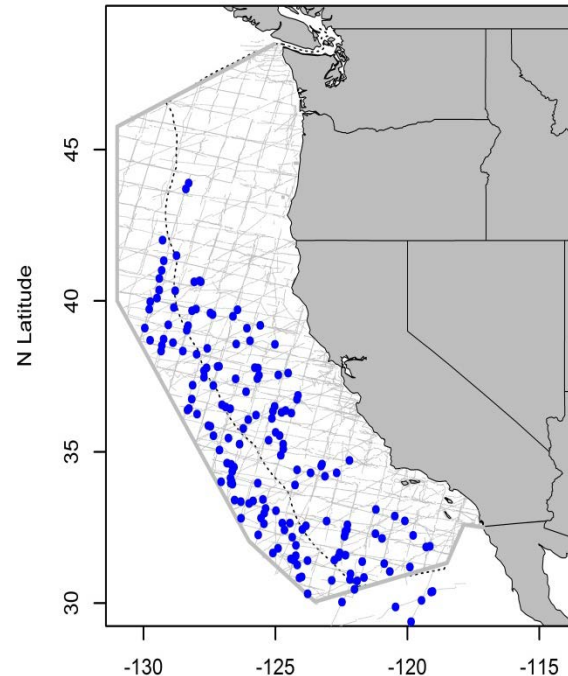


## STRIPED DOLPHIN (*Stenella coeruleoalba*): California/Oregon/Washington Stock

### STOCK DEFINITION AND GEOGRAPHIC RANGE

Striped dolphins are distributed worldwide in tropical and warm-temperate pelagic waters. Striped dolphins are commonly encountered in warm offshore waters of California, and a few sightings have been made off Oregon (Figure 1, Barlow 2016). Striped dolphins are also commonly found in the central North Pacific, but sampling between this region and California has been insufficient to determine whether the distribution is continuous. Based on sighting records off California and Mexico, striped dolphins appear to have a continuous distribution in offshore waters of these two regions (Perrin et al. 1985; Mangels and Gerrodette 1994). No information on possible seasonality in distribution is available, because the California surveys which extended 300 nmi offshore were conducted only during the summer/fall period. Although striped 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). Therefore, the management stock includes only animals found within U.S. waters. For the Marine Mammal Protection Act (MMPA) stock assessment reports, striped dolphins within the Pacific U.S. Exclusive Economic Zone are divided into two discrete, non-contiguous areas: 1) waters off California, Oregon and Washington (this report), and 2) waters around Hawaii.



**Figure 1.** Striped dolphin sightings based on shipboard surveys off California, Oregon, and Washington, 1991-2014 (Barlow 2016). Dashed line represents the U.S. EEZ, thin gray lines indicate the completed transect effort of all surveys combined.

### POPULATION SIZE

The abundance of striped dolphins in this region appears to be variable between years and may be affected by oceanographic conditions, as with other odontocete species (Forney 1997, Becker et al. 2012, Barlow 2016). Because animals may spend time outside the U.S. Exclusive Economic Zone as oceanographic conditions change, a multi-year average abundance estimate is the most appropriate for management within U.S. waters. The most recent estimate of striped dolphin abundance is the geometric mean of estimates from 2008 and 2014 summer/autumn vessel-based line-transect surveys of California, Oregon, and Washington waters, 29,211 (CV=0.20) animals (Barlow 2016). This estimate includes new correction factors for animals missed during the surveys.

### Minimum Population Estimate

The log-normal 20th percentile of the 2008-2014 average abundance estimate is 24,782 striped dolphins.

### Current Population Trend

The distribution and abundance of striped dolphins off California, Oregon and Washington varies interannually (Becker et al. 2012, Barlow 2016), but no long-term trends have been identified.

### CURRENT AND MAXIMUM NET PRODUCTIVITY RATES

No information on current or maximum net productivity rates is available for striped dolphins off California.

**POTENTIAL BIOLOGICAL REMOVAL**

The potential biological removal (PBR) level for this stock is calculated as the minimum population size (24,782) 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 fishery mortality CV > 0.3 and < 0.6; Wade and Angliss 1997), resulting in a PBR of 238 striped dolphins per year.

**HUMAN-CAUSED MORTALITY AND SERIOUS INJURY**

**Fishery Information**

A summary of recent fishery mortality and injury for this stock of striped dolphin is shown in Table 1. More detailed information on these fisheries is provided in Appendix 1. The estimate of mortality and serious injury for striped dolphin in the California drift gillnet fishery for the five most recent years of monitoring, 2010-2014, is zero animals per year (Carretta et al. 2017). Human-caused mortality and injury documentation is often based on stranding data, where raw counts are negatively-biased because only a fraction of carcasses are detected. Carretta et al. (2016a) estimated the mean recovery rate of California coastal bottlenose dolphin carcasses to be 25% (95% CI 20% - 33%) and stated that given the extremely coastal habits of coastal bottlenose dolphins, carcass recovery rates for this stock represented a maximum, compared with more pelagic dolphin species in the region. 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). One striped dolphin stranded during 2010-2014 with evidence of fishery interaction (Carretta et al. 2016b), yielding a minimum estimate of four fishery-related dolphin deaths. Gillnets have been documented to entangle marine mammals off Baja California (Sosa-Nishizaki et al. 1993), but no recent bycatch data from Mexico are available.

**Table 1.** Summary of available information on the incidental mortality and serious injury of striped dolphins (California/ Oregon/Washington Stock) in commercial fisheries that might take this species (Carretta et al. 2016a, 2016b, 2017.). 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). Coefficients of variation for mortality estimates are provided in parentheses.

Fishery Name	Data Type	Year(s)	Percent Observer Coverage	Observed Mortality	Estimated Mortality	Mean Annual Takes (CV in parentheses)
CA/OR thresher shark/swordfish drift gillnet fishery	observer	2010	12%	0	0 (n/a)	0 (n/a)
		2011	20%	0		
		2012	19%	0		
		2013	37%	0		
		2014	24%	0		
Unidentified fishery	Stranding	2010-2014	-	1	≥ 4	≥ 0.8 (0.46) <sup>1</sup>
<b>Minimum total annual takes</b> (includes correction for unobserved beach strandings)						≥ 0.8 (0.46)

**STATUS OF STOCK**

The status of striped dolphins in California relative to OSP is not known, and there are insufficient data to evaluate potential trends in abundance. No habitat issues are known to be of concern for this species. They are not listed as "threatened" or "endangered" under the Endangered Species Act nor as "depleted" under the MMPA. Because recent fishery and human-caused mortality (≥0.80) is less than 10% of the PBR (238), striped dolphins are not classified as a "strategic" stock under the MMPA, and the total fishery mortality and serious injury for this stock can be considered to be insignificant and approaching zero.

<sup>1</sup> The coefficient of variation (CV) for corrected carcass counts was derived from the results of Carretta et al. (2016a), who estimated that 25% (95% CI = 20% - 33%) of all available carcasses were recovered / documented.

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