The Gulf of California harbor porpoise, or vaquita, *Phocoena sinus*, Norris and McFarland (1958) was described originally from skulls collected in the northern Gulf of California, and since then has been seen or reported infrequently. Several authors have provided reviews of recovered specimens (Brownell, 1983, 1986; Magatagan et al., 1984), and a total of about 20 sightings of free-ranging *P. sinus* are known to scientists (Norris and McFarland, 1958; Norris and Prescott, 1961; Villa, 1976; Wells et al., 1981). However, Brownell (1986) argued that many of these observations lacked sufficient detail to be substantiated. The porpoise is believed to be endemic to the Gulf of California (Norris and McFarland, 1958; Norris and Prescott, 1961), and its range may be limited to the upper Gulf (Brownell, 1986). Little is known about the behavior, biology, and natural history of the vaquita. The size of the porpoise, its characteristically small group size, and its elusive nature have undoubtedly contributed to the paucity of sightings.

Surveys for *P. sinus* were conducted in the northern Gulf of California between 2-27 February and 15-30 March 1986. Although the surveys were not designed to yield a population estimate, the data presented here may be of value in planning future census work. This paper provides the single largest collection of sightings since the initial description of the species and provides some insight into its habitat utilization.
TABLE 1.—Phocoena sinus sightings in the northern Gulf of California during February and March 1986.

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>No. seen</th>
<th>Distance to shore (km)</th>
<th>Depth (m)</th>
<th>Water temp. (°C)</th>
<th>Clarity (m)</th>
<th>Tide</th>
<th>Sea state</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Feb</td>
<td>1139</td>
<td>31°34'N, 114°20'W</td>
<td>2</td>
<td>2.4</td>
<td>19.0</td>
<td>17.0</td>
<td>4.0</td>
<td>Fall</td>
<td>1</td>
</tr>
<tr>
<td>25 Mar</td>
<td>0831</td>
<td>31°07'N, 114°42'W</td>
<td>4 (2A + C*)</td>
<td>12.0</td>
<td>15.0</td>
<td>21.0</td>
<td>1.8</td>
<td>Fall</td>
<td>0–1</td>
</tr>
<tr>
<td>26 Mar</td>
<td>0945</td>
<td>31°15'N, 114°44'W</td>
<td>1 (+?)</td>
<td>12.8</td>
<td>13.5</td>
<td>19.0</td>
<td>0.9</td>
<td>Rise</td>
<td>0–1</td>
</tr>
<tr>
<td>26 Mar</td>
<td>1657</td>
<td>31°04'N, 114°41'W</td>
<td>1</td>
<td>12.0</td>
<td>25.0</td>
<td></td>
<td></td>
<td>Fall</td>
<td>0–1</td>
</tr>
<tr>
<td>26 Mar</td>
<td>1747</td>
<td>31°04'N, 114°40'W</td>
<td>1</td>
<td>12.8</td>
<td>22.0</td>
<td></td>
<td></td>
<td>Fall</td>
<td>0–1</td>
</tr>
<tr>
<td>27 Mar</td>
<td>0752</td>
<td>31°04'N, 114°40'W</td>
<td>3 (A + C + 1)</td>
<td>12.8</td>
<td>15.0</td>
<td></td>
<td>1.5</td>
<td>Fall</td>
<td>0–1</td>
</tr>
<tr>
<td>27 Mar</td>
<td>1122</td>
<td>31°10'N, 114°44'W</td>
<td>2 (A + C)</td>
<td>10.2</td>
<td>15.0</td>
<td></td>
<td>1.5</td>
<td>Rise</td>
<td>0–1</td>
</tr>
<tr>
<td>27 Mar</td>
<td>1240</td>
<td>31°07'N, 114°42'W</td>
<td>8–10</td>
<td>15.2</td>
<td>26.0</td>
<td>21.0</td>
<td>2.5</td>
<td>Rise</td>
<td>0–1</td>
</tr>
<tr>
<td>27 Mar</td>
<td>1355</td>
<td>31°10'N, 114°41'W</td>
<td>4 (2A + C)</td>
<td>16.8</td>
<td>28.0</td>
<td></td>
<td>2.5</td>
<td>Rise</td>
<td>1</td>
</tr>
<tr>
<td>27 Mar</td>
<td>1435</td>
<td>31°10'N, 114°40'W</td>
<td>1</td>
<td>16.8</td>
<td>28.0</td>
<td>23.0</td>
<td>2.5</td>
<td>Rise</td>
<td>0–1</td>
</tr>
<tr>
<td>27 Mar</td>
<td>1442</td>
<td>31°10'N, 114°39'W</td>
<td>1</td>
<td>17.6</td>
<td>22.0**</td>
<td>23.0</td>
<td>2.5</td>
<td>Rise</td>
<td>0–1</td>
</tr>
<tr>
<td>27 Mar</td>
<td>1459</td>
<td>31°09'N, 114°36'W</td>
<td>2</td>
<td>20.0</td>
<td>22.0**</td>
<td>23.0</td>
<td>2.5</td>
<td>Rise</td>
<td>0–1</td>
</tr>
</tbody>
</table>

* A + C = adult and calf.
** Indicated depths were extrapolated from a nautical chart.
More than 815 km of survey transects for *P. sinus* were conducted from an 8-m Boston whaler (Fig. 1). Two to four observers stationed at 3.5 m above the water surface used the unaided eye and 7 x 35 and 10 x 40 power binoculars to search the area in front of the vessel and about 200–300 m on either side of the ship’s track, although they also regularly scanned to greater distances. During all surveys the vessel traveled consistently at 10–11 km/h. Data on the number of individuals, tidal phase, sea state, and water depth, temperature, and clarity were collected for each sighting. The same information was collected for several porpoise sightings that occurred when we were not conducting systematic transects. The location of each sighting was determined by triangulating on landmarks then plotted on a nautical chart. Distances from shore also were derived from a chart. Most water depths were obtained at the time of the sighting using a JRC color depth sounder; the remainder were obtained from a nautical chart. The latter may be subject to a small degree of error caused by substantial tidal fluctuations and inaccuracies in the chart itself. Sea states were obtained by visual assessment according to the Beaufort scale. No surveys were conducted when sea states exceeded Beaufort 2. Water clarity was measured using a Secchi disc. Information on tidal phases was obtained from the University of Arizona tide chart for the northern Gulf of California (Thomson, 1986).

*Phocoena sinus* was observed on 12 occasions representing an estimated total of 30 individuals (Fig. 1). Of these observations six were adult/calf pairs and six were single individuals. The sightings occurred in two locations and in two separate time blocks (Table 1, Fig. 1). One sighting of two individuals occurred in early February, 33.6 km SE El Golfo de Santa Clara, Sonora, Mexico. The second series of sightings occurred between 25 and 27 March in an area about 15 km E San Felipe, Baja California Norte, Mexico (Table 1, Fig. 1). On two occasions we observed aggregations of porpoises in which the animals were dispersed as single individuals and small subgroups (two–four members) throughout several hundred square meters. One such aggregation was encountered on 27 March when the greatest number of porpoises was observed (eight–10 individuals; Table 1). However, we made only one pass through the group and did not stop to determine actual abundance. We believe that the number of porpoises in that area was substantially higher than the figure reported here. Thirteen additional porpoises were observed elsewhere on the same day (Table 1).

The biology and habitat utilization of *P. sinus* has not been quantified, although some information on group size and water depths accompanies previous porpoise sightings (Norris and McFarland, 1958; Norris and Prescott, 1961; Wells et al., 1981). The data presented here for *P. sinus* group sizes, distance from shore, and water depths are similar to those reported for *P. phocoena* (Amundin and Amundin, 1974; Gaskin, 1977; Gaskin et al., 1974; Neave and Wright, 1968; Prescott and Fiorelli, 1980; Scheffer and Slipp, 1948; Taylor and Dawson, 1984) and for *P. spinipinnis* (Würsig et al., 1977). Except for recent data on ventilation patterns (Silber et al., 1988), nothing is known about the behavior of *P. sinus* (Brownell, 1983).

The low number of *P. sinus* sightings reported here relative to the search effort involved suggests that the porpoise is exceedingly rare. Alternatively, there may be a seasonal component to porpoise density in the northern Gulf of California, and the main body of the population may have been elsewhere during our surveys in those areas. Additional work is needed to assess the relative abundance and distribution of *P. sinus*. This depleted population continues to be impacted through incidental kills in various local gillnet fisheries (Brownell, 1988).

This study was supported by the Nature Conservancy and the Center for Environmental Education. Logistical support and equipment was provided by the Long Marine Laboratory, the University of California and the West Coast Whale Research Foundation. I received a great deal of encouragement from Drs. K. Norris and B. Villa-R. The field work would not have been possible without contributions from G. Ellis, M. Newcomer, G. Barros, H. Perez-C., A. Robles, L. Torrez-M., A. Vaezquez-R. I also thank R. Boyer, R. Brownell, L. Findley, K. Marten, A. Robles, P. Turk-Boy, O. Vidal, R. Wells, B. Würsig, and M. Würsig for their assistance and advice. The paper benefitted from comments by R. Brownell, M. Newcomer, K. Norris, S. Shane, and B. Würsig. The work was conducted under the scientific research permit #2941 issued by the Secretaría de Pesca, Estados Unidos Mexicanos.

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FIRST RECORD OF DINOMYS BRANICKII FOR VENEZUELA

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An adult female pacarana (Dinomys branickii Peters) was captured alive in an empty concrete tank in El Caimito, District of Capacho, State of Táchira, northwestern Venezuela (7°49'N, 72°21'W) at 1,400 m elev., in February 1986. The specimen was taken to a local zoo in Capacho, where it was observed and positively identified as Dinomys branickii by the authors in June 1986. The habitats around the site of capture are pastures and cultivated fields of onions, cabbage, beans, and other vegetables. There is an isolated area of forest at a distance of about 500 m. The species is locally known as lapa rabuda or lapo and is considered to be uncommon. The species, described from Colonia Amable María, Montaña de Vitoc, Departamento de Junín, Perú, is known from a few localities in Bolivia, Brazil, Colombia, Ecuador, and Perú (Alho, 1982, Grimwood, 1969; Honacki et al., 1982) and is reported here for the first time in Venezuela.

LITERATURE CITED


