Revised 3/15/2022

SHORT-BEAKED COMMON DOLPHIN (*Delphinus delphis delphis*): California/Oregon/Washington Stock

STOCK DEFINITION AND GEOGRAPHIC RANGE

Short-beaked common dolphins are the most abundant cetacean off California, and are widely distributed from the coast to at least 300 nmi distance from shore (Figure 1). The abundance of this species off California changes on both seasonal and inter-annual time scales (Dohl *et al.* 1986; Forney and Barlow 1998; Barlow 2016). Significant seasonal shifts in the abundance and distribution of common dolphins were identified based on winter/spring 1991-92 and summer/fall 1991 surveys (Forney and Barlow 1998). The distribution of short-beaked common dolphins is continuous southward into Mexican waters to about 13ºN (Perrin *et al.* 1985; Wade and Gerrodette 1993; Mangels and Gerrodette 1994), and short-beaked common dolphins off California may be an extension of the "northern common dolphin" stock defined for management of eastern tropical Pacific tuna fisheries (Perrin *et al.* 1985). Variation in dorsal fin color patterns by latitude suggest there may be multiple stocks in this region, including at least two possible stocks in California (Farley 1995). Although short-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. Under the Marine Mammal Protection Act (MMPA), short-beaked common dolphins involved in tuna purse seine fisheries in international waters of the eastern tropical Pacific are managed separately, and they are not included in the assessment reports. For the MMPA stock assessment reports, there is a single Pacific management stock, including only animals found within the U.S. Exclusive Economic Zone of California, Oregon and Washington.

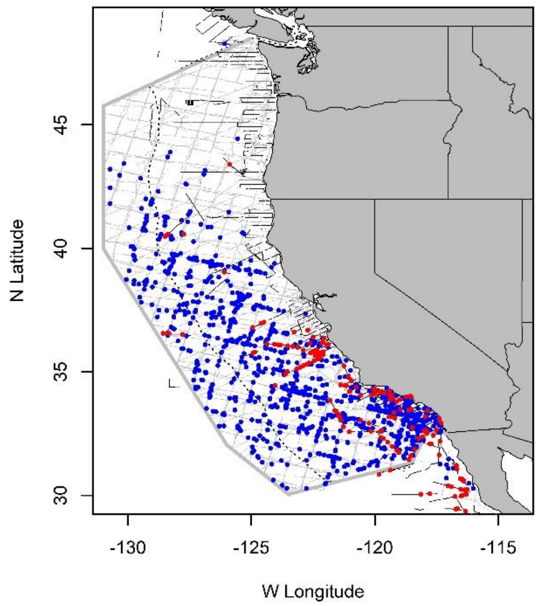

Figure 1. Short-beaked common dolphin sightings based on shipboard surveys off California, Oregon, and Washington, 1991-2018 (Barlow 2016, Henry et al. 2020). Dashed line represents U.S. EEZ, thin lines indicate completed transect effort (gray = 1991-2014, black = 2018). Sightings from the 2018 survey are shown in red.

POPULATION SIZE

The distribution of short-beaked common dolphins in this region is highly variable, in response to oceanographic changes on both seasonal and inter-annual time scales (Heyning and Perrin 1994; Forney 1997; Forney and Barlow 1998). Becker *et al*. (2020a) 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, 2020b, 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 1,056,308 (CV=0.207) animals (Becker *et al.* 2020a).

Minimum Population Estimate

The log-normal 20th percentile of the 2018 abundance estimate is 888,971 short-beaked common dolphins.

Current Population Trend

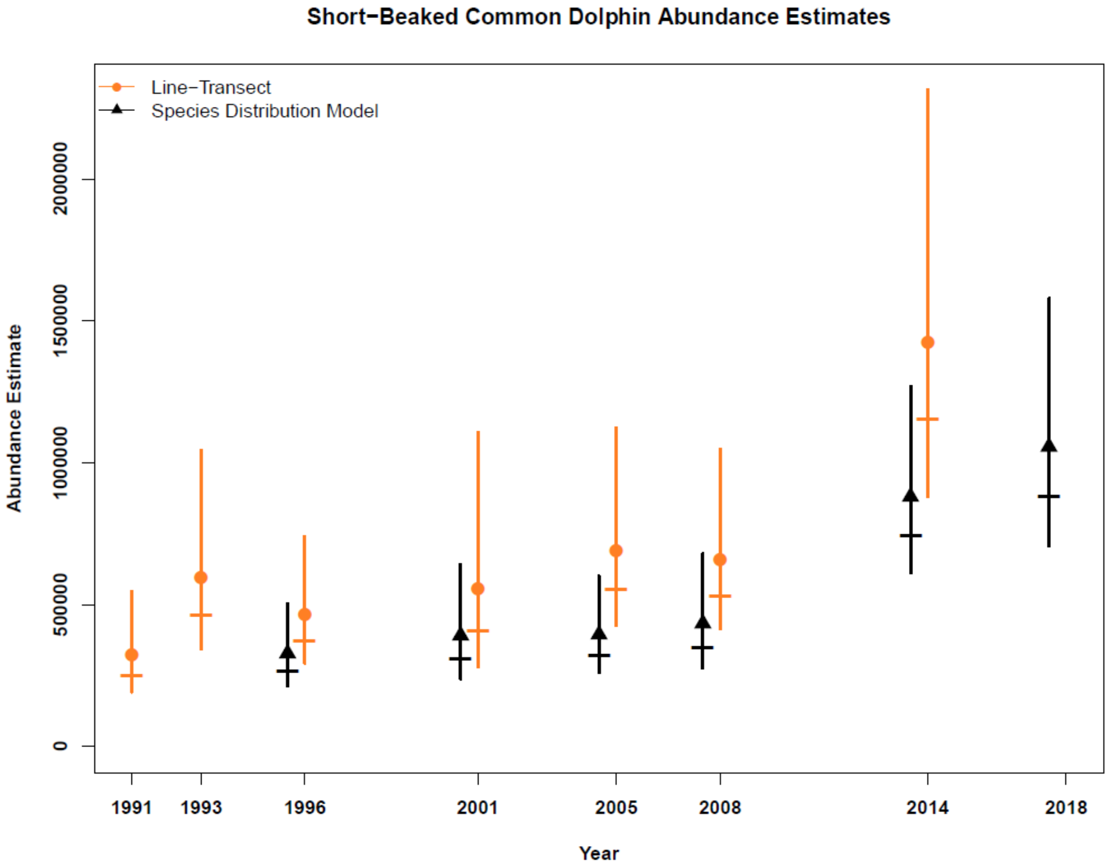

Figure 2. Abundance estimates and 95% confidence intervals from vessel-based line transect surveys (Barlow 2016) and species distribution models (Becker *et al.* 2020a) within the California Current. Line-transect surveys in 1991 and 1993 did not include the waters of Oregon and Washington. Vertical bars indicate approximate 95% confidence limits for line-transect and species distribution model estimates. Horizontal hatch marks represent minimum population size estimates based on 20th percentiles of mean estimates.

Short-beaked common dolphin abundance off the U.S. West Coast increases during warm-water periods (Dohl *et al.* 1986, Forney and Barlow 1998, Barlow 2016). Estimated abundance increased significantly beginning in 2014 survey during extremely warm ocean conditions (Bond *et al*. 2015) and the 2018 estimate is also elevated compared with earlier surveys in the 1991-2018 time series. The increase in short-beaked common dolphin abundance is likely a result of northward movement of this transboundary stock from waters off Mexico (Barlow 2016).

CURRENT AND MAXIMUM NET PRODUCTIVITY RATES

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

POTENTIAL BIOLOGICAL REMOVAL

The potential biological removal (PBR) level for this stock is calculated as the minimum population size (888,971) times one half the default maximum net growth rate for cetaceans (½ of 4%) times a recovery factor of 0.50 (for a species of unknown status with a mortality rate CV< 0.30; Wade and Angliss 1997), resulting in a PBR of 8,889 short-beaked common dolphins per year.

HUMAN-CAUSED MORTALITY AND SERIOUS INJURY

Fishery Information

A summary of recent fishery mortality and injury for short-beaked common dolphins is shown in Table 1. The estimate of mortality for short-beaked common dolphin in the California drift gillnet fishery for most recent 5 year period of 2015-2019 averages 26.7 (CV=0.25) per year (Carretta *et al*. 2021, Carretta 2021) (Table 1).

Short-beaked common dolphin have also been killed in the California halibut and white seabass set gillnet fishery, but the fishery has not been observed recently. There were 3 strandings attributed to this fishery during the most-recent 5-year period of 2015-2019. These 3 strandings are corrected for incomplete detection of stranded carcasses, following the methods of Carretta *et al*. 2016, by multiplying observed carcasses by 4 (Table 1). One stranding involved an unidentified gillnet fishery and this one carcass is also multiplied by 4 to account for undetected carcasses. The mean annual bycatch from strandings in the set gillnet fishery and unidentified gillnet fisheries is 16 animals during 2015-2019, or 3.8 animals per year (Table 1). The coefficient of variation for corrected strandings is derived from the results of Carretta et al. (2016). Most common dolphin strandings in the region where gillnet entanglement is identified as a cause of death involve small-mesh typically used in the set gillnet fishery and not large-mesh from the swordfish drift gillnet fishery that operates farther from shore.

Table 1. Summary of available information on the incidental mortality and injury of short-beaked common dolphins (California/Oregon/Washington Stock) in commercial fisheries that might take this species (Carretta *et al*. 2021, Carretta 2021). All entanglements resulted in the death of the animal. Coefficients of variation for mortality estimates are provided in parentheses; n/a = 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).

Fishery Name	Data Type	Year	Percent Observer Coverage	Observed Mortality (and Serious Injury)	Estimated Mortality and Serious Injury (CV)	Mean Annual Takes (CV)
CA/OR thresher shark/swordfish drift gillnet fishery	observer	2015-2019	21%	31	133.6 (0.25)	26.7 (0.25)
CA halibut / white seabass and other species set gillnet fishery	strandings	2015-2019	n/a	3	≥ 12 (0.46)	≥ 3 (0.46)
Hawaii Shallow Set Longline fishery	observer	2015-2019	100%	0	0	0
Unidentified gillnet fishery	Stranding	2015-2019	n/a	1	≥ 4 (0.46)	≥ 0.8 (0.46)
Minimum total annual takes (includes correction for unobserved beach strandings)						≥ 30.5 (0.22)

The California squid purse seine fishery has not been observed since 2008, but there have been past interactions with this fishery, including one mortality (Carretta and Enriquez 2006). No current estimates of bycatch exist for this fishery. There have also been short-beaked common dolphin interactions with the Hawaii shallow set longline fishery (one each in 2011 and 2014 with 100% observer coverage), but no recent interactions have been observed.

Other Mortality

Short-beaked common dolphins may occasionally be injured or killed by recreational hook and line fisheries, similar to documented deaths and injuries for long-beaked common dolphins. Other risks may include exposure to underwater detonations in coastal waters, such as those documented for long-beaked common dolphins (Danil and St. Leger 2011).

STATUS OF STOCK

The status of short-beaked common dolphins in Californian waters relative to OSP is not known. The observed increase in abundance of this species off California may reflect a distributional shift (Anganuzzi *et al.* 1993; Forney and Barlow 1998, Barlow 2016, Becker *et al*. 2020a), rather than an overall population increase due to growth. 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. The average annual human-caused mortality in 2015-2019 (≥ 30.5 animals) is estimated to be less than the PBR (8,889), and therefore they are not classified as a "strategic" stock under the MMPA. The total estimated fishery mortality and injury for short-beaked common dolphins is less than 10% of the calculated PBR and, therefore, can be considered to be insignificant and approaching zero mortality and serious injury rate.

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