Executive Summary 2025

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Executive Summary

Planning for the 2025 vaquita research was informed by the results obtained in May 2024. Although the weather was better for surveying in 2024 than it had been the year before, only 9 sightings were made compared with 16 in 2023. Of the 9 sightings, 4 were very brief with no photographs obtained, and 3 or 4 of the longer-duration sightings involved the same pair of vaquitas. The final sighting in 2024 was of 4 individuals, one of which had last been seen in 2019. That individual had not been seen and identified in 2021, 2022 or 2023, and this raised the question of whether vaquitas might be "returning" to previously favored habitat. The Zero Tolerance Area (ZTA) and Extension Area (EA) cover 12% of the total area known to have been used by vaquitas in 2015. The ZTA and EA are avoided by fishermen because of the protection afforded by concrete blocks with net-entangling hooks and surveillance. The rest of the Vaquita Refuge remains unprotected from the gillnetting. Immediately after the 2024 survey, the National Commission of Natural Protected Areas (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 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. The first project used acoustic recorders to collect thousands of 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, the subject of this report, used both acoustics and visual survey methods with the following objectives:

> Objective 1: 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 (discussed below).

Explanation: The visual survey used Sea Shepherd Conservation Society's (SSCS) 2 vessels to search for vaquitas, with cruise tracks informed by data from the summer acoustic research to map where vaquitas would most likely be seen. The visual and acoustic methods were similar to those employed in 2023 and 2024. A difference was that 2 large ships with onboard overnight accommodations for scientists were used to cover the more distant areas of the Vaquita Refuge. During each sighting, an attempt was made to obtain photographs and drone footage to help determine whether calves were present and whether vaquitas seen outside the ZTA were different from those seen inside the ZTA. All photographs have been compared to the Vaquita Individual Identification Catalog to evaluate whether vaquitas that have not been seen inside the ZTA since 2019 might have moved outside the ZTA.

Objective 2: To obtain information on body condition of vaquitas.

Explanation: Reports from scientists, photographs, and drone footage were used to assess whether any of the vaquitas seen were in poor condition. Such evidence can be used to determine if individuals appeared emaciated (e.g., visible ribs) or had skin conditions (e.g., lesions, ulcers).

Since 2018, acoustic data focused areas searched by the visual survey. 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, acoustic detectors were deployed at 35 sampling sites within the ZTA, 10 sites in the EA, and 21 sites in nearby waters. Only three acoustic detectors were lost during the study period, which was minimal in comparison to previous years. A total of 93 acoustic encounters of vaquitas were recorded at 24 of the 66 sites from 02 to 28 September 2025. 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 (Figure 1). Visual surveys in 2023, 2024 and 2025 covered the area covered by acoustic detectors in Figure 1. This are that includes the ZTA and EA and the area to the northwest is referred to as the "study area" in the Expert Elicitation questions for the visual survey.

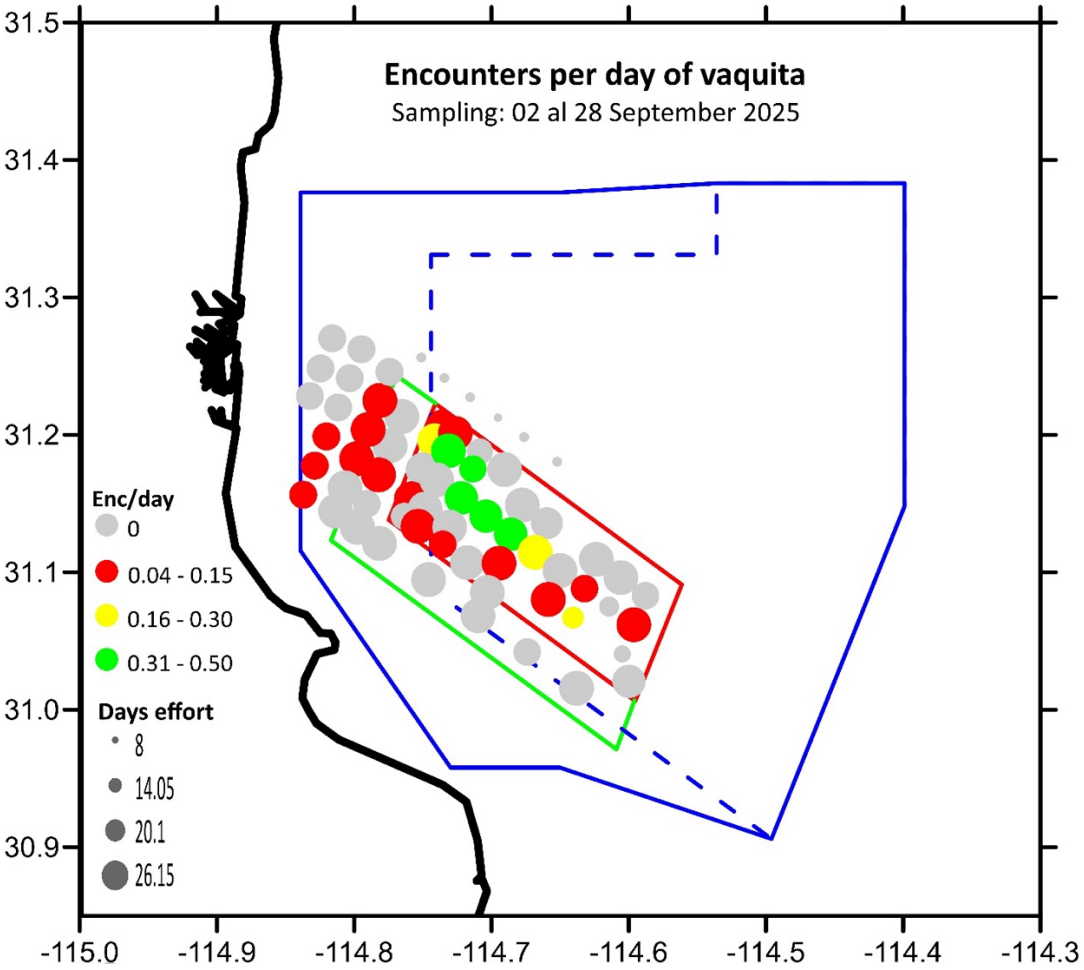

Figure 1. Map showing the acoustic encounter rate of vaquitas per day from 02 to 28 September 2025. The ZTA is the red polygon, the green polygon is the EA, the blue polygon is the Vaquita Refuge. The size of the circles indicates the days of effort per sampling site, and the colors show the acoustic encounters per day. Acoustic detectors were spaced from 1.2 to 4.5 km apart (see Appendix 2 for locations). The area with acoustic detectors covers the area referred to as the 'study area' in visual survey Expert Elicitation questions.

Two SSCS vessels (*Seahorse* and *Bob Barker*), staffed with scientists whose combined experience studying marine mammals totaled around 400 years, surveyed the northern Gulf of California hoping to find and track vaquitas, the rarest and most endangered marine mammal on earth. Each ship was equipped with 3 pairs of 25x binoculars (called bigeyes). The search for these small elusive porpoises was aided by the efforts of Mexican experts on acoustics supported by a group of local fishermen to collect the acoustic data for determining where vaquitas were spending time. This acoustic guidance has been a successful method since 2018 within the ZTA. In 2025, the acoustic effort provided information several times a week in a concentrated area within the ZTA, EA and selected nearby areas (Figure 1). Outside that concentrated area, acoustic detectors were deployed in locations where vaquitas had been observed in and prior to 2015, after which the vaquita's range collapsed. The data collected from May through September 2025 provided information on the vaquita's current distribution. Thus, the visual survey covered the full area known to have been occupied by vaquitas in 2015 except some areas very close to

el Golfo de Santa Clara where they were acoustically detected in 2015.

To provide the Government of Mexico (GOM) with the best possible data on current vaquita distribution and an estimate of minimum numbers, the 2025 ship survey took place in September, the last month of the acoustic distribution and abundance effort that had begun in late May. The survey length was increased to account for both the larger area covered and the known windier conditions which would make many days unsuitable for seeing and tracking vaquitas.

Conditions for seeing and tracking vaquitas were worse in 2025 than in 2023 and 2024 despite the survey duration being longer to account for fall weather. The surveys were of different lengths, so good weather is best expressed per day, which translates to 3.9 km/day of good conditions in 2025 compared with 15.9 km/day in 2024 and 13.9 km/day in 2023 (Table 1). Survey coverage in 2025 included 104.2 kilometers (km) with very good conditions (winds less than 7 km/h) compared to 302.4 km in 2023 and 194.2 km in 2024. Two days of very good weather in 2025 yielded no sightings along offshore tracklines that covered areas where vaquitas had been seen in 2015, but a few acoustic detections were recorded in such areas. We were obviously unable to determine whether the vaquitas using those offshore areas in 2025 were different from the individuals seen during recent surveys inside the ZTA and EA area.

Table 1. Comparison of very good sighting conditions from 2023, 2024 and 2025.

Vessel	**Beaufort**	**Distance (km) 2023 May 11-24 14 days**	**Distance (km) 2024 May 5-24 19 days**	**Distance (km) 2024 Sept 3-30 27 days**
Seahorse	0-1	302.4	194.2	104.2
	B0-B1/day	***13.9/day***	***15.9/day***	***3.9/day***

The use of 2 vessels and 6 bigeyes gave the team of expert observers a good ability to see vaquitas, resulting in more than double the number of sightings in 2024. However, 40% percent of the 2025 sightings lasted less than a minute. All of the 2023 and 2024 sightings that lasted longer than 20 minutes resulted in photographs allowing vaquitas to be individually identified. Sightings lasting longer than 20 minutes comprised 43% of the 2023 sightings, 55% of the 2024 sightings but only 32% of the 2025 sightings. Only half of those 20 minute sightings resulted in photo-ID photographs. The weather, including larger swell than is normally experienced in May, was clearly a factor in limiting ability to identify individuals, but the possibility that the presence of two large ships made vaquitas more skittish than usual cannot be ruled out.

Figure 2 shows the tracklines of the two ships and the locations where vaquitas were seen and heard. Relatively high numbers of detections, both acoustic and visual, were made to the northwest of the EA and all the way to the boundary of the Vaquita Refuge.

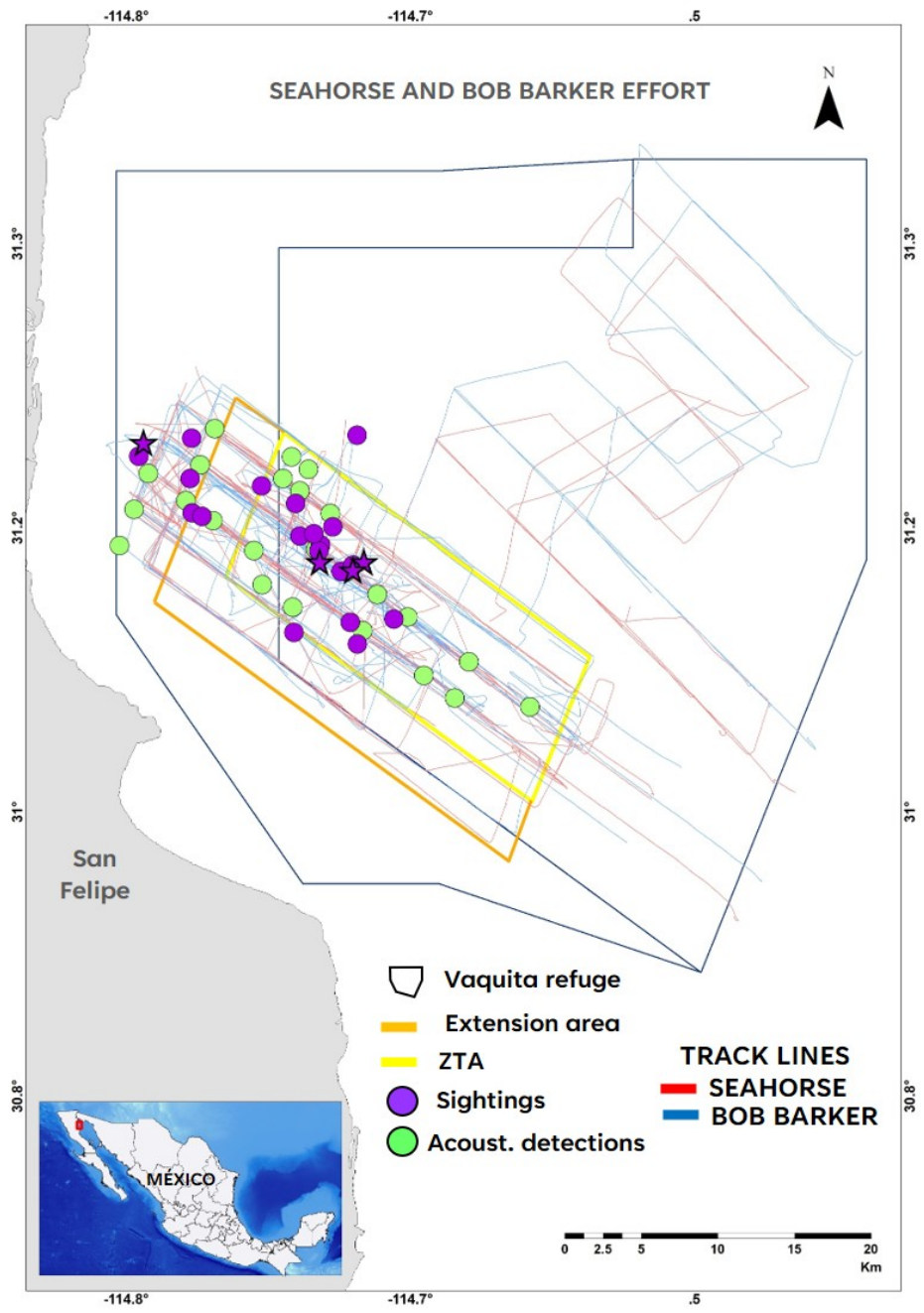

Figure 2. Summary of vaquita acoustic and visual detections during the May 2025 survey. The ZTA is outlined in yellow and the Extension Area (EA) in orange. Sites with acoustic detections are green dots. Sightings (purple dots and purple stars for definite mothers and calves) are 80% within the EA plus ZTA and 20% outside the area protected by blocks with hooks but within the Vaquita Refuge (black outer boundary). Tracklines of the Seahorse are in red and the Bob Barker in blue.

Another difference between the previous May surveys and the September 2025 survey is that in May calves are 2 months old and can be identified reliably compared to September when calves are 7-8 months old and cannot be easily told from adults unless observers have very good looks or drone

footage is obtained. Therefore, the Expert Elicitation question concerning the number of unique calves seen, which was addressed for the May 2023 and 2024 surveys, could not be addressed for the September 2025 survey. However, at least 1 or 2 calves were seen. The mother of one calf is called Frida. She has a bent fin and her name is inspired by the famous Mexican artist Frida Kahlo who lived a full life despite her wounds. Frida was the mother of a calf in 2023 and was seen with another individual that was not a calf in 2024, resulting a two-year calving interval. The only other individually identified mother had a calf in two sequential years.

Drone measurements from sightings 18 and 24 were both about 132 cm and could be one or two individuals of unknown sex. This length corresponds to females approximately 2.5 years old or males about 3.5 years old. These measurements therefore indicate one or two sexually immature vaquitas and confirm the survival of individuals born after about March 2022. Together with the observation that Frida's calf is about one year old, probably born in the fall rather than spring, these findings provide encouraging evidence of recent and continuing reproduction in this species.

Expert Elicitation uses facilitators to work with vaquita observers to reach a consensus concerning the frequency distribution in this case of numbers of vaquitas seen. We addressed the following question: "What is the number of unique vaquitas seen in the ZTA+EA study area", which is the same question as in 2023, and 2024? There was a 67% probability that the total number of different individuals seen in 2025 was between 7 and 10 compared with a 75% probability of 6 to 8 seen in 2024 and a 67% probability of 8 to 12 seen in 2023 (Figure 3). There is too much uncertainty in visual estimates to make strong conclusions about a trend in vaquita numbers. What can be said is that, based on these data, there is no evidence of a decline of the magnitude reported several years ago (about 45% per year), at least within the study area.

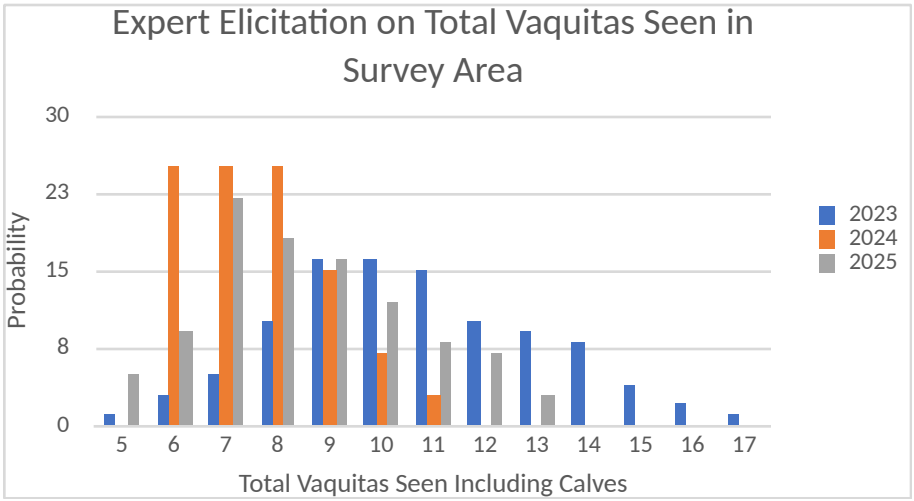

Figure 3. Frequency distribution for the number of vaquitas seen in the ZTA+EA study area in 2023, 2024 and 2025.

As emphasized in earlier reports, vaquitas move freely into and out of the ZTA, therefore the number seen in the ZTA study area at the time of the survey should be interpreted as "there are at least this

many vaquitas surviving". The movement of vaquitas out of the ZTA was highlighted on a very calm day when the 2 ships surveyed the entirety of this protected area without a single sighting. While it is possible that vaquitas escaped the notice of observers, it cannot be ruled out that most or all of them were elsewhere on that day. Even if vaquitas are in the survey area, they remain very difficult to see. This difficulty in seeing vaquitas has been quantified in earlier surveys. Under perfect conditions a vaquita on the trackline would have a 97% chance of being detected from a ship with 3 pairs of bigeyes and expert observers. Much of the 2025 survey was with winds around 10 km/hour and a swell of 0.6m. The probability of detection of vaquitas on the trackline under those conditions drops to around 20%.

This survey, and the surveys in 2023 and 2024, incorporated a training component to introduce interested young community members to visual survey methods and provide them with experience detecting vaquitas. Seventeen young community members from San Felipe were introduced to the visual-survey methods, and they observed from both ships. The trainees were enthusiastic, and many saw vaquitas. The CONANP, through staff from the Biosphere Reserve of the Upper Gulf of California and Colorado River Delta, oversaw the training program. Continued investment in the program, coupled with more training from experienced observers, and more time on the water, can go far in creating a dedicated team of vaquita and ecosystem monitors. Local community monitors are a way to continue vaquita observations in non-survey times, and for building community knowledge and enthusiasm for the species and the local marine ecosystem. It is our hope that this valuable program can be supported with committed funding from the government into the future.

The ZTA functions as a sanctuary from gillnets and the 2025 research confirms that vaquitas spend most of their time within this very small protected area. However, the 2025 research also shows that vaquitas range outside the ZTA. The area northwest of the ZTA+EA seems to be particularly important habitat for vaquitas. This area between the EA and the western boundary of the Vaquita Refuge needs immediate protection to guarantee the safety of these last vaquitas, including the critical mothers and calves, from death in gillnets.