez Flores, Alejandro Romero, Alan Valverde Esparza y Gilberto Ruiz. We also thank the captains of the two pangas used to approach vaquitas: Alejandro Castro and Jorge Castro. We thank César Vargas, manager of the Administración del Sistema Portuario Nacional (ASIPONA) in San Felipe, for his support in moving and transferring observers to the vessels.

We appreciate Pronatura assistance with loaning and transporting big-eye binoculars to the *Seahorse,* which were necessary for training the community observers.

Our gratitude to the President and CEO of SSCS, Pritam Singh, and to the following SSCS staff: François Van Sull (captain), Francisco Jarquin Torres, Arath Issac Gomez Alvarado, Osvaldo Urbina Garcia, Ernesto Robles Molina, Sergio Arturo Dorantes Callejas, Ross David Skinner, Jonas Uzziel Bueno Vargas, Yuval Elroy, Lauren Rae Clement, Valentina Ortega Backhoff, Alejandra Estefania Meza Orozco, Heidy Martinez, Benjamin Charles Brown, Isabel Contreras, and Deicy Cuadras.

We appreciate JOH loaned his personal drone to the survey, which was used during the training sessions and to locate acoustic detectors and other objects.

We acknowledge the great environmental DNA team: TVC, Rosa Isela Burciaga de la Rocha, Estefanía Rodríguez Jacinto, Jorge A. Mares Mayagoitia and Arturo Revuelta Ortega for their participation during the survey and for allowing the trainees to learn about this technique. Special mention to Dolphin Quest Ocean Foundation, which funded the participation of the eDNA team, through its Conservation of Threatened or Endangered Small Cetaceans Fund.

We appreciate the skill and attention of the visual team: Ernesto Vázquez Morquecho, Sergio Martinez, Pamela Martinez, Juan Carlos Salinas, RHP, Fabian Missael Rodríguez González, AH, and BT (*Seahorse* chief scientist). We appreciate the support provided to the acoustic team: Aitana Romero and Diana Lopez. And finally, many thanks to LRB, RHP, TVC, and GCH for translating the main report into Spanish.

Appendices

Appendix 1. Land-based training syllabus.

Monday 20 April		
Time	**Subject**	**Speaker**
17:00-17:30	Biology and conservation of vaquita marina	Lorenzo Rojas Bracho, PhD
BREAK		
17:40-18:10	Techniques applied to studying vaquita marina	Gustavo Cárdenas Hinojosa, PhD
BREAK		
18:20-18:35	Objectives of May training	Lorenzo Rojas Bracho, PhD, Gustavo Cárdenas-Hinojosa, PhD
18:35-18:50	Roles on board	Captain Alejandro Guerrero, SSCS
18:50-19:00	CLOSING	
Tuesday 21 April		
Hour	**Subject**	**Speaker**
17:00-17:45	Introduction to searching for vaquita marina	Ernesto Vázquez Morquecho, MS
BREAK		
18:00-18:45	Introduction to being a marine mammal observer: expectations and preparations	Sergio Martínez Aguilar, PhD
18:45-19:00	CLOSING	
Wednesday 22 April		
Hour	**Subject**	**Speaker**
17:00-19:00	Practice session: Use of big eyes and command cards	Rodrigo Huerta Patiño, MS
Monday 11 May		
Hour	**Subject**	**Speaker**
10:00-11:00	Ecological and conservation context of the Upper Gulf of California	Tania Valdivia Carrillo, PhD, Estefanía Rodríguez Jacinto, Rosa Isela Burciaga de la Rocha, Jorge Alberto Mares
11:00-12:00	Types of biological monitoring and environmental DNA as a non-invasive tool	

12:00-15:00	Practice session: Collecting water for eDNA (filtration, replicates, and sample labeling)	Mayagoitia, PhD, and Arturo Revuelta Ortega
Tuesday 12 May		
Hour	**Subject**	**Speaker**
09:00-14:00	Practice session: Processing eDNA sampling (PCR, agarose gel electrophoresis and interpreting the resulting bands)	Tania Valdivia Carrillo, PhD, Estefanía Rodríguez Jacinto, Rosa Isela Burciaga de la Rocha, Jorge Alberto Mares Mayagoitia, PhD, and Arturo Revuelta Ortega
Thursday 14 May		
Hour	**Subject**	**Speaker**
15:00-17:00	Introduction to the Expert Elicitation	Ernesto Vázquez Morquecho, MS, Barbara Taylor, PhD
Friday 22 May		
Hour	**Subject**	**Speaker**
07:00-11:00	Practice session: Use of drone and camera	Job A. Olguin Hernández, Aitana Romero

Appendix 2. Map and waypoint locations for visual and acoustic research.

The visual effort set of waypoints was developed in 2025 (Figure 2.1). The waypoints are used to communicate navigation directions and to give positions to pangas delivering trainees, media and dignitaries. Tracklines were designed to focus on acoustic detections in the areas where vaquitas were most commonly detected, with particular focus on the acoustic data provided throughout the survey. Latitude and longitude for waypoints are available upon request.

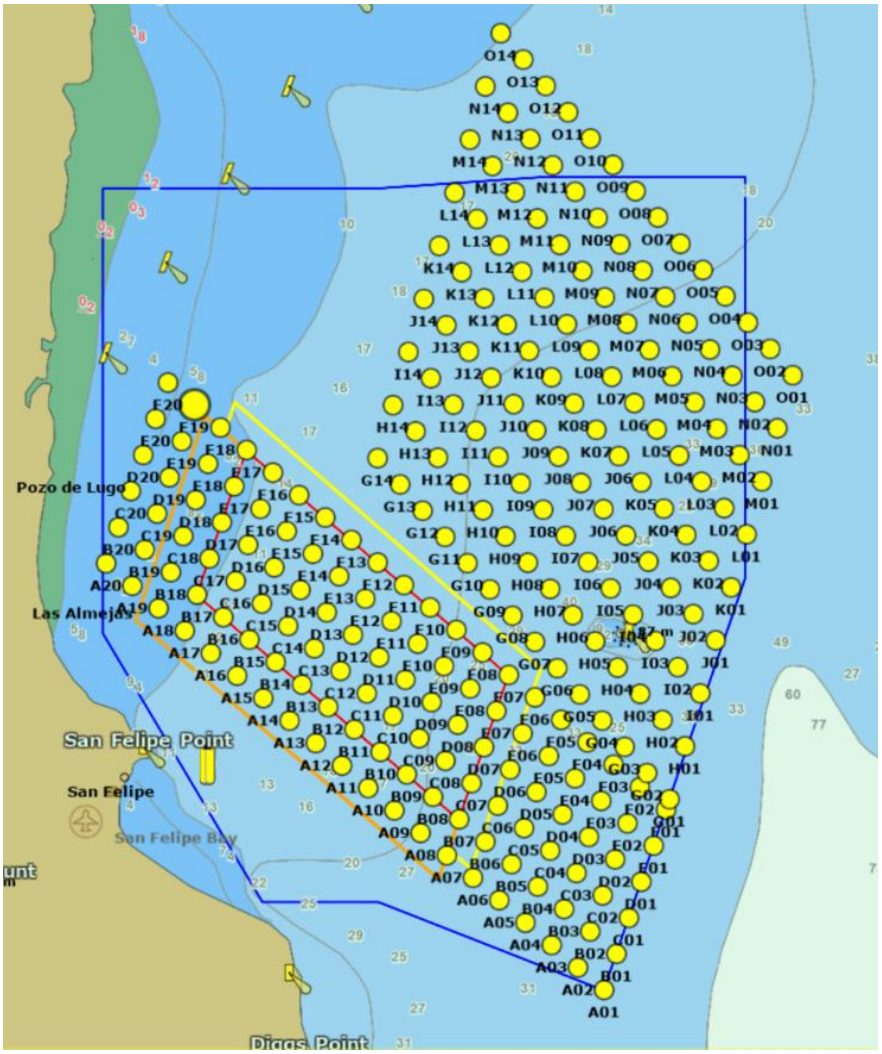

Figure 2.1. Visual waypoints for ship tracklines used in 2026. Lines A-F contain the areas surveyed in 2023 and 2024. Numbered lines 5 through 19 correspond approximately to the 2023 and 2024 surveys.

Appendix 3. Acoustic results.

Summary of the results of the acoustic component for the Campaign for Visual Observer Training and Photographing of Vaquita - 2026

Period of report: 07 to 26 May 2026

INTRODUCTION

The vaquita acoustic monitoring program, funded by the National Commission of Natural Protected Areas (CONANP), has been operating since 2011 with the goal of evaluating the population trends and status of the vaquita to contribute to the conservation of this critically endangered porpoise, endemic to the northern Gulf of California. A 46-site sampling design inside the Vaquita Refuge was implemented (Rojas-Bracho et al., 2010; Jaramillo-Legorreta et al., 2016), and formally started in 2011. Between 2011 and 2018, sampling occurred annually and resulted in an estimate of an average annual population decrease of 45% (Jaramillo-Legorreta et al., 2019). Annual sampling continued until 2024 within the Zero Tolerance Area (ZTA) with a 35-site sampling design. Between 2021 and 2023, sampling resulted in an estimate of an average annual population decrease of 14.4% within the ZTA. If detection rate change inside the ZTA is a proxy of population trend, the vaquita population continued decreasing but at a greatly reduced rate (Jaramillo-Legorreta et al., 2024).

Furthermore, since 2018, acoustic data focused areas searched by the visual surveys conducted to obtain photo-ID data of vaquita and to obtain an estimate of the number of vaquitas and the number of calves seen in the survey area using the method of expert elicitation (Rojas-Bracho et al 2019; 2022)

In 2024 fewer unique vaquitas were estimated to have been seen within the study area and no calves were sighted. However, the last sighting was of 4 vaquitas and included an individual last seen in 2019. The reduction in sightings together with the reappearance of an individual not seen during any of the last three surveys suggested that vaquitas may be reoccupying habitat outside the ZTA area (Cardenas-Hinojosa et al., 2024). Immediately after the 2024 survey, the CONANP and the Sea Shepherd Conservation Society (SSCS) funded acoustic research that was conducted outside the ZTA in August and September 2024. The detection of vaquitas outside the ZTA and EA led to an expansion of acoustic research effort in 2025. Two interconnected but distinct research projects were designed to provide up-to-date information on where vaquitas occur and how often, on how many remain, and generally on whether vaquitas are healthy and continue to produce calves (Cardenas-Hinojosa et al., 2025). The first project used acoustic recorders and collected more than 8,000 days of data throughout the area where vaquitas had been observed

in 2015, with the objective of addressing questions related to overall distribution and abundance. The second project used both acoustic and visual survey methods with the objectives to obtain an estimate of the number of vaquitas and the number of calves seen in the survey area using the method of expert elicitation and to obtain information on body condition of vaquitas.

The acoustic effort of September 2025 increased coverage significantly in time and space when compared to what was applied in the 2023 and 2024 May surveys. Those earlier acoustic efforts consisted of a sampling grid of 35 sites within the ZTA. In 2025, the acoustic detectors were deployed at 35 sampling sites within the ZTA, 10 sites in the EA, and 21 sites in nearby waters. Vaquitas were more active acoustically in the northwest and middle parts of the ZTA, but detections were also recorded in the northwest part of the EA and outside the EA all the way to the border of the Vaquita Refuge (Cardenas-Hinojosa et al., 2025).

Based on the vaquita distribution data obtained in 2025, acoustic research on this species was planned by CONANP to continue in 2026 with a similar sampling design and effort within the Vaquita Refuge to that used in 2025. The objective is to provide robust data to identify habitats of high acoustic occurrence for protection and conservation of the vaquita. Additionally, another of the objectives was to start the acoustic research early in May 2026 to inform and guide the visual efforts of the Campaign for Visual Observer Training and Photographing of Vaquita.

This report summarizes the acoustic effort and results obtained and described in the acoustic reports done in May 2026 to inform the visual team where vaquitas were located.

METHODS

Sampling design

The study area was the ZTA, the Extension Area (EA) of the ZTA, and nearby areas toward the northwest of the EA (Figure 3.1). The sampling design consisted of replacing acoustic detectors daily (F-PODs and C-PODs), downloading data, analyzing it, and creating a report for the visual team to use the next day. Replacement of detectors during the afternoons facilitated this as close to real time as possible. However, due to weather conditions, replacement occurred early in the morning, and it was not possible to do it during all the days during the period of the campaign for visual observer training. The sampling sites were selected for deployment based on recent knowledge of vaquita acoustic activity in the ZTA during 2021 to 2025. Furthermore, sites were selected based on the findings of the acoustic research outside the ZTA from May to September of 2025. The sampling grid consisted of a total of 60 sites distributed as follows: 35 sampling sites within the ZTA, 10 sites in the EA, and 15 sites in nearby waters (Figure 3.1).

The initial deployments of the acoustic detectors occurred on 07 May. We used sink moorings to avoid losing the moorings because of interactions on the sea surface with pangas transiting the study area towards fishing grounds. Between 12 and 14 May, these sink moorings with PODs

were retrieved to complete the first sampling of the acoustic monitoring of the population of the vaquita. Between 15 and 18 May, the fishers modified the 60 sink moorings to moorings with a buoy on the surface to make it easier to find and replace the PODs quickly to collect acoustic data daily to inform the acoustic activity of vaquitas to the leader of the training campaign to guide the visual effort to increase the chance of detecting vaquitas. On 19 May, the fishers deployed the PODs with moorings marked by buoys in the sampling sites, and the PODs were replaced daily (when weather allowed) until 26 May. No replacement of PODs occurred on 27 and 28 May because of rough sea conditions for safe navigation for the pangas. Instead, on 26 May, it was necessary to recover the moorings with buoys on the surface to replace them (another day) with sink moorings to continue collecting data for the acoustic monitoring program of the population of vaquita.

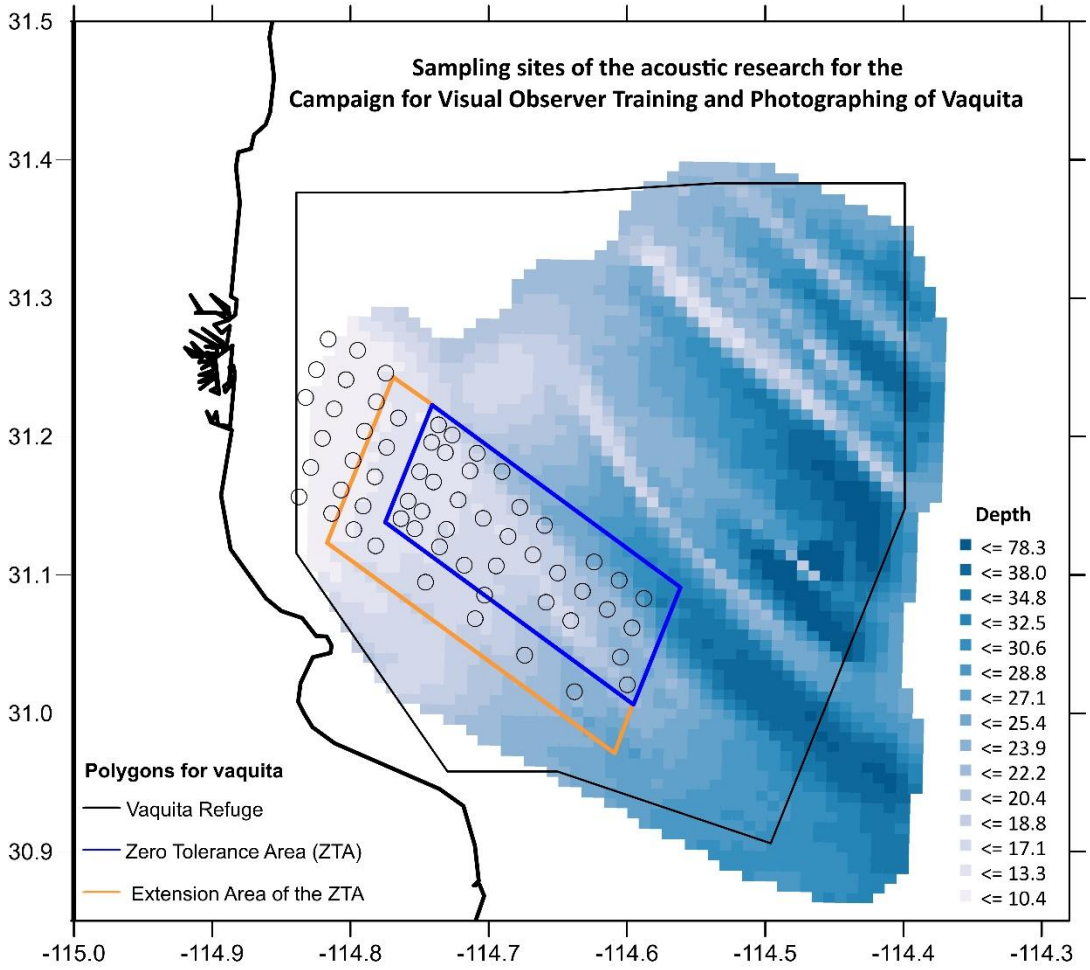

Figure 3.1. Map showing the study area in the Upper Gulf of California, near the town of San Felipe, Baja California, Mexico. Circles show the location of the 60 sampling sites where moorings with PODs were deployed to collect the acoustic data during the study period.

Furthermore, in May, another 15 PODs with sink moorings were deployed in other areas (out of the ZTA) of the Vaquita Refuge for the ongoing acoustic monitoring of the population of the vaquita. Information from these PODs is not included in this report.

Acoustic devices deployment and replacement

F-PODs and C-PODs were used to collect vaquita acoustic information (www.chelonia.co.uk) and prepared according to the manufacturer's instructions. We inserted memory cards and alkaline batteries and started the PODs a few hours before deployment or replacement for each sampling period.

Simple moorings, consisting of a main rope connected to an anchor at one end, and a buoy at the other, were used to deploy detectors at the selected sampling sites. A loop to attach the detector to the rope is located 10 meters from the buoy. Holes in the cap of PODs were used to attach them to the rope. Other PODs were deployed without a buoy on the surface because we used F-PODs with a device integrated that allows scheduling the release of the POD (www.chelonia.co.uk).

Every day we checked the weather forecast at windy.com to decide whether deployment or replacement of PODs could occur. When conditions looked promising, GPS units were programmed with the sites to deploy and replace detectors. In addition, logging sheets were prepared to record the date, time, and serial number of pods (clearly visible near the cap) for deployment or retrieval at each assigned site.

The deployment and replacement were done by a group of artisanal fishermen from San Felipe with over twelve years of experience doing this job. Hours before setting out in boats (called pangas), fishermen were provided with moorings, acoustic detectors, GPS units, logging sheets, and fuel. During initial deployment and final retrieval, four boats were assigned to complete the task. During the replacement of detectors, four teams of fishers were assigned to complete the task.

Data management

Every day acoustic detectors were replaced, and memory cards were extracted to download data using the fpod.exe pc programs provided by the manufacturer. At the time of downloading, times in files were checked against logging sheets to ensure consistency. Sometimes data was corrupted and unreadable; that data was lost. The KERNO algorithm, available in fpod.exe software, was used to identify potential clicks emitted by vaquitas. Both devices produce a primary file containing all the clicks identified during sampling (FP1 files for F-PODs and CP1 for C-PODs). KERNO produces files (FP3 and CP3 files) containing only click trains of four types: NBHF, other cetaceans, sonar, and other events. NBHF is the acronym for Narrow Band High Frequency, the type of clicks produced by porpoises (including vaquita) and some species of dolphins.

Although some dolphins also produce NBHF clicks, vaquita click trains have distinctive acoustic characteristics that allow them to be reliably distinguished during analysis.

Once files are created by KERNO, these are reviewed for the presence of vaquita-like click series by analysts. The files produced by F-PODs and C-PODs are reviewed with the fpod.exe and cpod.exe software, respectively. Click series identified as NBHF that do not have parameters that fit vaquita (as judged by the analysts) are deleted from the file. Finally, another software named CP3 Extractorum, coded by the CONANP research group, is used to extract vaquita detections from the CP3 and FP3 files. This software can extract information from a set of files stored in a folder. It creates separate files for several metrics, including click series, detection positive minutes, and acoustic encounters, among others. With this information, we created reports with a map to show the location and number of encounters, and a table with the site, times, and duration of each encounter. A brief narrative was included in each report to describe the findings and provide guidance to the visual team. A total of six acoustic reports were provided during the campaign and are included at the end of this document.

Summary of results

A total of 674.91 recording days of effort was collected on 58 sampling sites (Table 3.1). The average effort per site was 11.64 days, with a minimum effort of 1.97 days and a maximum of 14.91 days. We lost twelve moorings with PODs during the study period. A total of 72 acoustic encounters of vaquitas were recorded in 26 of the 58 sites with sampling effort during the sampling period from 07 to 26 May 2026. The average encounter rate was 0.11 enc/day for all 58 sampling sites, and 0.13 enc/day accounting only for sites within ZTA. In Table 3.1, we compared those from the results of the 2023 and 2024 Vaquita Surveys, as all three surveys were conducted in May, although sampling during those earlier surveys was restricted to the ZTA. The mean acoustic encounter rate recorded within the ZTA in 2026 was very similar to those obtained in May 2023 and May 2024. By comparison, the acoustic component of the September 2025 Vaquita Survey recorded a slightly lower mean acoustic encounter rate within the ZTA (0.095) (Cardenas-Hinojosa et al. 2025).

Ongoing statistical analyses of acoustic data collected in the ZTA between 2021 and 2025 will determine whether acoustic encounter rates have changed significantly over time.

Table 3.1. Summary of effort and acoustic encounters of vaquita recorded during 07 – 26 May 2026. The sampling effort was focused only within the ZTA in May 2023 and May 2024. In the 2026 column, all study areas refer to the ZTA, EA of the ZTA, and nearby areas sampled.

Effort and encounters	**2023**	**2024**	**2026**
Recording effort days	371.57	549.12	674.91 (422.63 within ZTA)
Sampling sites	35	34	58 (35 within ZTA)
PODs lost	17	14	12
Acoustic encounters	61	70	72 (all study areas) 56 (within ZTA)
Average encounter rate (including effort at all sites)	0.164 enc/day	0.127 enc/day	0.11 enc/day (all areas) 0.13 enc/day (within ZTA)
Average duration (minutes) of acoustic encounters	4.95	3.01	3.28

The northwest region of the ZTA is where vaquitas were acoustically more active. Furthermore, four acoustic detections of vaquita were also recorded in the northwest of the EA, and eleven detections between the west border of the Vaquita Refuge and the northwest border of the EA. Only one acoustic encounter of vaquita was recorded in the southern region of the ZTA (Figure 3.2). Overall, the distribution of the acoustic encounters within the ZTA and nearby areas in 2026 is similar to the results of the 2025 acoustic research to determine the current distribution of vaquita.

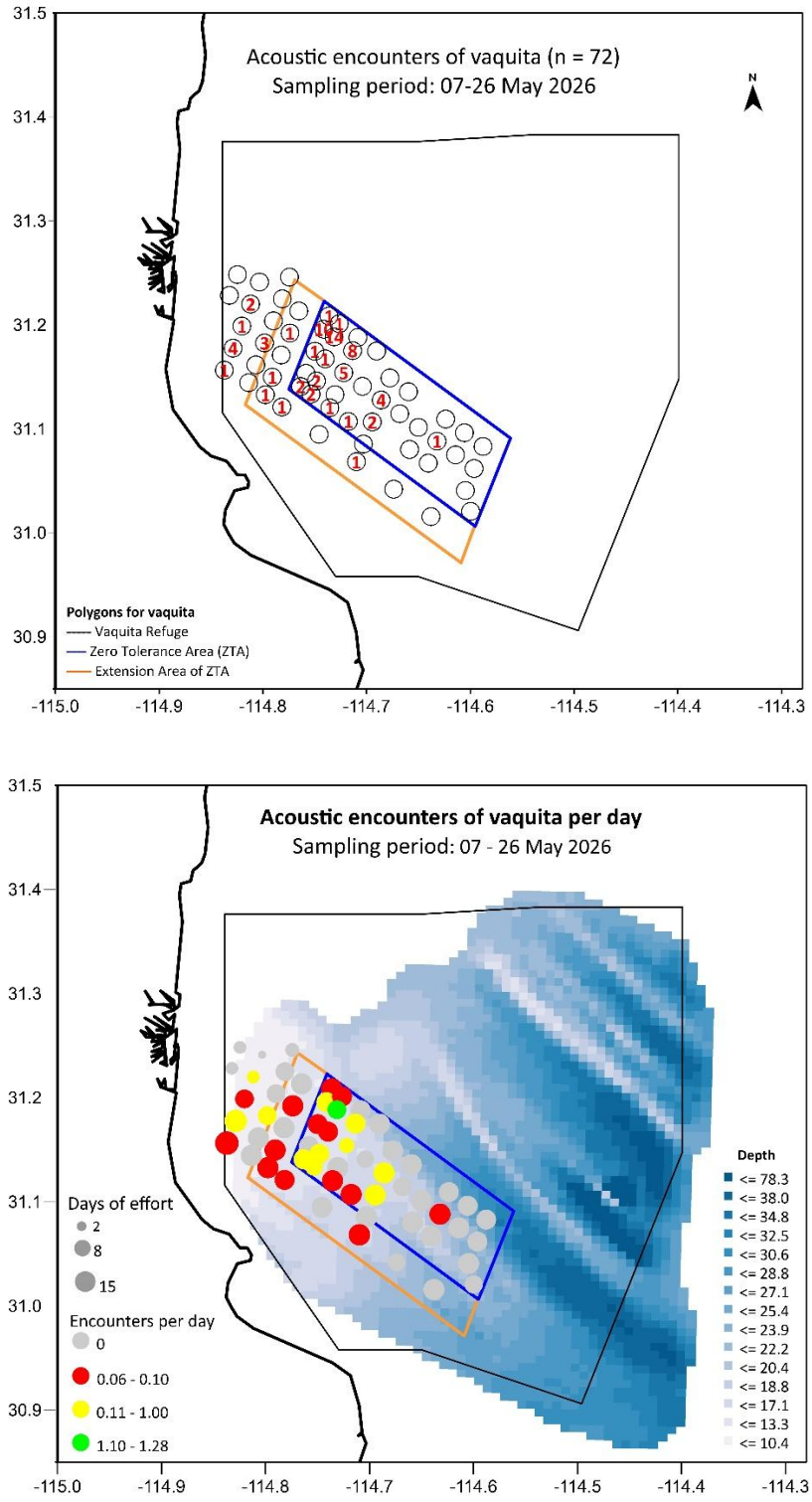

Figure 3.2. ***Top:*** Map showing the number of encounters per sampling site. The numbers in red in the center of circles indicate the number of acoustic encounters of vaquitas per sampling site. ***Bottom:*** Map showing the acoustic encounter rate of vaquitas per day per sampling site. The ZTA is the blue polygon, the orange polygon is the EA, the black polygon is the Vaquita Refuge. The size of the circles indicates the days of effort per sampling site, and the colors show the acoustic encounters per day.

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ACOUSTIC REPORTS

Report 01 - Acoustic monitoring for vaquita observer training campaign

Results of the 07-14 May 2026 sampling period

On 07 May, we started the 2026 sampling season of the acoustic research and monitoring of the vaquita marina. The sampling design to collect the acoustic data consists of deploying 80 sink moorings with PODs in the Zero Tolerance Area (35), the extension area of the ZTA (10), the area outside the EA, all the way to the west border of the Vaquita Refuge (15), and in the east of the Vaquita Refuge (20). The 20 sites in the east of the Vaquita Refuge were planned to change locations every deployment (around every two weeks) to increase the spatial coverage, and the rest of the sampling locations were planned and selected to be fixed during the entire sampling period (May to September) based on the distribution results obtained from the acoustic research of 2025.

In this report, we describe the results collected in the 60 fixed sites from 07 to 14 May 2026, because they overlap mainly with the study area of the vaquita observer training campaign 2026. Between 15 and 18 May, the fishers modified the 60 sink moorings to moorings with a buoy on the surface to make it easier to find and replace the PODs quickly to collect acoustic data daily to inform the acoustic activity of vaquitas to the leader of the training campaign to guide the visual effort to increase the chance of detecting vaquitas.

On 07 May, a total of 58 PODs were deployed. In two sampling sites located outside of the northwest corner of the EA, no deployments of PODs were made because of the presence of panga with fishers diving for oldroyd penshell (*Atrina oldroydii*). From 12 to 14 May, the fishers retrieved the sink moorings with the PODs, and only one mooring was lost in the area reported with diving for penshell. Therefore, we retrieved a total of 57 PODs. However, in two PODs, there were issues with the memory card and data were lost. In total, we recorded 22 acoustic encounters of vaquita in a total of 55 PODs. Most of the encounters were found within ZTA (n = 17), in the northwest corner of the ZTA, and a few (n = 5) between the northwest of the EA and the west border of the Vaquita Refuge (Figure 3.3).

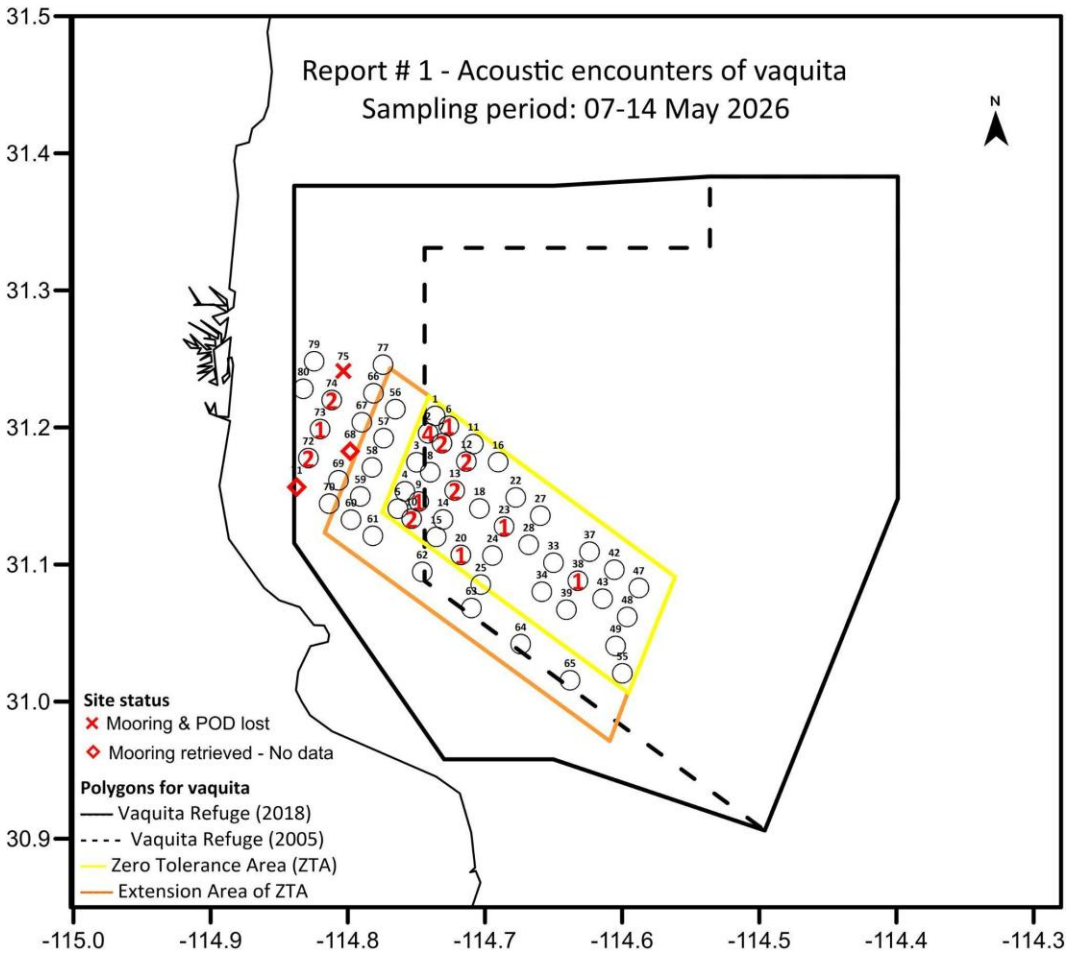


Figure 3.3. Distribution of the acoustic encounters of the vaquita recorded during 07-14 May. Numbers in the center of the circles show the encounters, and above the circles are the labels of the sampling sites.

The date, time, and duration of the acoustic encounters of the vaquita are described in Table 3.2.

On 19 May, the fishers deployed 58 PODs with moorings marked by buoys in the fixed sites. We planned to deploy 60, but again the presence of pangas for penshell avoid deploying the total number of PODs (60).

Table 3.2. Date, time, and duration of the acoustic encounters of the vaquita recorded during 07-14 May.

Site	Encounter	Start	End	Duration	Click trains	Clicks
23	1	07/05/2026 07:36	07/05/2026 07:36	00:00:03	2	49
2	1	07/05/2026 16:27	07/05/2026 16:27	00:00:20	2	32
2	2	07/05/2026 22:09	07/05/2026 22:15	00:06:50	34	579
13	1	08/05/2026 02:47	08/05/2026 02:47	00:00:00	3	45
72	1	08/05/2026 04:45	08/05/2026 04:45	00:00:29	8	128
12	1	08/05/2026 04:48	08/05/2026 04:58	00:10:00	3	36
74	1	08/05/2026 13:59	08/05/2026 13:59	00:00:00	1	19
7	1	09/05/2026 05:20	09/05/2026 05:22	00:02:19	11	196
10	1	09/05/2026 06:02	09/05/2026 06:06	00:04:25	7	62
74	2	10/05/2026 06:15	10/05/2026 06:15	00:00:00	1	11
73	1	10/05/2026 12:04	10/05/2026 12:04	00:00:00	1	5
12	2	10/05/2026 23:59	11/05/2026 00:04	00:05:00	6	93
13	2	11/05/2026 16:54	11/05/2026 16:56	00:02:00	3	26
2	3	11/05/2026 20:34	11/05/2026 20:35	00:01:17	9	511
7	2	11/05/2026 22:15	11/05/2026 22:19	00:04:15	13	733
6	1	11/05/2026 22:50	11/05/2026 22:50	00:00:01	1	24
2	4	12/05/2026 00:05	12/05/2026 00:05	00:00:13	3	42
38	1	12/05/2026 17:30	12/05/2026 17:30	00:00:01	1	6
9	1	13/05/2026 05:22	13/05/2026 05:22	00:00:03	2	55
72	2	13/05/2026 12:01	13/05/2026 12:01	00:00:00	1	7
10	2	13/05/2026 16:07	13/05/2026 16:07	00:00:00	1	11
20	1	14/05/2026 00:40	14/05/2026 00:44	00:04:47	19	701

Report 02 - Acoustic monitoring for vaquita observer training campaign

Results of 19-20 May 2026 sampling period

On 19 May, the fishers deployed 58 PODs with moorings marked by buoys in the fixed sites. On 20 May, between 05:46 and 08:34, the fishers replaced the PODs in the sampling sites. At 5 sites, the moorings were lost. These were located where the presence of pangas for penshell and transit for fishing sierra was previously reported. Fortunately, the same day, the observers aboard the Seahorse found and recovered 4 PODs floating on the surface. Three of the PODs were of the 5 moorings lost, and another one was a POD deployed on 20 May in site # 67 at 06:09, and it recorded till 06:55, meaning it was separated from the mooring after only 46 minutes of being deployed. The data of this POD will be analyzed for report number 03. Therefore, our results are based on data from 56 PODs. We recorded three acoustic encounters of the vaquita within ZTA (Table 3.2, Figure 3.4).

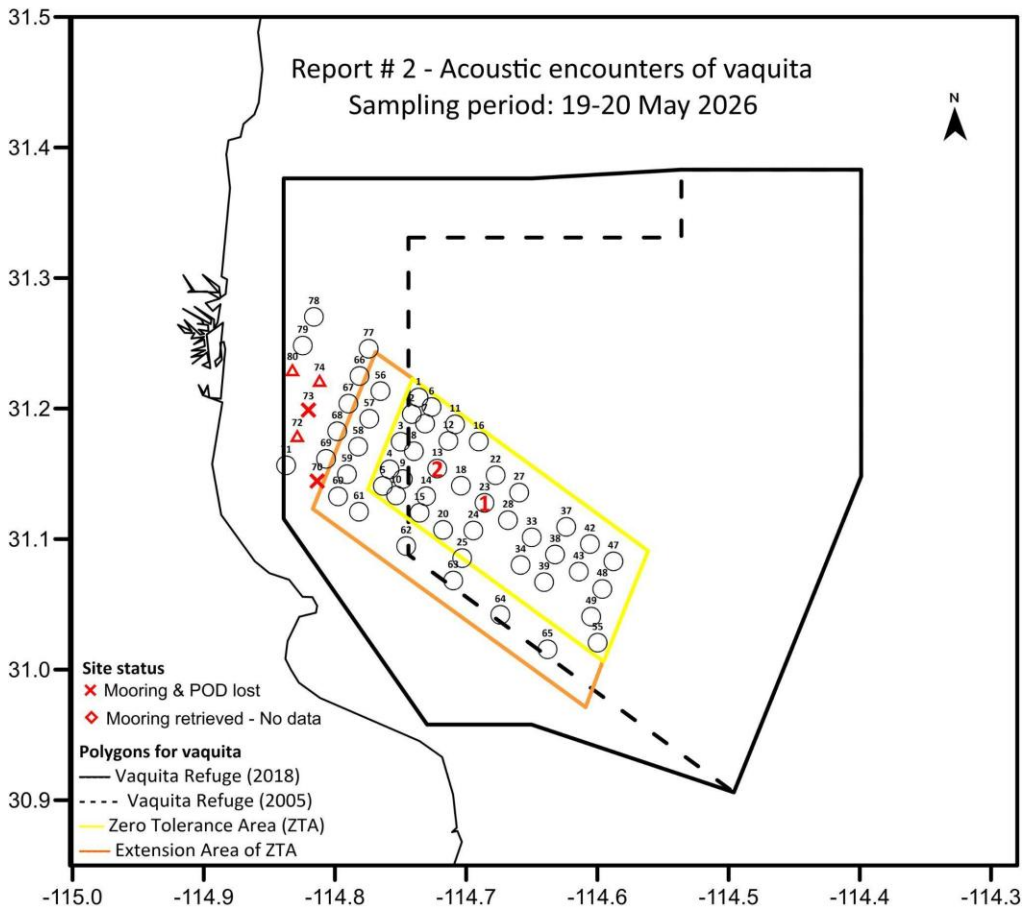


Figure 3.4. Distribution of the acoustic encounters of the vaquita recorded during 19-20 May. Numbers in the center of the circles show the encounters, and above the circles are the labels of the sampling sites.

Table 3.2. Date, time, and duration of the acoustic encounters of the vaquita recorded during 19-20 May.

Site	Encounter	Start	End	Duration	Click trains	Clicks
13	1	19/05/2026 17:31	19/05/2026 17:31	00:00:00	1	18
13	2	20/05/2026 05:16	20/05/2026 05:16	00:00:00	1	5
23	1	20/05/2026 05:51	20/05/2026 05:58	00:06:17	24	805

Report 03 - Acoustic monitoring for vaquita observer training campaign

Results of the 20-21 May 2026 sampling period

On 21 May, between 05:36 and 08:12, the fishers replaced the 53 PODs. However, it was not possible to do it in 5 sites because the moorings were lost. These were located along the ZTA. Furthermore, another two moorings were lost, but the two PODs were found floating on the surface, one from the boat Seahorse and the other by the panga of the acoustic team. The moorings in sites 77, 78, 79, and 80 in the northwest corner outside the ZTA were not deployed again due to the presence of pangas' activity. In sampling sites 67, 69, 70, 71, 72, and 73, the fishers replaced the moorings with a buoy on the surface to sink moorings (to avoid losing more moorings). Despite this, the sink moorings will be replaced daily (weather dependent). The results of report number 03 are based on data from 48 PODs. We recorded three acoustic encounters of the vaquita at the northwest corner of the ZTA (Table 3.3, Figure 3.5).

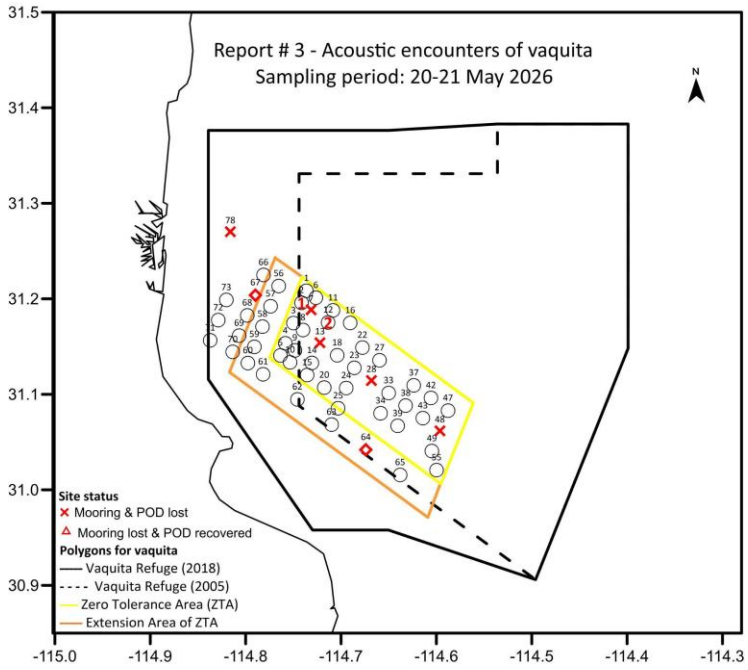


Figure 3.5. Distribution of the acoustic encounters of the vaquita recorded during 20-21 May. Numbers in the center of the circles show the encounters, and above the circles are the labels of the sampling sites.

Table 3.3. Date and time of the acoustic encounters of the vaquita recorded during 20-21 May.

Site	Encounter	Start	End	Duration	Click trains	Clicks
2	1	20/05/2026 10:56	20/05/2026 10:57	0:01:07	3	44
12	1	20/05/2026 21:39	20/05/2026 21:39	0:00:20	3	89
12	2	20/05/2026 23:57	21/05/2026 00:09	0:12:46	27	491

Report 04 - Acoustic monitoring for vaquita observer training campaign

Results of the 21-24 May 2026 sampling period

On 22 and 23 May, no effort for the replacement of 51 PODs occurred because of rough sea conditions. On 24 May, between 05:48 and 08:24, the fishers replaced 49 PODs of the total because two moorings with PODs were lost within the ZTA (in sites 10 and 28). Therefore, the results of this report are based on data from 49 PODs. In sampling sites 10, 13, 18, and 64, moorings with PODs were deployed to replace the lost moorings. In total, 53 PODS were deployed. We recorded 28 acoustic encounters of the vaquita, mainly at the northwest corner of the ZTA. Another 5 encounters were recorded in two sites closer to shore, and 4 encounters were recorded in the EZ of the ZTA (Table 3.4, Figure 3.6).

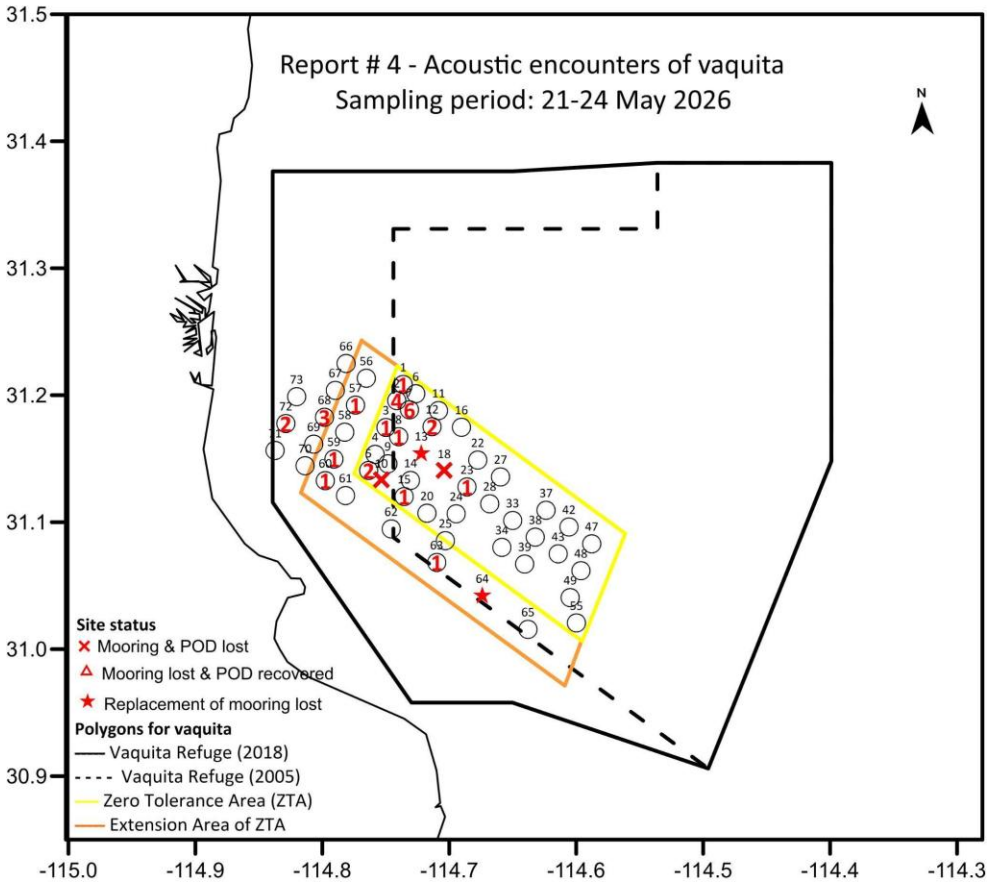


Figure 3.6. Distribution of the acoustic encounters of the vaquita recorded during 21-24 May. Numbers in the center of the circles show the encounters, and above the circles are the labels of the sampling sites.

Table 3.4. Date, time, and duration of the acoustic encounters of the vaquita recorded during 21-24 May.

Site	Encounter	Start	End	Duration	Click trains	Clicks
7	1	21/05/2026 07:23	21/05/2026 07:25	00:02:00	22	345
68	1	21/05/2026 14:35	21/05/2026 14:35	00:00:42	5	73
72	1	21/05/2026 16:13	21/05/2026 16:25	00:11:19	6	81
63	1	21/05/2026 22:30	21/05/2026 22:31	00:00:17	3	68
2	1	22/05/2026 01:31	22/05/2026 01:33	00:01:43	12	396
2	2	22/05/2026 03:12	22/05/2026 03:37	00:25:43	18	313
5	1	22/05/2026 08:31	22/05/2026 08:31	00:00:34	4	35
2	3	22/05/2026 09:39	22/05/2026 09:41	00:02:37	13	301
57	1	22/05/2026 13:09	22/05/2026 13:13	00:03:30	20	462
2	4	22/05/2026 13:56	22/05/2026 13:56	00:00:45	8	135
60	1	22/05/2026 16:40	22/05/2026 16:41	00:01:08	4	73
1	1	22/05/2026 19:32	22/05/2026 19:33	00:00:55	7	83
12	1	23/05/2026 01:07	23/05/2026 01:25	00:18:37	22	667
8	1	23/05/2026 04:42	23/05/2026 04:42	00:00:23	7	233
7	2	23/05/2026 11:28	23/05/2026 11:30	00:02:04	18	656
68	2	23/05/2026 12:48	23/05/2026 12:50	00:01:42	4	50
68	3	23/05/2026 13:53	23/05/2026 13:54	00:01:32	8	139
7	3	23/05/2026 13:59	23/05/2026 13:59	00:00:01	1	20
5	2	23/05/2026 16:30	23/05/2026 16:31	00:01:41	4	68
59	1	23/05/2026 18:17	23/05/2026 18:18	00:01:06	9	243
3	1	23/05/2026 18:21	23/05/2026 18:23	00:02:55	14	467
7	4	23/05/2026 19:35	23/05/2026 19:40	00:05:42	10	249
7	5	23/05/2026 20:37	23/05/2026 20:37	00:00:21	5	127
7	6	23/05/2026 22:51	23/05/2026 22:53	00:01:52	2	35
12	2	23/05/2026 23:13	23/05/2026 23:23	00:09:12	22	685
23	1	24/05/2026 01:18	24/05/2026 01:19	00:01:00	7	178
15	1	24/05/2026 07:13	24/05/2026 07:16	00:03:52	3	61
72	2	24/05/2026 07:33	24/05/2026 07:33	00:00:00	1	51

Report 05 - Acoustic monitoring for vaquita observer training campaign

Results of the 24-25 May 2026 sampling period

On 25 May, between 05:41 and 10:41, the fishers replaced 38 PODs of a total of 53 deployed on 24 May. No moorings with PODs were lost. A captain was reported to be sick, and no effort was made to replace 15 PODs. We recorded eight acoustic encounters of the vaquita, mainly at the northwest corner of the ZTA (Table 3.5, Figure 3.7).

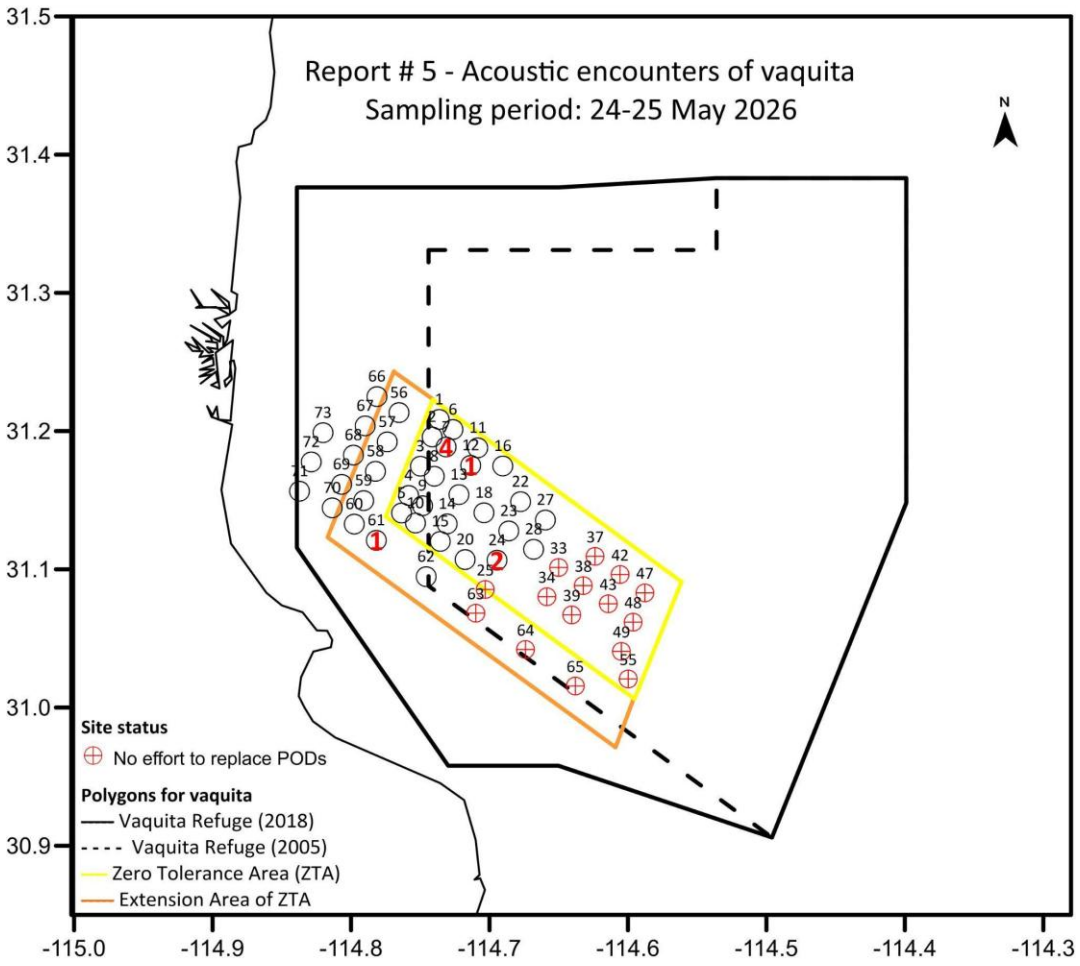


Figure 3.7. Distribution of the acoustic encounters of the vaquita recorded during 24-25 May. Numbers in the center of the circles show the encounters, and above the circles are the labels of the sampling sites.

Table 3.5. Date and time of the acoustic encounters of vaquita recorded during 24-25 May.

Site	Encounter	Start	End	Duration	Click trains	Clicks
61	1	24/05/2026 06:23	24/05/2026 06:27	00:04:00	3	25
7	1	24/05/2026 13:00	24/05/2026 13:00	00:00:00	4	30
7	2	24/05/2026 21:50	24/05/2026 21:50	00:00:00	3	107
7	3	25/05/2026 00:36	25/05/2026 00:40	00:04:00	29	891
12	1	25/05/2026 02:09	25/05/2026 02:42	00:33:00	15	414
7	4	25/05/2026 03:54	25/05/2026 03:55	00:01:00	4	39
24	1	25/05/2026 04:39	25/05/2026 04:43	00:04:00	2	154
24	2	25/05/2026 05:32	25/05/2026 05:44	00:12:00	5	117

Report 06 - Acoustic monitoring for vaquita observer training campaign

Results of the 25-26 May 2026 sampling period

No daily replacement of PODs was planned because of rough sea conditions forecasted for 27 and 28 May. Instead, it was necessary to recover the moorings with buoys on the surface to replace them with sink moorings to continue collecting data for the acoustic monitoring program of the population of vaquita. On 26 May, between 05:49 and 08:08, the fishers recovered 51 moorings with PODs of a total of 53 deployed on 25 May. Two moorings with PODs were lost at sites 18 and 59. At sampling site 73, the POD was recovered, but the memory card failed, and no data was recorded. Therefore, we recorded eight acoustic encounters of the vaquita from data of 50 PODs. Vaquitas were recorded mainly at the northwest and southwest corner of the ZTA. One encounter was recorded in the middle of the ZTA and another on the border of the west coast of the Vaquita Refuge (Table 3.6, Figure 3.8). Finally, it was planned to make an effort with the four pangas of the acoustic team to try to find the 12 moorings lost in May.

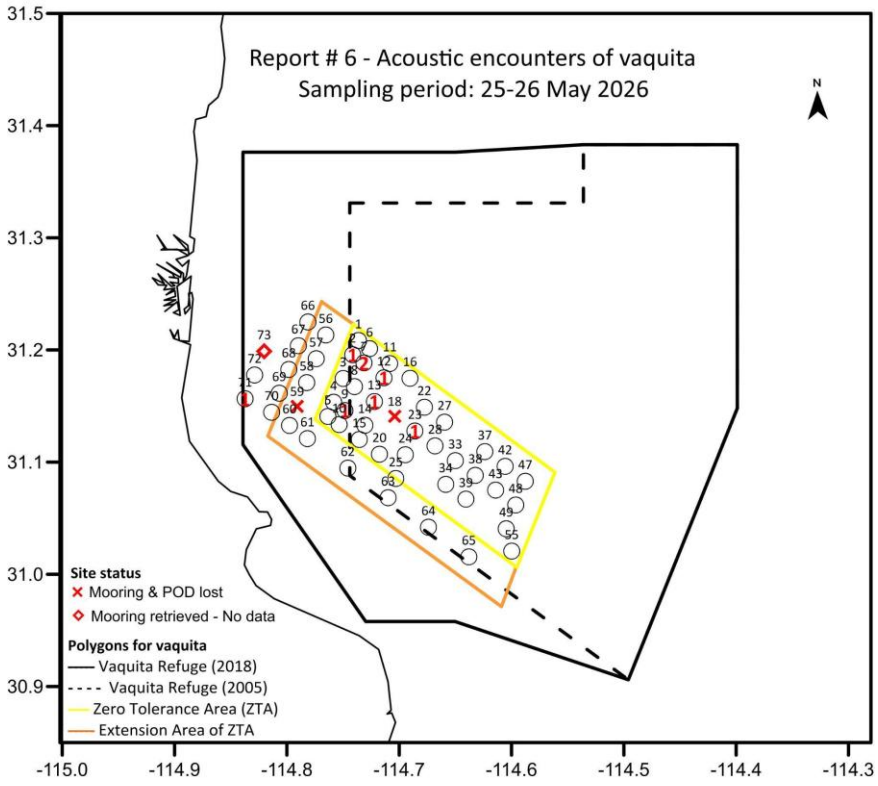


Figure 3.8. Distribution of the acoustic encounters of the vaquita recorded during 25-26 May.

Table 3.6. Date, time, and duration of the acoustic encounters of the vaquita recorded during 25-26 May.

Site	Encounter	Start	End	Duration	Click trains	Clicks
9	1	25/05/2026 08:13	25/05/2026 08:13	0:00:45	8	127
7	1	25/05/2026 09:20	25/05/2026 09:20	0:00:00	1	15
71	1	25/05/2026 10:41	25/05/2026 10:43	0:01:37	3	36
7	2	25/05/2026 17:47	25/05/2026 17:51	0:03:47	19	865
12	1	25/05/2026 20:59	25/05/2026 21:00	0:00:41	3	31
2	1	25/05/2026 22:22	25/05/2026 22:23	0:01:15	10	166
13	1	26/05/2026 00:15	26/05/2026 00:16	0:00:16	4	113
23	1	26/05/2026 01:46	26/05/2026 01:50	0:04:13	6	106

Appendix 4. Evidence Dossier Vaquita 2026

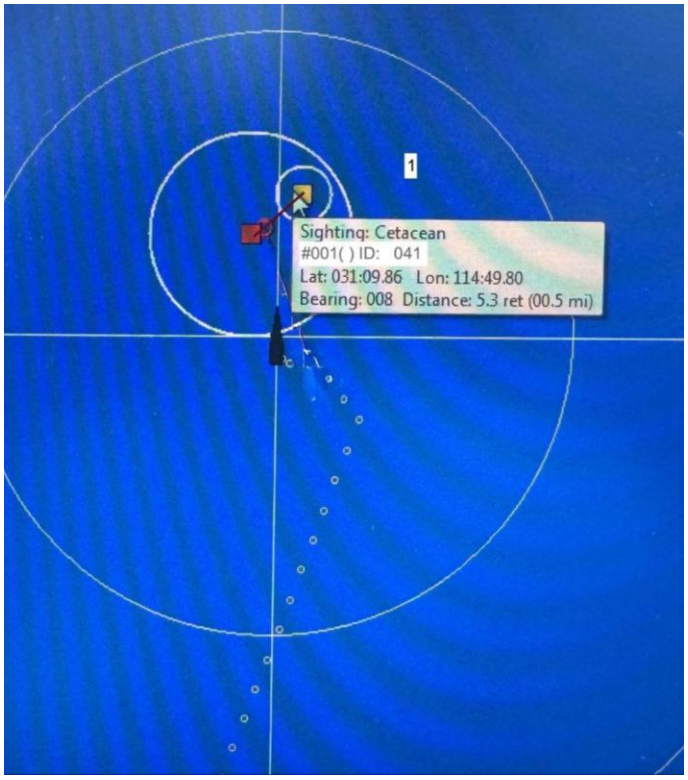
Evidence Dossier Vaquita 2026

Date: 5/22/2026

Sighting #1: (Seahorse (Y/N)
Photos: N
Videos: N
First time seen: 07:51
Last time seen: 07:57
Sighting length: 6 minutes
Beaufort: 2
Swell: 1 ft
Closest distance: 0.5nmi

Sighting summary and map:

All 3 observers saw at least 2 surfacing series. The second surfacing series was seen by all three observers who all described that surfacing series as a single vaquita. The sighting and 2 resightings seen in the Sighting 1 figure were consistent with swimming speeds by a single individual. The last resight was only seen by Juan Carlos. There were no trainees or pangas because of predictions that good weather would last 2 hours. Consequently, after the third sighting we had the ship slowly approach (at 2 nmi/hr), but the vaquita was not seen after that. The drone was launched but the vaquita was not located. A box was completed lasting 50 minutes. The sighting was made when the ship was near B20 and had just started a turn. The sighting itself was near A20 and the Vaquita Refuge boundary, which is an area not protected by blocks.



Sighting 1. The Seahorse is the ship icon in the center with its path indicated by small circles. The large circle is 1 nmi. The original vaquita sighting is the red square and the circle around it represents the area the vaquita is likely to resurface. The last resighting is the yellow square, which has a smaller circle because it happened more recently and therefore the zone where it might be found is smaller.

Observer Narratives:

Rodrigo Huerta-starboard bigeyes

I was on watch and the ship was turning to port side when I saw a dorsal fin, then, a couple of seconds later I saw a full surfacing of a single animal, swimming slowly, and that is when I called the sighting at 25° right and 4.5 reticles. The ship started to stop turning and in the third continuous surfacing I had the animal at 30° right. A couple of minutes later the ship was steady and it was when I saw another 3 continuous surfacings of the vaquita at about 40° right and reticle 5. Both times I only saw a single animal, moving to the right side of the ship at a slight angle and swimming very calmly. The dorsal fin was tall and pointy. Also, the animal seemed to have a good body condition. After a couple of minutes without resights, it was decided to turn about 50° right to have the sighting area in front of us and it is when there was a third surfacing seen by Juan Carlos at 9° right and reticle 4.5. I didn't see that surfacing and after that we kept looking for about an hour but we couldn't find it again.

Sergio Martínez (sighting 1) 22-may-26

Beaufort 2, Swell2

7:51 I was on the port binocular when the boat started turning to the left, then Rodrigo (that was on the starboard side) said, I have a sighting at 25 right and R 4.5. I could not find it at that moment, but some seconds later he said now it is on 40 or 41 right and R 4.5, so I looked to that position and I saw a single animal (looked like an adult to me) with a triangular, tall fin that is narrow at the tip. It was moving from left to right, slowly and I saw it twice. The vaquita looks healthy (not skinny).

After that Juan Carlos, who was on the second pair of big eyes, saw the vaquita again, but I didn´t, and then, we were looking for it for almost one hour.

I´m 80% sure that we have seen that vaquita in 2019 and last year (photo from 2019 attached)


Photograph of similar vaquita seen in 2019.

Juan Carlos Salinas Sighting 1 Seahorse

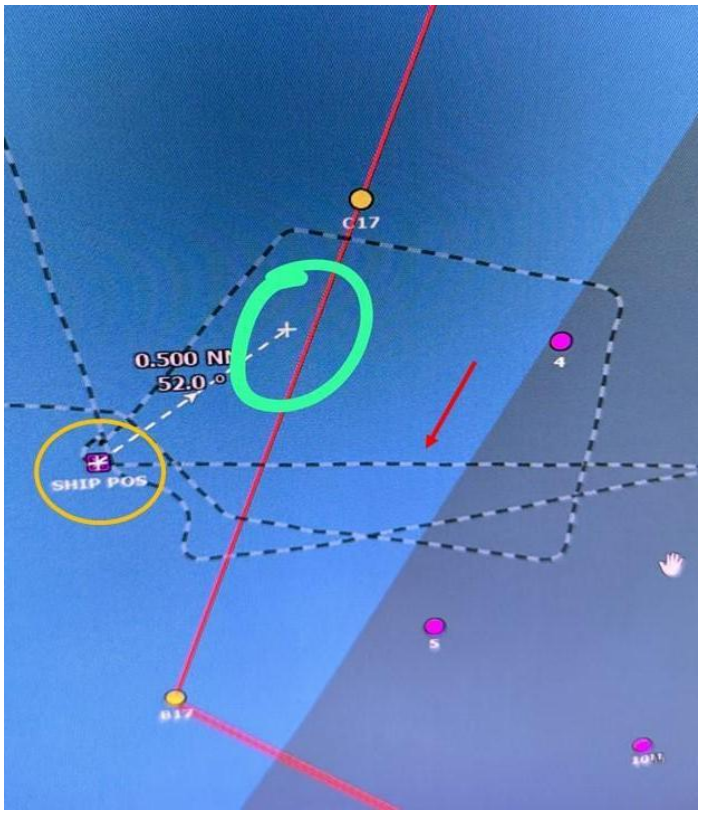
I was in the center bigeyes when the sighting was made for the observer on the right bigeyes (Rodrigo), he called at about 4.5 ret. and 25 deg. right. When I turned the glasses to that angle I saw the animal on two surfaces only, a partial gray back and a tall dorsal fin (very pointed). It seemed to me it was an adult size and healthy shape.

At the beginning of the sighting the ship was starting to turn into a new course, fortunately they stopped the turn almost immediately and reduced the speed, so we were able to have a resight at 30 Deg to the right and 4.5 ret. by Rodrigo about 1 minute from the original sighting, the single animal seen seemed to be the same, because the dorsal fin was very similar, again it was swimming slow and in the same direction, to the right of the bow, this time I only saw it on one surfacing. After a few minutes we changed course to try to relocate the animal (50 Deg R). After the ship was steady I had a resight of a single animal two times at 9 deg. Right and 4.5 ret. moving slowly away from the ship and slightly to the right, the dorsal fin seems the same tall and pointed, I believe it was the same animal all the time. After we had been searching for almost an hour we did not see the animal again and resumed effort.

Date: 05/27/2026
Sighting #2: (Seahorse (Y/N) Y
Photos: N
Videos: N
First time seen: 15:27
Last time seen: 15:27
Sighting length: 3 seconds
Beaufort: 3
Swell: 3 ft
Closest distance: 0.5 nmi

Sighting summary and map:

The sighting was made at 119° right by the starboard bigeyes, so the other observers didn't have it in their field view. The sighting was not entered in Wincruz therefore, there is no Wincruz map. The position of the sighting was calculated by Captain Francois Van Sull using the ship's position and the bearing and reticle of the sighting. The calculation puts the sighting close to CPOD C17. The ship turned to starboard side and continued searching for 0.5 nm, then turned again parallel to the path the ship had during the sighting but without an exact position the searching area was imprecise.



Sighting 2. The original track line of the ship during the sighting was signaled with a red arrow. The ship position (ship pos) when the sighting was made is inside the orange circle. Captain Francois' calculation of the position of the sighting is marked with a white cross inside the green circle.

Observer Narratives:

Pamela Martínez- starboard bigeyes

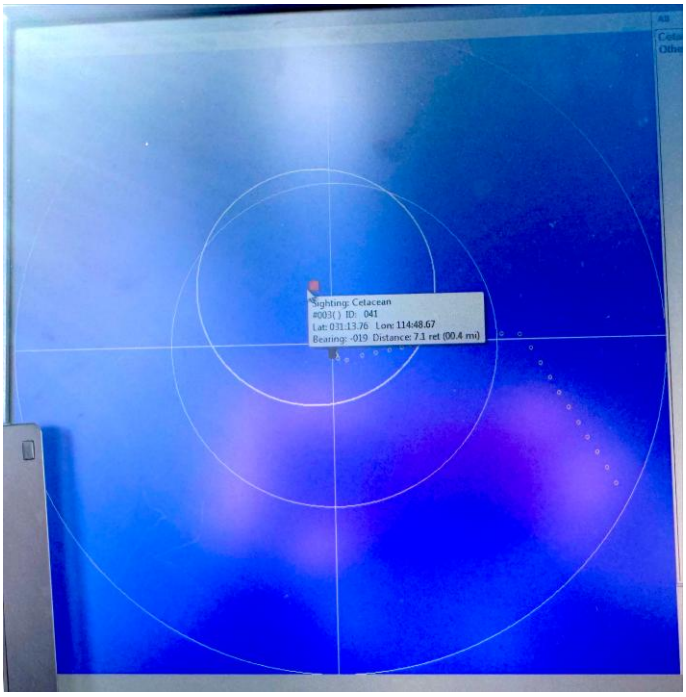
I was at the starboard bigeyes when, within my field of view and perpendicular to the boat, I spotted a dorsal fin, so I reported that I thought I had something. Approximately three seconds later, at bearing 119° right and 5 reticles, I could clearly observe the surfacing of a cetacean whose dorsal fin, coloration, and size matched the characteristics of a vaquita. Due to the relatively close distance, I was able to obtain a good view of the animal. Because the sighting occurred far to the starboard side of the boat and it was still moving, I quickly lost visual contact with it. The boat subsequently stopped and turned 30° to starboard in an attempt to relocate it; however, it was not possible to find it again.

Date: 5/28/2026

Sighting #3: (Seahorse (Y/N) Y
Photos: N
Videos: N
First time seen: 16:43
Last time seen: 16:44
Sighting length: 1 minute
Beaufort: 3
Swell: 3 ft
Closest distance: 0.5nmi

Sighting summary and map:

The sighting was made near to the end of the whole survey effort, and with wind conditions increasing fast it was hard to relocate the animal and resighting effort was cut off after 45 minutes. In addition the animal moved into the glare so it made it harder to follow. While attempted to resight the animal, viewing conditions diminished to a Beaufort 4 and swell height increased to 4 ft. Observer index was 5 throughout the sighting



Sighting 3. The Seahorse is the ship icon in the center with its path indicated by small circles. The original vaquita sighting is the red square and the circle around it represents the area the vaquita is likely to resurface. The circles around the ship are 1 and 2 nmi.

Observer Narratives:
Juan Carlos Salinas

The sighting of a vaquita occurred while I was using the left binoculars at a 22-degree angle and 3 reticles away. I only had a sequence of three surface views where I could observe its tall,

triangular dorsal fin (without any distinguishing markings visible to the naked eye) and part of its back, and on one occasion, also part of its head. From what I could tell, it appeared to be healthy. After recording the information on the computer, we reduced our speed to 2 knots to try to relocate the individual, but the wind conditions (B4) made relocation difficult. The vaquita was swimming towards the sun's reflection, and although a panga was traveling at high speed about half a mile away, it was unaffected and swam slowly. Hugo, the observer using the center binoculars, managed to catch a quick glimpse of the vaquita just before its last dive and as the panga passed through the field of view. Unfortunately, after searching the area for ~~for~~ 45 minutes, the organism was not seen again and the sighting was called off.

Appendix 5. Visual vaquita sighting locations 2026

The locations of vaquita sighted during the 2026 campaign are listed in Table 6.1. The locations of vaquitas for 2023, 2024 and 2025 are in Appendix 7 of the 2025 survey report.

Table 6.1. Locations, in decimal degrees, where vaquita were sighted in the 2026 survey.

Sighting #	Latitude (dd)	Longitude (dd)
1	31.176	-114.832
2	31.154	-114.769
3	31.229	-114.811

Appendix 6. eDNA training in San Felipe

Taller de ADN Ambiental en el Alto Golfo de California: Fundamentos y aplicaciones para la conservación marina

On 11 and 12 May 2026, the Vaquita DNA Project held the Taller de ADN Ambiental en el Alto Golfo de California: Fundamentos y aplicaciones para la conservación marina in San Felipe, Baja California. Organized by the Centro de Investigaciones Biológicas del Noroeste (CIBNOR) in collaboration with CONANP, and funded by the Dolphin Quest Ocean Foundation through its Conservation of Threatened or Endangered Small Cetaceans Fund, the two-day workshop (10 hours of instruction) was designed to strengthen the technical capacity of Reserve personnel and community collaborators to participate as co-monitors in environmental DNA (ADN ambiental) sampling for the conservation of the vaquita marina (*Phocoena sinus*).

The training was delivered by a team of five instructors: Dr. Tania Valdivia-Carrillo, Estefanía Rodríguez-Jacinto, Rosa Isela Burciaga de la Rocha, Dr. Jorge Alberto Mares Mayagoitia, and Arturo Revuelta Ortega, who guided both the classroom sessions and the hands-on field and laboratory work. Eleven participants reflected the collaborative nature of the project, bringing together staff from CONANP (San Felipe and San Luis Río Colorado offices), SEMAR (San Felipe), and Pesca ABC, alongside members of the local community, including a fisherwoman, the granddaughter of a fisher, and a young aquaculture technician..

The theoretical sessions began with the ecological and conservation context of the Alto Golfo de California and the biology and current status of the vaquita marina, then introduced the different types of biological monitoring and the specific role that environmental DNA can play as a complementary, non-invasive tool. Using accessible language tailored to a mixed audience, the instructors explained how DNA released into the water by organisms makes it possible to detect a species without directly observing the animal.

The workshop was structured around two hands-on practice components. On the first day, after the introductory sessions, participants traveled to the sampling site aboard the Reserve vessels and conducted live water sampling using the Smith-Root environmental DNA Citizen Scientist Sampler, following the full protocol of filtration, replicates, and sample labeling. On the second day, DNA samples were processed in a portable Bento Lab unit, where participants set up conventional PCR with positive and negative controls, ran agarose gel electrophoresis, and interpreted the resulting bands. Working through the entire workflow, from a water sample collected at sea to a readable result in the laboratory, allowed participants to understand the method as a coherent process rather than a set of isolated steps.

To ensure that this capacity remains in the local community, a complete environmental DNA sampling kit was donated to CONANP at the close of the workshop, enabling the Reserve and its community collaborators to continue monitoring once the training concluded. The workshop thus served both as a technical course and as a first operational step toward community-based environmental DNA monitoring for vaquita conservation in the Upper Gulf of California.


eDNA
citizen SCIENTIST