

Silber, G. K. 1990. Distributional relations of cetaceans in the northern Gulf of California, with special reference to the vaquita, *Phocoena sinus*. Ph.D. dissertation. University of California. Santa Cruz, California. 158 pp.

My objective was to describe habitat utilization and distribution of cetacean species of the northern Gulf of California, with an emphasis on the vaquita, *Phocoena sinus*. I provide an overview of the marine environment of the upper Gulf and relate aspects of the oceanographically unique region to features of the morphology, distribution, range, and acoustic behavior of *P. sinus*, including ecological interactions of this species with other cetacean species common to the northern Gulf. I review currently available information on *P. sinus* and I present the first description of phonations produced by *P. sinus*.

A total of 4,216 km of boat and aircraft surveys was conducted for cetaceans in the Gulf of California in 1986-1989. Seven cetacean species were seen on a total of 306 occasions, including 58 sightings (110 individuals) of vaquita. Bottlenose dolphins, common dolphins, and fin whales were the most abundant species in the Upper Gulf. Bottlenose dolphins were found almost exclusively in extreme nearshore, shallow water habitats, and common dolphins primarily inhabited deep water. In contrast, vaquita occurred in narrowly defined habitats of moderate depth (13.5-56.0 m) in small groups of three or less individuals. The principal range of *P. sinus* is apparently limited to the northern Gulf of California, Mexico, and its distribution is tightly clumped within well-mixed, turbid, highly productive waters. The species probably inhabits the northern Gulf year-round, and the population is held at low levels by incidental mortality in large mesh gillnets. *Phocoena sinus* vocalizations were similar to those of other members of the family, and the high frequency, narrow-band nature of the sounds may act to confine the species to turbid water habitats. Large numbers of sympatric cetaceans of the upper Gulf apparently are able to coexist by occupying different ecological niches.