

## COMMON BOTTLENOSE DOLPHIN (*Tursiops truncatus truncatus*): California/Oregon/Washington Offshore Stock

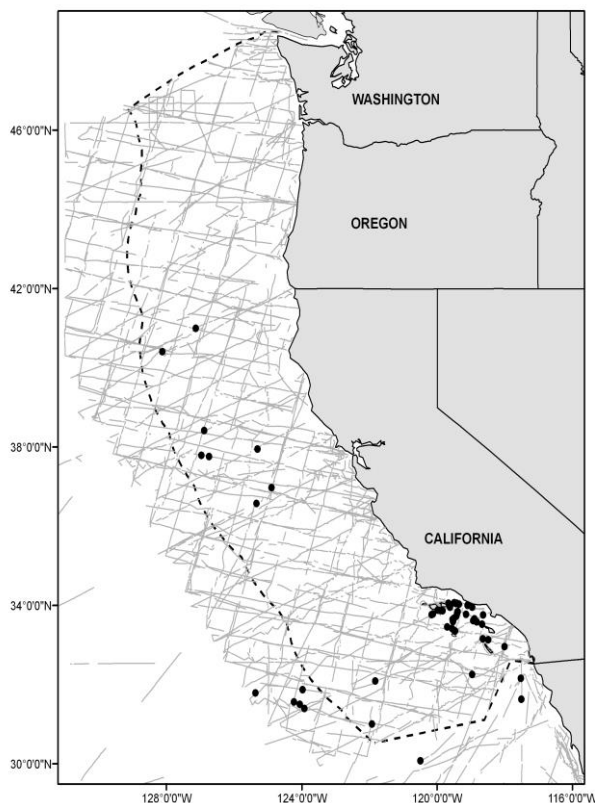
### STOCK DEFINITION AND GEOGRAPHIC RANGE

Bottlenose dolphins are distributed world-wide in tropical and warm-temperate waters. In many regions, including California, separate coastal and offshore populations are known (Walker 1981; Ross and Cockcroft 1990; Van Waerebeek et al. 1990; Lowther 2006). On surveys conducted off California, offshore bottlenose dolphins have been found at distances greater than a few kilometers from the mainland and throughout the Southern California Bight. They have also been documented in offshore waters as far north as about 41°N (Figure 1), and they may range into Oregon and Washington waters during warm-water periods. Sighting records off California and Baja California (Lee 1993; Mangels and Gerrodette 1994) suggest that offshore bottlenose dolphins have a continuous distribution in these two regions. Based on aerial surveys conducted during winter/spring 1991-92 (Forney et al. 1995) and shipboard surveys conducted in summer/fall 1991 (Barlow 1995), no seasonality in distribution is apparent (Forney and Barlow 1998). Offshore bottlenose dolphins are not restricted to U.S. waters, but 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, bottlenose dolphins within the Pacific U.S. Exclusive

Economic Zone are divided into seven stocks: 1) California coastal stock, 2) California, Oregon and Washington offshore stock (this report), and five stocks in Hawaiian waters: 3) Kauai/Niihau, 4) Oahu, 5) 4-Islands (Molokai, Lanai, Maui, Kahoolawe), 6) Hawaii Island and 7) the Hawaiian Pelagic Stock.

### POPULATION SIZE

The most recent shipboard surveys conducted within 300 nmi of the coasts of California, Oregon, and Washington were in 2005 (Forney 2007) and 2008 (Barlow 2010). Because the distribution of bottlenose dolphins appears to vary interannually and they may spend time outside the U.S. Exclusive Economic Zone, a multi-year average abundance estimate is the most appropriate for management within U.S. waters. The most comprehensive multi-year average abundance is the geometric mean abundance estimate for California, Oregon and Washington waters based on the 2005 and 2008 ship surveys, or 1,006 (CV=0.48) offshore bottlenose dolphins (Forney 2007, Barlow 2010).



**Figure 1.** Offshore bottlenose dolphin sightings based on shipboard surveys off California, Oregon, and Washington, 1991-2008 (see Appendix 2 for data sources and information on timing and location of survey effort). Dashed line represents the U.S. EEZ, thin lines indicate completed transect effort of all surveys combined.

### Minimum Population Estimate

The log-normal 20th percentile of the 2005-2008 average abundance estimate is 684 offshore bottlenose dolphins.

### Current Population Trend

Trend analyses for this stock have 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

No information on current or maximum net productivity rates is available for this population of offshore bottlenose dolphins.

### POTENTIAL BIOLOGICAL REMOVAL

The potential biological removal (PBR) level for this stock is calculated as the minimum population size (684) times one half the default maximum net growth rate for cetaceans ( $\frac{1}{2}$  of 4%) times a recovery factor of 0.40 (for a species of unknown status with fishery mortality  $CV > 0.80$ ; Wade and Angliss 1997), resulting in a PBR of 5.5 offshore bottlenose dolphins per year.

### HUMAN-CAUSED MORTALITY AND SERIOUS INJURY

#### New Serious Injury Guidelines

NMFS updated its serious injury designation and reporting process, which uses guidance from previous serious injury workshops, expert opinion, and analysis of historic injury cases to develop new criteria for distinguishing serious from non-serious injury (Angliss and DeMaster 1998, Andersen *et al.* 2008, NOAA 2012). NMFS defines serious injury as an “*injury that is more likely than not to result in mortality*”. Injury determinations for stock assessments revised in 2013 or later incorporate the new serious injury guidelines, based on the most recent 5-year period for which data are available.

#### Fishery Information

A summary of known fishery mortality and serious injury for this stock of bottlenose dolphin is shown in Table 1. During 2007-2011, two offshore stock bottlenose dolphins were seriously injured in commercial fishing gear (Jannot *et al.* 2011, Carretta *et al.* 2013) and one was killed in commercial fishing gear (Carretta and Enriquez 2012). The fisheries involved included sablefish fixed longline gear (Jannot *et al.* 2011), the California swordfish drift gillnet fishery (Carretta and Enriquez 2012), and a stranding record from an unknown fishery interaction (Carretta *et al.* 2013). Bottlenose dolphins are rarely observed entangled in the California swordfish drift gillnet fishery and potential reductions in bycatch resulting from acoustic pinger use in this fishery are unknown, due to small sample sizes (Barlow and Cameron 2003, Carretta and Barlow 2011). The average annual fishery-related serious injury and mortality of offshore stock bottlenose dolphins for the period 2007-2011 is  $\geq 2.0$  animals/yr (Table 1).

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 injury of bottlenose dolphins (California/ Oregon/Washington Offshore Stock) in commercial fisheries that might take this species. Mean annual takes are based on 2007-2011 data unless noted otherwise (Carretta and Enriquez 2009a, 2009b, 2010, 2012a, 2012b, Jannot *et al.* 2011).

Fishery Name	Data Type	Year(s)	Percent Observer Coverage	Observed Mortality (and Serious Injury)	Estimated Annual Mortality and Serious Injury (CV)	Mean Annual Takes (CV in parentheses)
CA/OR thresher shark/swordfish drift gillnet fishery	observer	2007	16.4%	0	0	1.6 (0.96)
		2008	13.5%	0	0	
		2009	13.3%	0	0	
		2010	11.9%	1	8 (0.96)	
		2011	18.8%	0	0	

Fishery Name	Data Type	Year(s)	Percent Observer Coverage	Observed Mortality (and Serious Injury)	Estimated Annual Mortality and Serious Injury (CV)	Mean Annual Takes (CV in parentheses)
California halibut and white seabass set gillnet	observer	2007	17.8%	0	0	0
		2010	12.5%	0		
		2011	8%	0		
California yellowtail, barracuda, and white seabass drift gillnet fishery	observer	2010	5.0%	0	0	0
		2011	3.3%	0		
CA lobster trap/pot	At-sea disentanglement	2008	n/a	0 (1)	1 (n/a)	0.2 (n/a)
Sablefish offshore fixed gear	At-sea disentanglement	2005	0.5%	0	1 (n/a)*	0.2 (n/a)
		2006	1.5%	0		
		2007	3.4%	0		
		2008	1.5%	0		
		2009	2.4%	0 (1)		
<b>Minimum total annual takes</b>						≥2.0 (0.96)

\*No estimate of bycatch was derived from the one observation of a bottlenose dolphin released injured from sablefish gear (Jannot et al. 2009).

Offshore bottlenose dolphins are often associated with Risso's dolphins and pilot whales, for which mortality has been documented in the squid purse seine fishery off Southern California (Heyning et al. 1994). Based on this association, offshore bottlenose dolphins may also have experienced some mortality in this fishery. However these would probably represent animals killed intentionally to protect catch or gear, rather than incidental kills, and such intentional takes are now illegal under the 1994 Amendment to the MMPA.

#### STATUS OF STOCK

The status of offshore bottlenose dolphins in California relative to OSP is not known, and there are insufficient data to evaluate 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 average annual fishery takes (2.0/yr) are less than the calculated PBR (5.5), offshore bottlenose dolphins are not classified as a "strategic" stock under the MMPA. The total fishery mortality and serious injury for this stock is greater than 10% of the PBR and cannot be considered to be insignificant and approaching zero.

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