

Short Note

Southernmost Distribution of Common Bottlenose Dolphins (*Tursiops truncatus*) in the Eastern South Pacific

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Abstract

The common bottlenose dolphin (*Tursiops truncatus*) is a cosmopolitan species that does not range to latitudes greater than 45° in either hemisphere, with a few exceptions. In South American waters, this species is generally distributed in the Atlantic Ocean south to Chubut province (ca. 46° S), while in the eastern South Pacific this species has been recorded in northern and central Chile, with a few records south to 40° S. Here we summarize recent records of common bottlenose dolphins obtained during systematic marine mammal surveys in the Chilean Patagonian and Fuegian channels and fjords (the Los Lagos, Aysén, and Magallanes regions of Chile). These data suggest an extension of the documented range of the species southwards, indicating that bottlenose dolphins may have colonized new areas in the eastern South Pacific or as the result of an increase in survey efforts by scientists in the region.

Key Words: common bottlenose dolphin, *Tursiops truncatus*, eastern South Pacific, Chile, distribution

The common bottlenose dolphin (*Tursiops truncatus*) (Montagu, 1821) is a cosmopolitan species distributed widely in coastal and pelagic habitats

in temperate and tropical waters (Leatherwood & Reeves, 1983; Jefferson et al., 2008). Generally, this species does not range to latitudes greater than 45° in either hemisphere, with exceptions occurring around the United Kingdom, northern Europe, and southern New Zealand (Jefferson et al., 2008). In South American waters, this species is regularly distributed in the Atlantic Ocean south to Chubut province (ca. 46° S) in Argentina (Crespo et al., 2008); however, it has also been recorded further south into Santa Cruz and Tierra del Fuego provinces (Bastida & Rodríguez, 2003; Goodall et al., 2004). In the eastern South Pacific, this species was recorded in northern and central Chile (ca. 34° S) (Aguayo-Lobo et al., 1998); and a few sightings were reported to 39° S (Findlay et al., 1998) and more recently south of 40° S (Sanino et al., 2005; Aguayo-Lobo et al., 2006; Viddi et al., 2010).

Here, recently published and unpublished records of common bottlenose dolphins observed during systematic marine mammal surveys in southern Chile are summarized. The surveys were conducted by several different scientific research groups along and across a vast area of Chilean Patagonian and Fuegian channels and fjords, involving the Los Lagos, Aysén, and Magallanes regions. We aim to document the distribution

of the species southwards along the eastern South Pacific.

Systematic surveys for several independent cetacean research studies were conducted by various scientific teams from 2000 to 2010, mostly during austral spring and summer seasons. The surveys covered different areas and were undertaken in different periods of time, which are detailed as follows. One dataset on cetacean distribution were collected between December 2000 and November 2001 through vessel-based observations performed from Puerto Montt to Laguna San Rafael, Los Lagos and Aysén regions, aboard the Navimag company tour and cargo ferries (*M/V Evangelistas* and *M/V Puerto Eden*), which have fixed routes along the fjords (Viddi et al., 2010). During the summers of 2001 and 2003, other surveys were conducted under the Aysén Biodiversity project in Reserva Nacional Las Guaitecas, Parque Nacional Laguna San Rafael, and Reserva Nacional Katalalixar (Hoelzel et al., 2003). During the summers of 2004, 2005, and 2006, surveys were conducted in Laguna San Rafael, and opportunistic records of cetaceans were registered from aboard *M/V Evangelistas* and *M/V Puerto Eden* between Puerto Montt and Laguna San Rafael (M. Flores, unpub. data, 2004-2006). In the summers of 2003, 2007, and 2009, fine-scale boat-based marine surveys were also conducted under the Kepenklu project in the Comau and Reñihue fjords and Guaitecas Archipelago (F. A. Viddi, unpub. data, 2003-2009). In 2008 and 2009, surveys were performed in the Los Lagos and Aysén regions in coastal and more exposed waters from aboard several different small (4 m) and medium size (8 m) vessels (Anonymous, 2008; Anonymous, 2009). In January and February of 2009 and 2010, three surveys were done in northern Aysén, including the Moraleda channel and the fjords system around Magdalena Island (H. Vester, unpub. data, 2009-2010) and along fjord Puyuhuapi and channels Moraleda and Jacaf (Zamorano et al., 2010). In the Chilean Patagonian and Fuegian channels and fjords of Magallanes region, extensive surveys for cetaceans were conducted between 1997 and 2009 by researchers at the Instituto de la Patagonia—Whalesound that are detailed in Gibbons et al. (2006). Surveys were also done by the Centre for Quaternary Research (CEQUA) in the fjords and channels at the central and western portions of the Magellan Strait as well as in the southern channels south to Cape Horn between 2003 and 2009 from different platforms, ranging from medium-size fishermen and tourist boats (13 to 15 m) to tourist cruise ships (70 m). From January to March 2010, extensive surveys were done in the northern part of the Magallanes region, particularly in the fjords and channels of the Bernardo O'Higgins

National Park (J. Acevedo & C. Olavarría, unpub. data, 2010) and the western area of Katalalixar National Reserve (M. Flores, unpub. data, 2010).

Thirty-two sightings of bottlenose dolphins were compiled from recent years in the fjords and channels of southern Chile (Table 1; Figure 1). The sightings were recorded by experienced observers, which ensured the correct species identification. Most of the sightings seem to be concentrated in the northern Aysén region and have involved large groups of dolphins (group size average 25; the range is 2 to 100 individuals). One outlier data point in the sightings was recorded approximately 1,000 km south of the other sightings, which represents the first time this species was sighted in the Magallanes region. This group of five dolphins remained in the same small bay (Estero Cóndor) for at least a week.

Until recently, *T. truncatus* distribution in Chilean waters was thought to be restricted to northern and central Chile (Aguayo-Lobo, 1975; Sielfeld, 1983; Cárdenas et al., 1986; González et al., 1989). Since the late 1990s, however, several new sightings of this species have been reported in southern Chile (Findlay et al., 1998; Sanino et al., 2005; Aguayo-Lobo et al., 2006; Viddi et al., 2010). These more regular sightings suggest that the bottlenose dolphins' range in the eastern South Pacific could be extending southward over the last 10 y. Alternatively, this possible extension in range distribution might be explained by an increase in survey effort by scientists.

Some groups of common bottlenose dolphins were large (30 to 100 individuals) when compared to the more common species in the area such as the Peale's dolphin (*Lagenorhynchus australis*) (group size average 4.28 [SD \pm 3.20] and 5.58 [SD \pm 3.27]) (Viddi & Lesrauwaet, 2005) and Chilean dolphin (*Cephalorhynchus eutropia*) (group size average 5.92; range 1 to 25) (Ribeiro et al., 2005), which are often found in groups of less than 20 to 25 individuals (Aguayo-Lobo et al., 2006; Anonymous, 2008; Anonymous, 2009; Zamorano et al., 2010). The presence of *T. truncatus* in the channels of the Los Lagos and Aysén regions has apparently become frequent in the last 10 y as supported by the number of new sightings. In the southern Patagonia channels (Magallanes region), however, their presence seems rather infrequent.

Given the lack of records for this species in the area between Los Lagos/Aysén and Magallanes regions (45 to 53° S) in the eastern South Pacific along the Chilean coast and the close geographic proximity of the Magallanes dolphins with the western South Atlantic population along the coast of Argentina (Goodall et al., 2004; Crespo et al., 2008; Figure 1), it is likely that these dolphins come from Atlantic populations. An Atlantic

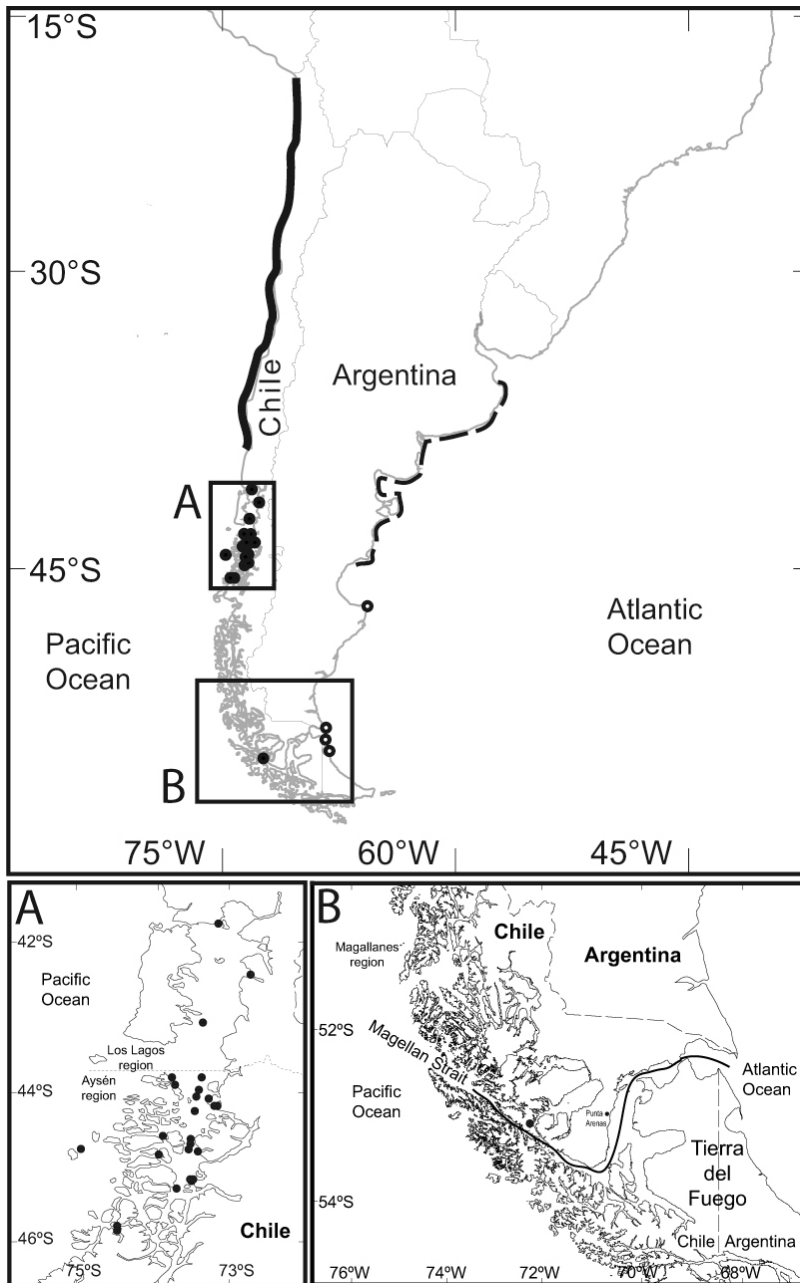


Figure 1. Distribution of bottlenose dolphins in the eastern South Pacific along the Chilean coast (solid line; Aguayo-Lobo et al., 1998), including as filled circles the data compiled for this note (inserts A and B); the distribution in the western South Atlantic along the coast of Argentina (dashed line for general range and hollowed circles for extra limit records; Crespo et al., 2008) is included for comparison.

origin has been suggested for other cetacean species in the southern fjords and channels of South America such as Risso's dolphin (*Grampus griseus*) (Olavarría et al., 2001), southern right whale (*Eubalaena australis*) (Belgrano et al., 2008),

Commerson's dolphin (*Cephalorhynchus commersonii*) (Goodall, 1994), and common minke whales (*Balaenoptera acutorostrata*) (Pastene et al., 2009). The Atlantic origin of the Magallanes bottlenose dolphins could be related to the

Table 1. Recorded sightings of bottlenose dolphins in the Chilean Patagonian and Fuegian channels; published records are identified by its reference, while the initials of the observer in the Observer/Source column identify unpublished records.

Date	Geographic position	No. of groups	No. of individuals	Observer/Source
1 January 2001	44°16'S; 73°25'W	1	50	Viddi et al., 2010
2 February 2001	44°48'S; 73°29'W	1	30	Viddi et al., 2010
4 April 2001	43°08'S; 73°20'W	1	8	Viddi et al., 2010
8 May 2001	45°10'S; 73°31'W	1	--	Aguayo et al., 2006
8 May 2001	45°13'S; 73°31'W	1	6	Aguayo et al., 2006
9 May 2001	45°21'S; 73°39'W	1	15	Aguayo et al., 2006
15 May 2001	45°50'S; 74°25'W	1	25	Aguayo et al., 2006
15 May 2001	45°50'S; 74°25'W	1	9	Aguayo et al., 2006
4 October 2001	44°08'S; 73°24'W	1	60	Viddi et al., 2010
5 October 2001	44°03'S; 73°24'W	1	100	Viddi et al., 2010
27 October 2001	44°33'S; 73°28'W	1	15	Viddi et al., 2010
27 October 2001	44°37'S; 73°29'W	1	6	Viddi et al., 2010
27 October 2001	44°40'S; 73°30'W	1	4	Viddi et al., 2010
26 November 2001	44°38'12"S; 73°52'13"W	1	15	CO-ARH
8 July 2002	45°49'26"S; 74°32'19"W	1	8	Aguayo et al., 2006
20 November 2002	45°49'31"S; 74°59'40"W	1	6-8	Aguayo et al., 2006
31 December 2003	42°29'S; 72°39'W	1	2	FV
2 August 2004	41°45'S; 73°10'W	1	2	Sanino et al., 2005
19 December 2006	45°11'S; 73°30'W	1	6-10	MF
5 January 2008	43°54'S; 73°44'W	1	35-60	FV
15 February 2008	43°49'S; 73°46'W	1	40-60	FV
25 January 2009	53°22'30.89"S; 72°38'13.01"W	1	4-5	CO
28 January 2009	53°22'30.89"S; 72°38'13.01"W	1	5	EN
31 January 2009	53°22'30.89"S; 72°38'13.01"W	1	5	JG, JC
1 February 2009	44°40.966'S; 73°29.253'W	1	40-50	HV
3 February 2009	53°22'30.89"S; 72°38'13.01"W	1	4	JA
8 February 2009	44.17598°S; 73.12333°W	2	24	JPTF
23 February 2009	43°54'S; 73°43'W	1	30-50	FV
8 March 2009	44°49.8711'S; 73°23.578'W	3	100	JZA
22 March 2009	44°12.067'S; 73°08.202'W	1	100	JZA
22 January 2010	43°48.461'S; 73°22.151'W	1	15-18	HV
23 January 2010	44°08.920'S; 73°16.255'W	1	20-30	HV

Observers: CO – Carlos Olavarría; ARH – A. Rus Hoelzel; FV – Francisco Viddi; MF – Marcelo Flores; EN – Emma Newcombe; JG – Jorge Gibbons; JC – Juan Capella; HV – Heike Vester; JA – Jorge Acevedo; JPTF – Juan Pablo Torres-Florez; and JZA – José Zamorano-Abramson

similarity in oceanographic conditions of the central and eastern parts of the Magellan Strait and the Atlantic Ocean (Valdenegro & Silva, 2003).

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