LONG-BEAKED COMMON DOLPHIN
(*Delphinus delphis bairdii*):
California Stock

**STOCK DEFINITION AND GEOGRAPHIC RANGE**
Long-beaked common dolphins were recognized as a distinct species in the 1990s (Heyning and Perrin 1994; Rosel et al. 1994), but Cunha et al. (2015) suggests that *Delphinus capensis* is an invalid species and the Society of Marine Mammalogy now provisionally recognizes animals from this stock as the subspecies *Delphinus delphis bairdii*. In the future, it is possible that this stock will be recognized as a separate species (perhaps *D. bairdii*), as discussed by Dall (1873) and advocated by Banks and Brownell (1969), but further taxonomic analyses are required. Along the U.S. west coast, their distribution overlaps with that of the short-beaked common dolphin. Long-beaked common dolphins are commonly found within about 50 nmi of the coast, from Baja California (including the Gulf of California) northward to about central California (Figure 1). Along the west coast of Baja California, long-beaked common dolphins primarily occur inshore of the 250 m isobath, with very few sightings (<15%) in waters deeper than 500 meters (Gerrodette and Eguchi 2011). Stranding and sighting records indicate that the abundance of this species off California changes both seasonally and inter-annually (Heyning and Perrin 1994, Forney and Barlow 1998, Barlow 2016). Although long-beaked common dolphins are not restricted to U.S. waters, cooperative management agreements with Mexico exist only for the tuna purse seine fishery and not for other fisheries which may take this species (e.g. gillnet fisheries). For the MMPA stock assessment reports, there is a single Pacific management stock including only animals found within the U.S. Exclusive Economic Zone off California.

**POPULATION SIZE**
Becker et al. (2020) generated species distribution models (SDMs) from fixed and dynamic ocean variables using 1991-2018 line-transect survey data to estimate density and abundance of cetaceans in the California Current Ecosystem (CCE). The use of SDMs for density estimation is well-established for this region and models incorporate changes in species abundance and habitat shifts over time (Becker et al. 2016, 2017, Redfern et al. 2017). Additionally, use of SDMs facilitates abundance estimation when survey coverage is limited, as was the case in 2018 when line-transect effort was largely limited to continental shelf waters (Henry et al. 2020). The best-estimate of abundance is taken as the estimate from 2018, or 83,379 (CV=0.216) animals (Becker et al. 2020).

**Minimum Population Estimate**
The log-normal 20th percentile of the 2018 abundance estimate is 69,636 long-beaked common dolphins.

**Current Population Trend**

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**Figure 1.** Long-beaked common dolphin sightings based on shipboard surveys off California, Oregon, and Washington, 1991-2018 (Barlow 2016, Henry et al. 2020). Dashed line represents U.S. EEZ, thin lines indicate completed transect effort (gray = 1991-2014, black = 2018). Sightings from the 2018 survey are shown in red.
California waters represent the northern limit for this stock and animals likely move between U.S. and Mexican waters. The ratio of strandings of long-beaked to short-beaked common dolphin in southern California has varied, suggesting that the proportions of each species varies with ocean conditions (Heyning and Perrin 1994, Danil et al. 2010). There appears to be an increasing trend of long-beaked common dolphins in California waters over the last 30 years coincident with warming ocean conditions (Fig. 2), but a trend analysis for this stock has not been performed to date, while other stocks with more urgent conservation concerns are analyzed (e.g., Moore and Barlow 2011, 2013).

**CURRENT AND MAXIMUM NET PRODUCTIVITY RATES**

There are no estimates of current or maximum net productivity rates for long-beaked common dolphins.

**POTENTIAL BIOLOGICAL REMOVAL**
The potential biological removal (PBR) level for this stock is calculated as the minimum population size (69,636) times one half the default maximum net growth rate for cetaceans (½ of 4%) times a recovery factor of 0.48 (for a species of unknown status with a mortality rate CV of 0.3 to 0.6; Wade and Anglis 1997), resulting in a PBR of 668 long-beaked common dolphins per year.

### HUMAN-CAUSED MORTALITY AND SERIOUS INJURY

**Fishery Information**

A summary of recent fishery mortality and injury for long-beaked common dolphins is shown in Table 1. More detailed information on these fisheries is provided in Appendix 1. The estimate of mortality and serious injury for long-beaked common dolphin in the California drift gillnet fishery for the five most recent years of monitoring, 2015-2019, averages 1.7 (CV= 0.60) per year (Carretta 2020). Stranding data are the primary source of documenting human-caused mortality for this stock during the most recent 5-year period of 2015-2019 (Table 1). Human-caused mortality totals based on observed counts from strandings are negatively-biased because only a fraction of carcasses are detected (Carretta et al. 2016). Therefore, in this stock assessment report and others involving dolphins along the U.S. West Coast, human-related deaths and injuries counted from beach strandings along the outer U.S. West Coast are multiplied by a factor of 4 to account for the non-detection of most carcasses (Carretta et al. 2016a). Applying this correction factor to the 21 stranded long-beaked common dolphins yields a minimum estimate of 84 fishery-related dolphin deaths, or an average of 16.8 annually (Table 1).

**Table 1.** Summary of available information on the incidental mortality and serious injury of long-beaked common dolphins (California Stock) in commercial fisheries that might take this species (Carretta 2021, Carretta et al. 2021). All observed entanglements resulted in the death of the animal. Coefficients of variation for mortality estimates are provided in parentheses, when available. n/a = information not available. Human-caused mortality values based on strandings recovered along the outer U.S. West Coast are multiplied by a correction factor of 4 to account for undetected mortality (Carretta et al. 2016a).

<table>
<thead>
<tr>
<th>Fishery Name</th>
<th>Data Type</th>
<th>Year(s)</th>
<th>Percent Observer Coverage</th>
<th>Observed Mortality (and Serious Injury)</th>
<th>Estimated Annual Mortality (CV)</th>
<th>Mean Annual Takes (CV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA thresher shark/swordfish drift gillnet fishery</td>
<td>observer</td>
<td>2015-2019</td>
<td>21%</td>
<td>2</td>
<td>8.7 (0.60)</td>
<td>1.7 (0.60)</td>
</tr>
<tr>
<td>CA Spot Prawn Trap Fishery</td>
<td>Strandings</td>
<td>2015-2019</td>
<td>n/a</td>
<td>1</td>
<td>≥ 4</td>
<td>≥ 0.8 (0.46)</td>
</tr>
<tr>
<td>CA halibut/white seabass and other species set gillnet fishery</td>
<td>Strandings</td>
<td>2015-2019</td>
<td>n/a</td>
<td>2</td>
<td>≥ 8 (n/a)</td>
<td>≥ 1.6 (0.46)</td>
</tr>
<tr>
<td>Unidentified gillnet fishery interaction</td>
<td>Strandings</td>
<td>2015-2019</td>
<td>n/a</td>
<td>21</td>
<td>≥ 84</td>
<td>≥ 16.8 (0.46)</td>
</tr>
<tr>
<td>Unidentified fishery interaction</td>
<td>Strandings</td>
<td>2015-2019</td>
<td>n/a</td>
<td>7</td>
<td>≥ 28</td>
<td>≥ 5.6 (0.46)</td>
</tr>
<tr>
<td>Minimum total annual takes (includes correction for unobserved beach strandings)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>≥ 26.5 (0.39)</td>
<td></td>
</tr>
</tbody>
</table>

**Other Mortality**

Stranding records from 2015-2019 include two deaths resulting from hook and line fishery entanglements (Carretta et al. 2021). Applying the minimum correction factor of 4 to account for undetected mortality (Carretta et al. 2016a), yields an estimated 16 human-caused long-beaked common dolphin deaths from hook and line fisheries or 3.2 annually for 2015-2019.
‘Unusual mortality events’ of long-beaked common dolphins off California due to domoic acid toxicity have been documented by NMFS as recently as 2007. One study suggests that increasing anthropogenic CO₂ levels and ocean acidification may increase the toxicity of the diatom responsible for these mortality events (Tatters et al. 2012).

STATUS OF STOCK

The status of long-beaked common dolphins in California waters relative to OSP is not known, and there are insufficient data to evaluate potential trends in abundance. Exposure to blast trauma resulting from underwater detonations is a local concern for this stock (Danil and St. Leger 2011), but population level impacts from such activities are unclear. In response to the 2011 event, the U.S. Navy has implemented training protocols to reduce the probability of blast trauma events occurring (Danil and St. Leger 2011). Long-beaked common dolphins are not listed as "threatened" or "endangered" under the Endangered Species Act nor as "depleted" under the MMPA. The average annual human-caused mortality from commercial fisheries (≥26.5/yr) and other sources (3.2/yr) is 29.7 long-beaked common dolphins. This does not exceed the PBR (668), and therefore they are not classified as a "strategic" stock under the MMPA. The average total fishery mortality and injury for long-beaked common dolphins (29.7/yr) is less than 10% of the PBR and therefore, is considered to be insignificant and approaching zero mortality and serious injury rate.

REFERENCES


NMFS, Southwest Region, 501 West Ocean Blvd, Long Beach, CA 90802-4213.


