

# VAQUITA

## *On the Brink of Extinction or Salvation?*

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*Phocoena sinus*, the Gulf of California harbor porpoise or vaquita, was first described in 1958 from three skulls found on beaches near San Felipe, Baja California (Norris and McFarland 1958). CEDO helped recover three vaquitas at Puerto Peñasco in 1979 and '80 (Magatagan, et al. 1984), increasing the number of whole specimens of this new species to 5. In 1985 an additional 13 fresh animals were entangled in fishing nets set at El Golfo de Santa Clara - 7 in experimental nets set for totoaba and 6 others in nets set by fishermen for shark and/or the illegal totoaba (Robles et al. 1986, Brownell et al. 1987). These events offered scientists an opportunity to look closely at these beautiful creatures and at the same time sounded an alarm about the high mortality of this porpoise associated with the totoaba and shark fisheries.

Vaquita is the smallest of all cetaceans (whales, dolphins and porpoises) with adults measuring from 1.2 to 1.5 meters in length and weighing approximately 55 kg. Females tend to be somewhat longer than males. The dark gray upper body of this porpoise fades to a lighter gray on the sides and is contrasted with striking dark patches encircling the eyes and a dark lining around the lips. Throughout the 80s and 90s it became established that vaquita live solely in the northernmost part of the Gulf of California, thus having the most limited distribution of any cetacean (Brownell 1986; Silber 1990; Gerodette, et. al. 1995). Its timid habits have made it challenging to observe vaquitas in the wild.

The best early approximation of vaquita abundance in 1993 suggested a population of 224 animals (with a 95% confidence interval of 106 to 470) (Barlow et al. 1997). A more accurate and comprehensive survey in 1997, not directly comparable to the 1993 study, however, estimated the population at 567 (95% confidence interval from 177 to 1073) (Jaramillo L. et al. 1999).

CEDO made the first estimate of fishing-related mortality by surveying fishermen from Puerto Peñasco in 1988. From their recall of captures and what was known about vaquita distribution and fishing effort in different fisheries, an initial annual capture rate of 32.3 vaquitas was calculated for the entire northern Gulf (Turk and Silber 1994). An intense effort was subsequently made to directly observe mortality at El Golfo de Santa Clara from 1993 to '95, resulting in a mortality estimate of 39 deaths per year at El Golfo alone (D'Agrosa et. al. 1995).

Though totoaba fishing was officially banned in 1975 (DOF 1975), this activity continued illicitly into the early 1990s, especially in the isolated communities of El Golfo de Santa Clara, Sonora and San Felipe, Baja California. In 1992 the large mesh gillnets (10 and 12 inch diameter) used for capturing totoaba and shark were prohibited (DOF 1992). This and other factors resulted in the emergence and expansion of fisheries that use smaller-mesh nets. Unfortunately evidence shows that vaquita are caught in all types of gill nets used in the upper Gulf, including the totoaba and shark nets (now prohibited), and legal nets set for shrimp, chano, sierra, sharks and rays (ranging from 2.5 to 8 inches in mesh size) (D'Agrosa et al. 1995). An attempt to relate the 1995 annual mortality estimates to fishing effort at El Golfo suggests 13 vaquita are captured annually in shrimp nets, 17 in the chano fishery, 0 in curvina, 7 in nets set for sharks and rays, and 2 in

nets set for sierra and mackerel, for a total annual mortality of 39 vaquitas (D'Agrosa et al. 2000). Since small-scale fisheries are known to be dynamic, the relative threat each poses to vaquita should also be considered dynamic, responding to changes in the economy and environment.

While local investigations continued, national and international conservation officials took notice of *Phocoena sinus*. Numerous Mexican, U.S. and international laws have been enacted during the last three decades to address the need to protect this animal (see box on page 25). Today the vaquita is considered to be the most endangered marine cetacean in the world.

In the early 1990s, as the negotiations were taking place for the North American Free Trade Agreement, both national and international interest to directly protect the vaquita increased. The Mexican Fisheries Department established a Committee for the Protection of the Totoaba and Vaquita. One of the first actions of the committee was to ban the use of large-mesh totoaba nets that were still thought to be the primary cause of vaquita mortality. As a member of this committee CEDO carried out a multi-year environmental education program in the communities of the upper Gulf on vaquita, totoaba and their northern Gulf of California habitat.

The importance of the northern Gulf ecosystem, the vaquita and the totoaba (both endemic and in danger of extinction), and other species of commercial importance was highlighted when the region was established as a Biosphere Reserve in 1993. CEDO participated in the drafting of the first management programs for both Upper Gulf and Pinacate Reserves and today serves in an advisory capacity and implements programs to support goals of these Reserves.

The Upper Gulf Biosphere Reserve was intended as a mechanism to offer protection to the vaquita as well as other important species. To date "reserve" designation has not restricted gill net fisheries, except within the core zone of the Colorado River Delta. This regulation lacks adequate enforcement, however. In addition today we know that approximately 40% of the vaquita's range lies outside the boundary of the Reserve (Jaramillo L. et al. 1999). Limited information and the lack of regulation of small-scale fisheries have made it difficult to set forth appropriate guidelines for protecting the vaquita and moving toward sustainable fisheries.

While the scientific community continued its debate about vaquita population size and mortality, CEDO set out to work with fishermen to better understand their fisheries. With funding from the David and Lucile Packard Foundation, CEDO published a comprehensive resource on small-scale fisheries in the northern Gulf of California. *Pescando Entre Mareas del Alto Golfo: Una Guía sobre la Pesca Artesanal, Su Gente y sus Propuestas de Manejo* (Cudney and Turk Boyer 1998). The book serves fishers, managers, naturalists and conservation groups and includes information on species fished, zones, reproduction, equipment and fishermen's ideas for management. The fishers' participation that began at the onset of this project continues today, while CEDO continues its commitment to providing scientific information needed for management (see "CEDO and FisheriesWork", p. 4 ).

CEDO's work and additional studies by the *Centro Regional de Investigación Pesquera* (CRIP, Guaymas and Ensenada) and Conservation International provide the foundation for a more meaningful fisheries management regime. The Upper Gulf Biosphere Reserve staff is updating the management program and fisheries advisory councils are being formed in the communities of El Golfo, San Felipe, and Puerto Peñasco as a way to incorporate fishermen's input into the management process.

Meanwhile, concern for the vaquita increased. It was officially designated as “Endangered with Extinction” by the Mexican Government in 1994 and re-classified as “Critically Endangered” by IUCN in 1996 and CITES in 1997. In 1996 the Mexican government established the International Committee for the Recovery of the Vaquita (CIRVA). Among the first actions of this committee was to estimate the population size at 567.

In order to establish a plan for recuperation of this species all potential factors under human control that put the vaquita at risk were analyzed: habitat alteration through reductions in water flow from the Colorado River; pollutants; problems with inbreeding in such a small population; and incidental fisheries mortality. After careful study, incidental fisheries mortality was considered to be the greatest immediate risk for vaquita (Rojas-Bracho and Taylor 1999).

Using available data on vaquita and fishing activities and zones, CIRVA has made the following recommendations for the recuperation of vaquita. (Rojas B. and Jaramillo 2000)

- Reduce vaquita by-catch to zero as soon as possible.
- Extend the southern boundary of the Reserve to include the entire range of vaquita.
- Ban gillnets and trawlers in the enlarged Reserve.

Complete elimination of gill-netting activities in the upper Gulf represents a major implementation and enforcement challenge with fishermen and to the government. If such a ban were presented with no alternatives, many families in the region would suffer economic hardship. CEDO has stepped up to this challenge by involving fishermen directly in its solution. In coordination with the Biosphere Reserve and with support from World Wildlife Fund’s Gulf of California Program, in February 2001, CEDO held workshops on “Vaquita, Fishing and the Future” in El Golfo, San Felipe, and Puerto Peñasco—the three key fishing communities of the northern Gulf. With participation from members of many of the regions’ fishing cooperatives, we spent day-long sessions sharing the latest scientific information on vaquita, surveyed fishers’ willingness to change fishing methods or stop fishing altogether, and explored alternatives or incentives that might prove attractive. A majority of the fishermen that participated in these sessions showed a willingness to change the way they fish or do something other than fishing, though in each community the tendency towards change was distinct. More detailed results will appear in the next issue of *CEDO News* and are also being presented in the Spanish-language newspaper, *Voces del Mar y del Desierto* that CEDO is expanding to distribute to communities throughout the Reserve. A comprehensive booklet on vaquita will also be published as part of this project.

These workshops were only the beginning. Right now a coordinated inter-institutional effort, led by the Joint Initiative of the Gulf of California and CIRVA, is underway to create a more effective plan for the recovery of the vaquita and preservation of its habitat. The comprehensive plan will cover developing mechanisms to direct socioeconomic change in the communities of the upper Gulf, creating the legal structures that will allow for reduction of trawling and gillnetting activities within the Reserve, and even expanding the Reserve. It also addresses the need for a major, coordinated communications campaign to solicit public support. The plan is just coming off the drawing board, but it is safe to say that if the funding is available to implement it, it will be our last chance to save the vaquita.

During these recent workshops with fishermen, we showed a video of a newborn vaquita calf with the umbilicus still attached that was brought live to CEDO in 1994 (See *CEDO News*, 1994,

*Vol. 6 [2] pp. 1-7*). The fishermen were completely engrossed with this sight and saddened as we all watched it die in the tank at CEDO. Almost every workshop participant expressed an interest in protecting the vaquita. This attitude we consider to be an important first step towards the cetacean's salvation. ♦

***CEDO, VAQUITA and the Future***

- *With \$ 20,000 CEDO could produce a video of the vaquita conservation story that would help inspire fishermen to make the necessary changes.*
- *With \$50,000 per year for three years CEDO could employ specialists to assist the communities of the region in shifting their fishing to more sustainable livelihoods.*