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

STOCK DEFINITION AND GEOGRAPHIC RANGE

Long-beaked common dolphins have only recently been recognized as a distinct species (Heyning and Perrin 1994; Rosel et al. 1994). Along the U.S. west coast, their distribution overlaps with that of the short-beaked common dolphin, and much historical information has not distinguished between these two species. 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). Stranding data and sighting records indicate that the relative abundance of this species off California changes both seasonally and inter-annually. 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). Under the Marine Mammal Protection Act (MMPA), long-beaked ("Baja neritic") common dolphins involved in eastern tropical Pacific tuna fisheries are managed separately as part of the 'northern common dolphin' stock (Perrin et al. 1985), and these animals 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.

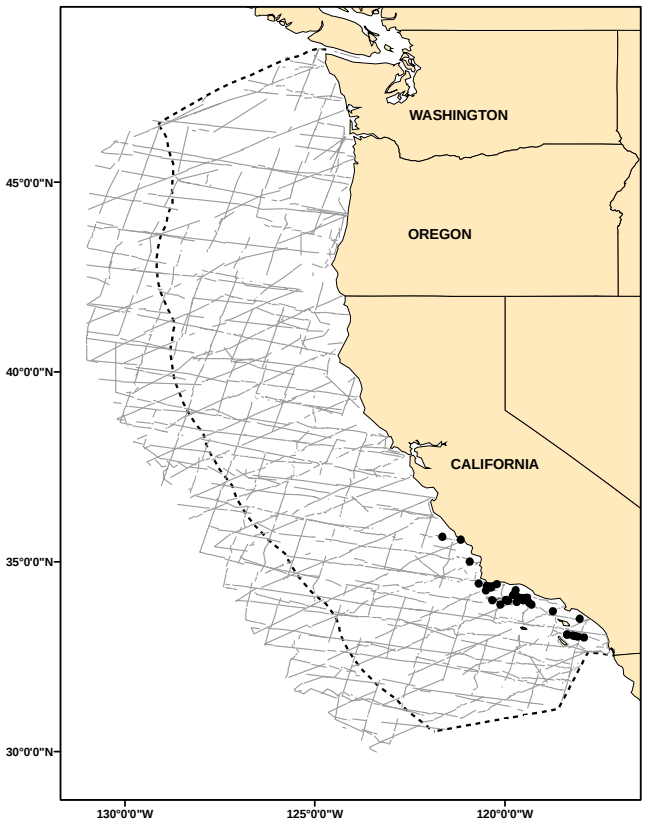

Figure 1. Long-beaked common dolphin sightings based on shipboard surveys off California, Oregon, and Washington, 1991-2005 (see Appendix 2 for information on timing and location of survey effort). No Delphinus sightings have been made off Washington. Dashed line represents the U.S. EEZ, thin lines indicate completed transect effort of all surveys combined.

POPULATION SIZE

The most recent abundance estimates are 20,076 (CV=0.71) and 11,714 (CV=0.99) long-beaked common dolphin, based on 2001 and 2005 ship line transect surveys, respectively, of California, Oregon, and Washington waters (Barlow and Forney 2007, Forney 2007). The 2001 estimate of 20,076 (CV=0.71) is based on a new multiple-covariate line transect analysis (Barlow and Forney 2007) and supercedes the estimate of 306 (CV=1.02) reported by Barlow (2003). See Appendix 2 for additional information on abundance estimates used in this stock assessment. The distribution and abundance of long-beaked common dolphins off California appears to be variable on interannual and seasonal time scales (Heyning and Perrin 1994). As oceanographic conditions change, long-beaked common dolphins may move between

Mexican and U.S. waters, and therefore a multi-year average abundance estimate is the most appropriate for management within the U.S. waters. The geometric mean abundance estimate for California, Oregon and Washington waters based on two ship surveys conducted in 2001 and 2005 is 15,335 (CV= 0.56) long-beaked common dolphins (Barlow and Forney 2007 , Forney 2007).

Minimum Population Estimate

The log-normal 20th percentile of the weighted average abundance estimate is 9,880 long-beaked common dolphins.

Current Population Trend

California waters represent the northern limit for this stock and animals likely move between U.S. and Mexican waters. No information on trends in abundance are available for this stock because of high interannual variability in line-transect abundance estimates. Heyning and Perrin (1994) detected changes in the proportion of short-beaked to long-beaked common dolphins stranding along the California coast, with the short-beaked common dolphin stranding more frequently prior to the 1982-83 El Niño (which increased water temperatures off California), and the long-beaked common dolphin more commonly observed for several years afterwards. Thus, it appears that both relative and absolute abundance of these species off California may change with varying oceanographic conditions.

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 (9,880) 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 >0.30 and <0.60; Wade and Angliss 1997), resulting in a PBR of 95 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. Mortality estimates for the California drift gillnet fishery are included for the five most recent years of monitoring, 2002-2006 (Carretta and Chivers 2004, Carretta et al. 2005a, 2005b, Carretta and Enriquez 2006, 2007). After the 1997 implementation of a Take Reduction Plan, which included skipper education workshops and required the use of pingers and minimum 6-fathom extenders, common dolphin entanglement rates in the drift gillnet fishery dropped considerably (Barlow and Cameron 2003). However, because of interannual variability in entanglement rates additional years of data will be required to fully evaluate the effectiveness of pingers for reducing mortality of this species in the long term.

Common dolphin mortality has also been reported in halibut set gillnets in California (Julian and Beeson 1998). The fishery has been observed only four times since 1994 (in 1999, 2000, 2006, and 2007), at low levels of observer coverage (<10% of fishing effort). Although no common dolphin were observed taken during these four observation periods, fisher self-reports for 2000-2004 indicate that at least two common dolphins (type not specified) were killed (Marine Mammal Authorization Permit Program data). Although these reports are considered unreliable (see Appendix 4 of Hill and DeMaster 1998) they represent a minimum mortality for this fishery.

Nineteen common dolphins (three unidentified common dolphin and 16 long-beaked common dolphin) stranded with evidence of fishery interaction (NMFS, Southwest Region, unpublished data) between 2002-2006. All but one of these strandings showed evidence of an interaction with an unknown entangling net fishery (severed flukes, knife cuts, net marks, or net fragments wrapped around the animal). The remaining animal showed evidence of an interaction with an unknown hook and line fishery. Mean annual takes in Table 1 are based on 2002-2006 data. This results in an average estimate of 16 (CV= 0.46) long-beaked common dolphins taken annually.

Drift gillnet fisheries for swordfish and sharks exist along the entire Pacific coast of Baja California, Mexico and may take animals from this population. Quantitative data are available only for the

Mexican swordfish drift gillnet fishery, which uses vessels, gear, and operational procedures similar to those in the U.S. drift gillnet fishery, although nets may be up to 4.5 km long (Holts and Sosa-Nishizaki 1998). The fleet increased from two vessels in 1986 to 31 vessels in 1993 (Holts and Sosa-Nishizaki 1998). The total number of sets in this fishery in 1992 can be estimated from data provided by these authors to be approximately 2700, with an observed rate of marine mammal bycatch of 0.13 animals per set (10 marine mammals in 77 observed sets; Sosa-Nishizaki et al. 1993). This overall mortality rate is similar to that observed in California driftnet fisheries during 1990-95 (0.14 marine mammals per set; Julian and Beeson, 1998), but species-specific information is not available for the Mexican fisheries. Previous efforts to convert the Mexican swordfish driftnet fishery to a longline fishery have resulted in a mixed-fishery, with 20 vessels alternately using longlines or driftnets, 23 using driftnets only, 22 using longlines only, and seven with unknown gear type (Berdegué 2002).

Table 1. Summary of available information on the incidental mortality and injury of long-beaked common dolphins (California Stock) and prorated unidentified common dolphins in commercial fisheries that might take this species. All observed entanglements resulted in the death of the animal. The observer program for the set gillnet fishery was discontinued during 1994 and later resumed in Monterey Bay from 1999-2000. Observations in the set gillnet fishery resumed in 2006 and 2007 (260 total sets observed) and no long-beaked common dolphin were observed taken. Coefficients of variation for mortality estimates are provided in parentheses, when available. Mean annual takes are based on 2002-2006 data unless noted otherwise. n/a = information not available.

Fishery Name	Data Type	Year(s)	Percent Observer Coverage	Observed	Estimated Annual Mortality	Mean Annual Takes (CV in parentheses)
CA/OR thresher shark/swordfish drift gillnet fishery	observer	2002 2003 2004 2005 2006	22.1% 20.2% 20.6% 20.9% 18.5%	4 0 0 3 1	18 (0.79) 0 0 14 (0.57) 5 (1.04)	7.4 (0.77)
CA small mesh drift gillnet fishery for white seabass, yellowtail, barracuda, and tuna	observer	2002 2003 2004 2005 2006	11.5% 10.4% 17.6% not observed not observed	0 1 1 n/a n/a	0 (n/a) 9 (0.78) 5 (1.18) n/a n/a	4.7 (0.98)
CA angel shark/ halibut and other species large mesh (>3.5in) set gillnet fishery[2]	MMAP self-reporting	Common dolphins, species not determined				
		2002 2003 2004 2005 2006	- - - - - n/a n/a	0 0 1 n/a n/a	0 0 1 n/a n/a	≥0.2 (n/a)
	observer	2006-2007	<10%	0	0	0
Undetermined	strandings	2002-2006	19 common dolphins (three unidentified and 16 longbeaked common dolphin) stranded with evidence of fishery interactions. Evidence of fishery interactions included severed flukes, net fragments, net marks, positive metal detector scans, and knife marks or cuts. Only one of the strandings could be linked to a specific commercial fishery (halibut set gillnet in 2002), which was not observed that year. Other strandings may have come from observed fisheries that already have bycatch estimates and these are not included in the annual average to prevent double-counting of fishery mortality. Mean annual takes are therefore based on stranded animals only if the stranding can be attributed to a fishery lacking an observer program or cases where stranded animals represent the only documented fishery-related deaths in a given year.			≥0.2(n/a)

Fishery Name	Data Type	Year(s)	Percent Observer Coverage	Observed	Estimated Annual Mortality	Mean Annual Takes (CV in parentheses)
Minimum total annual takes						12.5 (0.46)

[1] Observer coverage in the small mesh drift gillnet fishery was estimated from logbook records. Logbook effort totaled 192, 134, 191, 201, and 125 sets for 2000 through 2004, respectively. The fishery was not observed in 2005 and 2006. Annual fishery mortality is calculated based on the three-year average from 2002-2004.

[2]The set gillnet fishery was observed from 1991-94 and then only in Monterey Bay during 1999-2000, where 20-25% of the local fishery was observed. Observer coverage in this fishery resumed in 2006 (12 sets observed) and continued into 2007 (248 sets observed).

Other Mortality

In the eastern tropical Pacific, 'northern common dolphins' have been incidentally killed in international tuna purse seine fisheries since the late 1950's. Cooperative international management programs have dramatically reduced overall dolphin mortality in these fisheries during the last decade (Joseph 1994). Between 2000-2004, annual fishing mortality of northern common dolphins (potentially including both short-beaked and long-beaked common dolphins) ranged between 54 and 159 animals, with an average of 102 (IATTC, 2006). Although it is unclear whether these animals are part of the same population as long-beaked common dolphins found off California, they are managed separately under a section of the MMPA written specifically for the management of dolphins involved in eastern tropical Pacific tuna fisheries.

'Unusual mortality events' of long-beaked common dolphin due to domoic acid toxicity have been documented by NMFS as recently as 2007 along the California coast.

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 of this species of common dolphin. 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 from 2002-2006 (12.5 animals) does not exceed the PBR (95), 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 (12.5) exceeds 10% of the PBR and, therefore, cannot be considered to be insignificant and approaching zero mortality and serious injury rate.

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